HỘI NGHỊ VẬT LÝ LÝ THUYẾT TOÀN QUỐC LẦN THỨ 37

The 37th National Conference on Theoretical Physics

Cửa Lò, 6 – 9/8/2012

CHƯƠNG TRÌNH HỘI NGHỊ VÀ TÓM TẮT BÁO CÁO

Viện Vật lý, Hà Nội **Trường Đại học Vinh**

HỘI NGHỊ VẬT LÝ LÝ THUYẾT TOÀN QUỐC LẦN THỨ 37

(Cửa Lò, 6 – 9/8/2012)

Chủ tịch Hội nghị

Nguyễn Ái Việt (VVL HN)

Ban Tổ chức

Đinh Xuân Khoa (ĐH Vinh), Đồng Trưởng ban
Trịnh Xuân Hoàng (VVL HN), Đồng Trưởng ban
Nguyễn Hồng Quang (VKHCNVN), Đồng Trưởng ban
Hoàng Dũng (ĐHQG Tp. HCM)
Bạch Thành Công (ĐHKHTN HN)
Trương Minh Đức (ĐHSP Huế)
Phó Thị Nguyệt Hằng (ĐHBK HN)
Lê Văn Hoàng (ĐHSP Tp. HCM)
Nguyễn Anh Kỳ (VVL HN)
Trần Công Phong (CĐGDVN)
Đặng Văn Soa (ĐHSP HN)
Lưu Thị Kim Thanh (ĐHSP HN II)
Cao Huy Thiện (VVL Tp. HCM)

Ban chương trình

Hoàng Anh Tuấn (VVL HN), Trưởng ban
Nguyễn Bá Ân (VVL HN)
Hà Huy Bằng (ĐHKHTN HN)
Nguyễn Quang Báu (ĐHKHTN HN)
Hồ Trung Dũng (VVL Tp. HCM)
Phùng Văn Đồng (VVL HN)
Võ Văn Hoàng (ĐHBK Tp. HCM)
Vũ Văn Hùng (ĐHSP HN)
Nguyễn Quốc Khánh (ĐHKHTN Tp. HCM)
Vũ Ngọc Tước (ĐHBK HN)

Ban Tổ chức địa phương

Đinh Xuân Khoa (ĐH Vinh), Trưởng ban
Trần Văn Ân (ĐH Vinh)
Đoàn Hoài Sơn (ĐH Vinh)
Nguyễn Huy Bằng (ĐH Vinh)
Đinh Phan Khôi (ĐH Vinh)
Nguyễn Văn Phú (ĐH Vinh)
Chu Văn Lanh (ĐH Vinh)
Mai Văn Lưu (ĐH Vinh)

Phụ trách biên tập kỷ yếu Hội nghị

Nguyễn Toàn Thắng (VVL HN)

Thư ký Hội nghị

Đào Thị Hồng (VVL HN)

Cơ quan tổ chức

Trường Đại học Vinh
Trung tâm Vật lý lý thuyết, Viện Vật lý, Hà Nội

Cơ quan tài trợ

Trường Đại học Vinh
Trung tâm Vật lý lý thuyết, Viện Vật lý, Hà Nội
Viện Khoa học và Công nghệ Việt Nam

CHƯƠNG TRÌNH HỘI NGHỊ

Chương trình khung

Thời gian	Thứ 2 6/8/2012	Thứ 3 7/8/2012	Thứ 4 8/8/2012	Thứ 5 9/8/2012
8:30 – 10:00	Đăng ký đại biểu Khai mạc (9:30)	Phiên toàn thể 2 (3 báo cáo mời)	Phiên tiểu ban 3 (2+2 báo cáo miệng) Phiên báo cáo treo	Phiên tiểu ban 5 (4+4 báo cáo miệng)
10:00 – 10:30	Giải lao 1	Giải lao 3	Giải lao 4	Giải lao 5
10:30 – 12:00	Phiên toàn thể 1 (3 báo cáo mời)	Phiên toàn thể 3 (3 báo cáo mời)	Phiên tiểu ban 4 (4+4 báo cáo miệng)	Phiên tiểu ban 6 (2+2 báo cáo miệng) Tổng kết Hội nghị
12:00 – 14:00				
14:00 – 15:30	Phiên tiểu ban 1 (4+4 báo cáo miệng)	Tham quan chùa Hương Tích	Gặp gỡ Cửa Lò 15:00-17:00	
15:30 – 16:00	Giải lao 2			
16:00 – 17:00	Phiên tiểu ban 2 (3+3 báo cáo miệng)			
18:00	Tiệc Hội nghị			

Thứ Hai, ngày 6 tháng 8 năm 2012

BUỔI SÁNG:

08:30 – 09:30 **Đăng ký đại biểu**

09:30 – 10:00 **Khai mạc**

10:00 – 10:30 **Nghỉ giữa buổi, chụp ảnh lưu niệm**

10:30 – 12:00 **PHIÊN TOÀN THỂ 1**

Chủ tọa: Nguyễn Hồng Quang

10:30 - 11:00 Nguyen Van Hieu and Nguyen Bich Ha, **I-1 Quantum Dynamics of Plasmons in Nanomaterials**
Báo cáo mời
Người trình bày: **Nguyễn Văn Hiệu** (*Viện Khoa học và Công nghệ Việt Nam)*

11:00 - 11:30 Alexander Povolotsky, **Universal scaling functions of interacting particle systems** **I-2**
Báo cáo mời
Người trình bày: **Alexander Povolotsky** (*Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia)*

11:30 - 12:00 Phan Van Nham, Holger Fehske, Klaus Becker, **Excitonic insulator phase in the extended Falicov-Kimball model** **I-3**
Báo cáo mời
Người trình bày: **Phan Văn Nhâm** (*Viện Vật lý, Hà Nội)*

BUỔI CHIỀU:

14:00 – 15:30 **PHIÊN TIỂU BAN 1**

TIỂU BAN A1:

Chủ tọa: Vũ Văn Hùng

14:00 - 14:20 Nguyen Thi Trang, Nguyen Van Chinh, Nguyen Tat Thang, Bach Thanh Cong, **First Order Magnetization Process in Magnetic Systems with Random Competing Interactions** **O-1**
Người trình bày: **Bạch Thành Công** (*Trường Đại học Khoa học tự nhiên Hà Nội)*

14:20 - 14:40 Le Van Tan and Cao Huy Thien, **Spin dependent compressibility in 2D semiconductor** **O-2**
Người trình bày: **Lê Văn Tân** (*Viện Vật lý, Tp. Hồ Chí Minh)*

14:40 - 15:00 Dinh Nhu Thao, Nguyen Hong Quang, **Light Absorption in Dilute Magnetic Semiconductor Quantum Dots** **O-3**

Người trình bày: **Đinh Như Thảo** (*Trường Đại học Sư phạm Huế)*

15:00 - 15:20 Nguyen Ngoc Tuan, **Meissner effect in superconductors with a large pair momentum** **O-4**
Người trình bày: **Nguyễn Ngọc Tuấn** (*Trường Đại học Bách Khoa Hà Nội)*

TIỂU BAN B1:

Chủ tọa: Lê Văn Hoàng

14:00 - 14:20 T. Bui Dinh, V. Cao Long, Wieslaw Leoński and K. Dinh Xuan, **Solitary waves in an elastic rod** **O-5**
Người trình bày: **Cao Long Vân** (*Trường Đại học Zielona Gora Ba Lan)*

14:20 - 14:40 Dinh Xuan Khoa, and Nguyen Huy Bang, **Recent scientific activities in Optics Group, Vinh University** **O-6**
Người trình bày: **Đinh Xuân Khoa** (*Trường Đại học Vinh)*

14:40 - 15:00 Chu Van Bien and Ho Quang Quy, **Nén xung đa vòng bằng bộ liên kết phi tuyến kết hợp sợ quang khuyếch đại với nguồn bơm không đổi** **O-7**
Người trình bày: **Chu Văn Biên** (*Trường Đại học Hồng Đức)*

15:00 - 15:20 Tran Minh Hien and Ho Trung Dung, **Image of an emitting dipole by a superlens** **O-8**
Người trình bày: **Trần Minh Hiến** (*Viện Vật lý, Tp. Hồ Chí Minh)*

15:30 – 16:00 **Nghỉ giữa buổi**

16:00 – 17:00 **PHIÊN TIỂU BAN 2**

TIỂU BAN A2:

Chủ tọa: Bạch Thành Công

16:00 - 16:20	P.K.Hung and N.T.T.Ha, **Correlation effect for diffusion in disordered system** Người trình bày: **Phạm Khắc Hùng** (*Trường Đại học Bách Khoa Hà Nội)*	**O-9**
16:20 - 16:40	Nguyen Thuy Trang, **Influences of solvent on geometry and electronic structure of PbS surface** Người trình bày: **Nguyễn Thùy Trang** (*Trường Đại học Khoa học tự nhiên Hà Nội)*	**O-10**
16:40 - 17:00	Le Huy Dung, T.V. Koval, **Transformation of low-Energy High-Current Electron Beam in the Plasma Channel** Người trình bày: **Lê Huy Dũng** (*Tomsk Polytechnic University, Russia)*	**O-11**

TIỂU BAN B2:

Chủ tọa: Đinh Xuân Khoa

16:00 - 16:20	Hoang Van Hung, Tran Trieu Phu, Le Van Hoang, **TDSE Method of Calculating High-Order Harmonic Spectra** Người trình bày: **Hoàng Văn Hưng** (*Trường Đại học Sư phạm Tp. HCM)*	**O-12**
16:20 - 16:40	Hoang Do Ngoc Tram, Le Quy Giang, Nguyen Thi Man, Pham Dang Lan, Le Van Hoang, **The FK Operator Method for Exact Numerical Solutions of the Schrodinger Equation of a Negatively Charged Exciton in Two-Dimensional Semiconductors** Người trình bày: **Hoàng Đỗ Ngọc Trầm** (*Trường Đại học Sư phạm Tp. HCM)*	**O-13**
16:40 - 17:00	D. K. Phung, F. Rotermund, Kihong Kim and H.	**O-14**

Lim, **Opical diode properties of one-dimensional nonlinear photonic crystals**
Người trình bày: **Phùng Duy Khương** (*Viện Vật lý, Hà Nội)*

18:00 – 20:00 **Tiệc Hội nghị**

Thứ Ba, ngày 7 tháng 8 năm 2012

BUỔI SÁNG:

08:30 – 10:00 **PHIÊN TOÀN THỂ 2**

Chủ tọa: Đào Vọng Đức

08:30 - 09:00	Irina Pirozhenko, **Fluctuation induced quantum interactions in the background of bodies with nontrivial dielectric (or magnetic) response** *Báo cáo mời* Người trình bày: **Irina Pirozhenko** (*Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia)*	**I-4**
09:00 - 09:30	Nguyen Thi Hong Van, **On discovery of the Higgs boson at the LHC with the ATLAS detector** *Báo cáo mời* Người trình bày: **Nguyễn Thị Hồng Vân** (*Viện Vật lý, Hà Nội)*	**I-5**
09:30 - 10:00	Nguyen Quang Hung, **Thermal Fluctuations and Pairing Reentrance Phenomenon in Hot Rotating Nuclear and Finite Systems** *Báo cáo mời* Người trình bày: **Nguyễn Quang Hưng** (*Trường Đại học Tân Tạo)*	**I-6**

10:00 – 10:30 **Nghỉ giữa buổi**

10:30 – 12:00 **PHIÊN TOÀN THỂ 3**

Chủ tọa: Trịnh Xuân Hoàng

10:30 - 11:00	Mai Suan Li, **Computer-aided drug design: basic concepts and application to influenza and Alzheimer's disease**	**I-7**

Báo cáo mời
Người trình bày: **Mai Suan Li** *(Institute of Physics, Polish Acad. Sci., Poland and Institute for Computational Science and Technology, HCM city, Vietnam)*

11:00 - 11:30 Wieslaw Leoński and Cao Long Van, **Nonlinear quantum scissors - a method for generation of finite-dimensional quantum states** **I-8**
Báo cáo mời
Người trình bày: **Wieslaw Leoński** (*Quantum Optics and Engineering Division, Institute of Physics, University of Zielona Gora, Poland)*

11:30 - 12:00 Nguyen Ngoc Ty, Le Van Hoang, **High-order Harmonic Generation and Extraction of Dynamic Molecular Structures - New Trend of Investigation** **I-9**
Báo cáo mời
Người trình bày: **Nguyễn Ngọc Ty** (*Trường Đại học Sư phạm Tp. HCM)*

BUỔI CHIỀU: THAM QUAN CHÙA HƯƠNG TÍCH

Thứ Tư, ngày 8 tháng 8 năm 2012

BUỔI SÁNG:

08:30 – 09:10 **PHIÊN TIỂU BAN 3**

TIỂU BAN A3:

Chủ tọa: Phạm Khắc Hùng

08:30 - 08:50	Vu Ngoc Tuoc, Le Thi Hong Lien, Luyen Thi San and Tran Doan Huan, **Density Functional Based Tight Binding Study on Multiple Wall TiO2 Nanotube** Người trình bày: **Vũ Ngọc Tước** (*Trường Đại học Bách Khoa Hà Nội)*	**O-15**
08:50 - 09:10	Tran Van Nam, Nguyen Thuy Trang and Bach Thanh Cong, **Mg-doped TiO2 for dye-sensitive solar cell: An electronic structure study** Người trình bày: **Trần Văn Nam** (*Trường Đại học Khoa học tự nhiên Hà Nội)*	**O-16**

TIỂU BAN B3:

Chủ tọa: Đào Tiến Khoa

08:30 - 08:50	Dao Tien Khoa and Doan Thi Loan, **Equation of state of nuclear matter at finite temperature** Người trình bày: **Doãn Thị Loan** (*Viện Khoa học và Kỹ thuật hạt nhân)*	**O-17**
08:50 - 09:10	T. V. Nhan Hao, P. Quentin, L. Bonneau, **Restoration of the parity of correlated microscopic solutions within the HTDA scheme, application to the region of heavy nuclei** Người trình bày: **Trần Viết Nhân Hào** (*Trường Đại học Tân Tạo)*	**O-18**

09:10 – 10:00 **Phần trình bày báo cáo treo**

TIỂU BAN A:

Chủ tọa: Nguyễn Như Đạt

Nguyen Tri Lan, **Microscopic derivation of three-component Ginzburg-Landau functional** **PA-1**
Người trình bày: **Nguyen Tri Lan**

Nguyen Duc Quyen, Ngo Van Thuyen, Nguyen Quang Hoc and Nguyen Duc Hien, **Rotary Inverted Pendulum and Control of Rotary Inverted Pendulum by Artificial Neural Network** **PA-2**
Người trình bày: **Nguyen Duc Quyen**

Tran Cong Phong, Do Thien Diep, Phan Nguyen Tuan, Vo Thanh Lam, **Cyclotron-phonon resonance in semiconductor superlattices** **PA-3**
Người trình bày: **Tran Cong Phong**

Nguyen Thi Thuy and Tran Minh Tien, **Topological insulating phase in the Haldane - Falicov - Kimball model** **PA-4**
Người trình bày: **Nguyen Thi Thuy**

D. T. Huong, H. P. Thao, B. T. L. Quyen, N. T. L. Hoai and N. A. Viet, **Electric Potential Profile of Spherical Soft Particle with a Point Charged Hardcore** **PA-5**
Người trình bày: **D. T. Huong**

Le Hoang Anh, Ho Sy Ta, and Do Van Nam, **Treatment of graphene-metallic lead coupling in simulation of top-gated sub-100 nanometer graphene channel field-effect-transistors** **PA-6**
Người trình bày: **Le Hoang Anh**

Mai Thi Lan, Pham Thai Binh, Nguyen Van Hong, Pham Khac Hung, **Studying Blocking Effect for Many Particles Diffusion in one-Dimensional** **PA-7**

Disordered Lattice
Người trình bày: **Mai Thi Lan**

Duc-Anh Le, Anh-Tuan Hoang, **Coherent Potential Approximation Study of the Mott Transition in the Half-filled Asymmetric Hubbard Model** **PA-8**
Người trình bày: **Le Duc Anh**

Duc-Anh Le, Anh-Tuan Hoang, **Mott Transition of the Half-filled Hubbard Model in a Two-dimensional Frustrated Lattice** **PA-9**
Người trình bày: **Le Duc Anh**

Le Minh Thu and Bui Duc Tinh, **Effect of size Dispersion on the Averaged Magnetic Susceptibility of Ensembles of Semiconductor Quantum Rings** **PA-10**
Người trình bày: **Le Minh Thu**

Nguyen Thanh Tien and Vo Huu Cau, **Key Electron Scattering Mechanisms in non-doping Zn-polar ZnO/MgZnO heterostructure at Low-Temperature** **PA-11**
Người trình bày: **Nguyen Thanh Tien**

Do Thi Nga, Chu Thuy Anh, To thi Thao, Ngo Van Thanh and Nguyen Ai Viet, **Trapping cold atoms by a Silicon nanopillar** **PA-12**
Người trình bày: **Chu Thuy Anh**

Nguyen Van Nghia, Dinh Quoc Vuong, and Nguyen Quang Bau, **Calculations of the Acoustoelectric Current in a Rectangular Quantum Wire** **PA-13**
Người trình bày: **Nguyen Van Nghia**

M. Chung Nguyen, V. Hung Nguyen and H. Viet Nguyen, **Electronic properties and transport in graphene nanomesh based structures** **PA-14**
Người trình bày: **Nguyen Mai Chung**

Nguyen Quang Hoc, Nguyen Ngoc Anh, Nguyen The Hung, Nguyen Duc Hien and Nguyen Duc Quyen, **PA-15**

Molar Specific Heat under Constant Volume of Molecular Cryocrystals of Nitrogen Type with HCP Structure: Contribution from Lattice Vibrations and Molecular Rotational Motion
Người trình bày: **Nguyen The Hung**

Nguyen Quang Hoc, Nguyen Ngoc Anh, Nguyen The Hung, Nguyen Duc Hien and Nguyen Duc Quyen, **Thermodynamic Properties of Molecular Cryocrystals of Nitrogen Type with FCC Structure: Contribution from Lattice Vibrations and Molecular Rotational Motion** **PA-16**
Người trình bày: **Nguyen Ngoc Anh**

Vo Thanh Lam, Nguyen Ngoc Hieu, **Electronic energy band structure of carbon nanotubes with quinoid structure** **PA-17**
Người trình bày: **Nguyen Ngoc Hieu**

Bui Duc Hung, Nguyen Vu Nhan, Luong Van Tung , and Nguyen Quang Bau, **Photostimulated quantum effects in quantum wells with a paraboloic potential** **PA-18**
Người trình bày: **Bui Duc Hung**

Bui Thi Hanh and Nguyen Van Lien, **Quasi-bound states in a gate-tunable disk-like graphene quantum dot** **PA-19**
Người trình bày: **Bui Thi Hanh**

Dang Van Quan and Cao Huy Thien, **Condensation kinetics of polaritons in semiconductor quantum wire** **PA-20**
Người trình bày: **Dang Van Quan**

Nguyen Quoc Khanh, Nguyen Minh Quan and Nguyen Ngoc Thanh Nam, **Các tính chất vận chuyển của khí điện tử giả hai chiều trong giếng lượng tử SiGe/Si/SiGe : Ảnh hưởng của nhiệt độ và từ trường** **PA-21**

Người trình bày: **Nguyen Quoc Khanh**

Nguyen Quoc Khanh, Nguyen Ngoc Thanh Nam and Nguyen Minh Quan, **Các tính chất vận chuyển của khí điện tử giả hai chiều trong cấu trúc dị thể Si/SiGe : Ảnh hưởng của nhiệt độ và từ trường** **PA-22**
Người trình bày: **Nguyen Quoc Khanh**

C. Q. Ky and L. V. Vinh, **Simulation of mechanical properties of amorphous Ni and Ni nanowires** **PA-23**
Người trình bày: **C. Q. Ky**

Huynh Vinh Phuc, Luong Van Tung, Le Dinh and Tran Cong Phong, **Nonlinear Optically Detected Electrophonon Resonance Line-width in Doped Semiconductor Superlattice** **PA-24**
Người trình bày: **Huynh Vinh Phuc**

Huynh Vinh Phuc, Luong Van Tung, Le Dinh and Tran Cong Phong, **Cyclotron Resonance Line-width in Graphene** **PA-25**
Người trình bày: **Huynh Vinh Phuc**

Nguyen Quoc Thai, **Khảo sát tiết diện sinh Neutron theo phân bố góc trong phản ứng (P,N) với các mức năng lượng bắn phá khác nhau lên bia NIKEN** **PA-26**
Người trình bày: **Nguyen Quoc Thai**

Nguyen Dinh Nam, Do Tuan Long, Nguyen Duc Huy, Nguyen Quang Bau, Hoang Dinh Trien, **The influence of Electromagnetic wave on the relative magnetoresistance in quantum wells with parabolic potential in the presence of magnetic field** **PA-27**
Người trình bày: **Nguyen Dinh Nam**

Le Thanh Hai and Nguyen Nhu Dat, **Dynamical response of a quantum wire electron system** **PA-28**
Người trình bày: **Le Thanh Hai**

Hoang Dinh Trien, Le Thai Hung, Vu Thi Hong Duyen, Nguyen Thu Huong, Nguyen Vu Nhan and Nguyen Quang Bau, **Impact Of The External Magnetic Field And The Confinement Of Phonons On The Nonlinear Absorption Coefficient Of A Strong Electromagnetic Wave By Confined Electrons In Compositional Superlattices** **PA-29**
Người trình bày: **Hoang Dinh Trien**

Nguyen Duong Bo and Tran Minh Tien, **Multiple-degeneracy electron correlations in quantum mixtures of ultracold atoms** **PA-30**
Người trình bày: **Nguyen Duong Bo**

Ha Dang Khoa and Nguyen Thi Phuong Lan, **Investigation of the thermodynamic properties of the multi compernent alloys** **PA-31**
Người trình bày: **Ha Dang Khoa**

Do Chieu Ha and Nguyen Nhat Khanh, **The surrounded atom theory of order-disorder phase transition in binary alloys** **PA-32**
Người trình bày: **Do Chieu Ha**

P.H. Kien and P.K. Hung, **Study of Tracer Diffusion Mechanism in Amorphous Fe-based Alloys** **PA-33**
Người trình bày: **P.H. Kien**

Le Thi Thao, Doan Thi Thanh Binh, Tran Trung Nguyen, Le The Vinh, **Molecular dynamics study of microstructure, refractive index and anomalies in SiO2** **PA-34**
Người trình bày: **Le Thi Thao**

Doan Thi Thanh Binh, Tran Trung Nguyen, Bui Danh Hao, Le The Vinh, **Molecular dynamics study of microstructure and refractive index of TiO2** **PA-35**
Người trình bày: **Doan Thi Thanh Binh**

M T Lan, N T Thao, T V Mung, H V Hue, N V Hong and P K Hung, **Structure and Dynamics of Liquid** **PA-36**

MgO under high pressure
Người trình bày: **M. T. Lan**

Pham Duy Tan and Pham Dinh Tam, **Dependence of Lattice Parameter and Order Parameter on Temperature and Pressure for Cu3Au Alloy** **PA-37**
Người trình bày: **Pham Dinh Tam**

Pham Dinh Tam, Pham Duy Tan, Nguyen Quang Hoc, Nguyen Hong Son, **Equation of State and Thermal Expansion of Metals with FCC Structure:Applications to Cu, Ag, Au, Al and Ni** **PA-38**
Người trình bày: **Pham Dinh Tam**

Vu Van Hung, Luu Thi Kim Thanh, Duong Dai Phuong, **Paramagnetic Susceptibility of Metals in the Theory of Q-Deformed Fermi- Dirac Statistics** **PA-39**
Người trình bày: **Duong Dai Phuong**

Le Nguyen Tue Minh and Vo Van Hoang., **Investigation of the Vitrification Process of Monatomic Lennard-Jones System with free surfaces.** **PA-40**
Người trình bày: **Le Nguyen Tue Minh**

Ho Khac Hieu, Pham Thi Minh Hanh and Bui Dinh Hoi, **Isotopic effect in Debye-Waller factor of crystalline germanium** **PA-41**
Người trình bày: **Bui Dinh Hoi**

Nguyen Thi Ha Loan and Hoang Van Quyet, **g - Deformed crystal lattice vibration** **PA-42**
Người trình bày: **Nguyen Thi Ha Loan**

N T T Ha, H V Hung, N. V. Huy, N V Hong and P K Hung, **The microstructure and diffusion in silica liquid under high pressure** **PA-43**
Người trình bày: **H. V. Hung**

Nguyen Quang Hoc and Dinh Quang Vinh, **Elasticity Modulus and Elasticity Constant for Compounds** **PA-44**

of Quantum Crystals
Người trình bày: **Dinh Quang Vinh**

Phan Thi Thanh Hong and Vu Van Hung, **Activation Volume for Diffusion in Silicon** **PA-45**
Người trình bày: **Phan Thi Thanh Hong**

Nguyen Thi Trang, Le Van Vinh and Pham Khac Hung, **Molecular dynamics simulation of the mechanical properties of amorphous aluminum and nano-crystal embedded in amorphous aluminum.** **PA-46**
Người trình bày: **Nguyen Thi Trang**

Vu Van Hung and Dang Thanh Hai, **Thermodynamic properties of some rare-earth alloys** **PA-47**
Người trình bày: **Dang Thanh Hai**

Vu Van Hung , Tran Thi Thuy Dung and Le Thi Thanh Huong, **Thermodynamic properties of ceria thin film : temperature and pressure dependence** **PA-48**
Người trình bày: **Vu Van Hung**

N.T.T.Ha, B.T.V.Thao and P.K.Hung, **The spatial heterogeneity and anomalous slowdown for dynamics in silica liquid** **PA-49**
Người trình bày: **Nguyen Thi Thanh Ha**

P. The Nguyen, V. Thanh Ngo and N. A. Viet, **Monte Carlo Simulation of the Phase Transition in a Shelf-Organized System** **PA-50**
Người trình bày: **P. The Nguyen**

Vu Ba Dung, **Quá trình khuếch tán ngược và phương pháp chống ô nhiễm khí quyển do bụi và khí thải công nghiệp** **PA-51**
Người trình bày: **Vu Ba Dung**

Vu Ba Dung and Ta Thi Dung, **Backward Diffusion Process and the Method of Control of Polluted Atmosphere by Dust Ad Industrial Exhaust** **PA-52**

Người trình bày: **Ta Thi Dung**

Bui Phuong Thuy, Trinh Xuan Hoang, **Effects of ribosomal exit tunnel on protein's cotranslational folding** **PA-53**
Người trình bày: **Bui Phuong Thuy**

D. T. Huong, N.T. L. Hoai and N. A. Viet, **Therapy Model for Long-term Treatment of HIV Infection** **PA-54**
Người trình bày: **D. T. Huong**

Tran Phuoc Duy, Alejandro Giorgetti, Nguyen Ha Hung Chuong, Hoang Zung, Paolo Carloni, **Characterization of G Protein Coupled Receptors through the use of bio- and chemo- informatics tools** **PA-55**
Người trình bày: **Tran Phuoc Duy**

Nguyen Ba Hung, Trinh Xuan Hoang, **Folding of proteins in a presculpted free energy landscape** **PA-56**
Người trình bày: **Nguyen Ba Hung**

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Người trình bày: **T. A. Chu**

Truong Thi Chinh, Dinh Van Thien, T.T.T Van and Nguyen Ai Viet, **pH-Dependence of the Optical Bio-Sensor Based on DNA - Semiconductor Graphene Nanoribbons** **PA-58**
Người trình bày: **Truong Thi Chinh**

To Thi Thao, Ngo Van Thanh, Do Thi Nga, Chu Thuy Anh and Nguyen Ai Viet, **Studying the Mechanical Properties of Neuroglobin by Computer Simulation** **PA-59**
Người trình bày: **To Thi Thao**

D. Tien Hoang, T. Hoa Vo, V. Thanh Ngo and N. A. Viet, **Phase Transition in an Ising Spin Glass Face-Centered Cubic Lattice** **PA-60**

Người trình bày: **D. Tien Hoang**

TIỂU BAN B:

Chủ tọa: Phùng Văn Đồng

Vo Van On and Pham Lan Anh, **The Spherically – Symmetric Pressure free Collapse of the White - Black Hole in the Vector Model of Gravitational Field** **PB-1**
Người trình bày: **Vo Van On**

Le Viet Hoa and Le Duc Anh, **Isospin dependence of the pressure of asymmetric nuclear matter** **PB-2**
Người trình bày: **Le Viet Hoa**

Nguyen Chinh Cuong, **Higgs Sector in the Next Minimal Supersymmetric Standard Model** **PB-3**
Người trình bày: **Nguyen Chinh Cuong**

Dang Trung Si and Nguyen Thanh Phong, **The effects of renormalzation evolution group on a S_4 flavor symmetry and leptogenesis** **PB-4**
Người trình bày: **Dang Trung Si**

Truong Trong Thuc and Nguyen Thanh Phong, **S_4 flavor symmetry with soft-breaking and physical consequences** **PB-5**
Người trình bày: **Truong Trong Thuc**

Nguyen Huy Thao, Tran Dinh Tham and Dang Van Soa, **Electromagnetic detection of heavy radions** **PB-6**
Người trình bày: **Nguyen Huy Thao**

Bui Minh Loc, Dao Tien Khoa, Dang Ngoc Thang, and Le Xuan Chung, **Probing neutron skin in the nuclear charge exchange reaction** **PB-7**
Người trình bày: **Bui Minh Loc**

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Nguyen Van Thuan, **Non - Abelian Classical Solution of Yang-Mills - Higgs Theory** **PB-9**
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Pham Thuy Giang, Le Tho Hue, Do Thi Huong, Hoang Ngoc Long and Nguyen Huy Thao, **Lepton flavor violation in the minimal supersymmetric 331 model.** **PB-10**
Người trình bày: **Pham Thuy Giang**

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Người trình bày: **Nguyen Suan Han**

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Người trình bày: **Dao Vong Duc**

Luu Thi Kim Thanh, Tran Thai Hoa, Nguyen Minh Vuong, **The q– Deformed Bose – Einstein Statistics Distribution with Phase Transformation Temperature of Superconductor** **PB-13**
Người trình bày: **Luu Thi Kim Thanh**

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Người trình bày: **Cao Long Van**

Nguyen Thanh Vinh, Bui Dinh Thuan, Cao Long Van, Wieslaw Leoński, **Cellular Automata and Matlab** **PB-15**
Người trình bày: **Cao Long Van**

Vo Tinh, Dang Huu Dinh, Truong Minh Duc, **Higher-order nonclassical properties of two-mode** **PB-16**

nonlinear charge coherent states
Người trình bày: **Dang Huu Dinh**

Nguyen Ba An, Cao Thi Bich and Nung Van Don, **Joint Remote State Preparation with Absolute Security** **PB-17**
Người trình bày: **Cao Thi Bich and Nung Van Don**

Phan Hoang Chuong, **Nghiệm phương trình dao động tử ngẫu nhiên Chaos** **PB-18**
Người trình bày: **Phan Hoang Chuong**

Truong Minh Duc, Nguyen Thi Xuan Hoai and Nguyen Ba An, **New Two-Mode Photon-Added Displaced Squeezed States** **PB-19**
Người trình bày: **Nguyen Thi Xuan Hoai**

Truong Minh Duc, Tran Quang Dat and Nguyen Ba An, **Production of free-Travelling trio Coherent State** **PB-20**
Người trình bày: **Tran Quang Dat**

Nguyen Manh An, Nguyen Van Hoa and Nguyen Van Thoai, **Bistability characteristics of the reflected signal through a symetric nonlinear Michelson Interferometer** **PB-21**
Người trình bày: **Nguyen Manh An**

Nguyen Manh An, Nguyen Van Hoa and Nguyen Van Thoai, **Bistable characteristic of signal transmitted through the symmetric nonlinear Michelson interferometer** **PB-22**
Người trình bày: **Nguyen Van Hoa**

Ho Quang Quy and Nguyen Thi Thanh Tam, **Using a Nonlinear Coupler to Sort a Sequence of Weak and Strong Pulses** **PB-23**
Người trình bày: **Nguyen Thi Thanh Tam**

Tran Hong Nghia, Hoang Van Hung, Nguyen Ngoc Ty, Le Van Hoang, **Affect of the Distribution of** **PB-24**

Molecular Alignment to the Molecular Imaging by the Tomographic Method
Người trình bày: **Hoang Van Hung**

Le Cong Nhan, **Femtosecond supercontiuum generation in short pieces of a microstructured silica fiber** **PB-25**
Người trình bày: **Le Cong Nhan**

Nguyen Van Hoa and Dac Hoang Luat, **Tối ưu hóa thông số tự do của phương pháp toán tử cho bài toán nguyên tử Hydro** **PB-26**
Người trình bày: **Dac Hoang Luat**

Doan Tri Dung, Cao Huy Thien, and Tran Thoai Duy Bao, **Polariton condensate in real space** **PB-27**
Người trình bày: **Doan Tri Dung**

Le Thi Cam Tu, Hoang Van Hung, Nguyen Ngoc Ty, Le Van Hoang, **Extracting the inter-atomic distance by the use of the electron interference effect in the high-order harmonic spectra of CO2** **PB-28**
Người trình bày: **Le Thi Cam Tu**

Nguyen Thanh Son, Phan Ngoc Hung, Le Van Hoang, **On the Hurwitz's 1, 2, 4, 8 theorem and applications** **PB-29**
Người trình bày: **Phan Ngoc Hung**

Nguyen Van Hop, **Fidelity of quantum teleportation through the decoherence channels** **PB-30**
Người trình bày: **Nguyen Van Hop**

Le Thi Thu Phuong, Le Dinh, Huynh Vinh Phuc, Tran Cong Phong, **Optically detected magneto-phonon resonance line-widths in rectangular quantum wires** **PB-31**
Người trình bày: **Le Thi Thu Phuong**

Le Canh Trung, Dinh Xuan Khoa, Nguyen Huy Bang, J. Szczepkowski, W. Jastrzębski , and P. Kowalczyk, **PB-32**

First rotational spectroscopic observation of the 21Π state of NaLi
Người trình bày: **Nguyen Huy Bang**

Dinh Xuan Khoa, Le Canh Trung, Le Thi Minh Phuong, and Nguyen Huy Bang , **Experimental determination of molecular constants for the 21Π state of NaLi** **PB-33**
Người trình bày: **Le Canh Trung**

Nguyen Tien Dung, Le Canh Trung, Nguyen Van Thinh, Hoang Cong Vieng, Le Hong Quang, Phan Van Thuan, Vu Ngoc Sau, Doan Hoai Son, Dinh Xuan Khoa, and Nguyen Huy Bang, **Population density distribution of vibrational levels in the 21Π state of NaLi molecule** **PB-34**
Người trình bày: **Nguyen Tien Dung**

Nguyen Tien Dung, Le Canh Trung, Chu Manh Hoai, Dinh Xuan Khoa, and Nguyen Huy Bang, **Construction of potential curve for the 31Π state of NaLi molecule by the IPA and DPOTFIT methods** **PB-35**
Người trình bày: **Nguyen Tien Dung**

Le Van Doai, Pham Van Trong, Dinh Xuan Khoa, and Nguyen Huy Bang, **EIT enhanced Kerr nonlinearity in the five-level cascade scheme of Rb85 atoms** **PB-36**
Người trình bày: **Le Van Doai**

Le Van Doai, Pham Van Trong, Dinh Xuan Khoa, and Nguyen Huy Bang, **EIT enhanced Kerr nonlinearity in the five-level cascade scheme of Rb85 atoms** **PB-36**
Người trình bày: **Le Van Doai**

Le Van Doai, Bui Hong Hai, Trinh Thi Hong, Pham Van Trong, Phan Van Dao, Tran Manh Cuong, Mai Van Luu, Vu Ngoc Sau, Doan Hoai Son, Dinh Xuan Khoa, and Nguyen Huy Bang, **EIT enhanced Kerr nonlinearity in the four-level lambda scheme of Rb85 atoms** **PB-37**

Người trình bày: **Trinh Thi Hong**

K. Doan Quoc, V. Cao Long, W. Leoński, **EIT with double fano continuum and broad-band coupling laser** **PB-38**
Người trình bày: **Cao Long van**

M.T.Nguyen, T.V.Koval, A.G.Zherlitsyn, G.G.Kanaev, **Study of Electrodynamic and Radiation Characteristics of a Coaxial and a Planar-Coaxial Vircator** **PB-39**

Người trình bày**: Nguyen Minh Tuan**

10:00 -10:30 **Nghỉ giải lao**

10:30 -12:00 **PHIÊN TIỂU BAN 4**

TIỂU BAN A4:

Chủ tọa: Vũ Ngọc Tước

10:30 - 10:50 Trinh Xuan Hoang, Antonio Trovato, Flavio Seno, Jayanth R. Banavar, Amos Maritan, **Folding of repeat proteins** **O-19**
Người trình bày: **Trịnh Xuân Hoàng** (*Viện Vật lý, Hà Nội)*

10:50 - 11:10 Ho Le Tuan Anh, Vu Thi Giang and Trinh Xuan Hoang, **Phase diagram of thick polymers** **O-20**
Người trình bày: **Hồ Lê Tuấn Anh** (*Viện Vật lý, Hà Nội)*

11:10 - 11:30 Le Van Qui, Pham Cong Huy, and Nguyen Van Lien, **Dirac fermions in a magnetic Kronig-Penny-type graphene superlattice** **O-21**

Người trình bày: **Lê Văn Quy** (*Viện Vật lý, Hà Nội)*

11:30 - 11:50 T. Nguyet Nguyen, V. Thanh Ngo and N. A. Viet, **Forecasting Daily Tide Profiles Using** **O-22**

Artificial Neural Networks
Người trình bày: **Nguyễn Thị Nguyệt** (*Trường Đại học Hải Phòng)*

TIỂU BAN B4:

Chủ tọa: Hoàng Ngọc Long

10:30 - 10:50	Dao Vong Duc, **Gauge interaction with space-time dependent coupling parameter and renormalization** Người trình bày: **Đào Vọng Đức** (*Viện Vật lý, Hà Nội)*	**O-23**
10:50 - 11:10	Tran Dinh Tham, Dang Van Soa and Dinh Phan Khoi, **Production cross-section of axion in a external electromagnetic field** Người trình bày: **Trần Đình Thám** (*Trường Đại học Phạm Văn Đồng)*	**O-24**
11:10 - 11:30	Thoi Ngoc Tuan Quoc, Phan Ngoc Hung, Le Van Hoang, **On the Non-Abelian SO(8) Gauge Fields as the Fields of a Monopole in a Nine-Dimensional Space** Người trình bày: **Thới Ngọc Tuấn Quốc** (*Trường Đại học Sư phạm Tp. HCM)*	**O-25**
11:30 - 11:50	Nguyen Cong Kien, Nguyen Anh Ky, Le Ba Nam and Nguyen Thi Hong Van, **Coherent state method in constructing representation of super quantum groups** Người trình bày: **Nguyễn Công Kiên** (*Viện Vật lý, Hà Nội)*	**O-26**

BUỔI CHIỀU: GẶP GỠ CỬA LÒ (15:00 - 17:00)

1. Báo cáo của BCH Hội VLLT tổng kết hoạt động của Hội và BCH Hội VLLT (15')
2. Trao tặng Giải thưởng Nghiên cứu trẻ của Hội VLLT (15')
3. Bài nói chuyện phổ biến khoa học của GS. Đào Vọng Đức: Đối ngẫu lượng tử - nguyên lý khởi đầu của Đại Thống nhất (Quantum duality - A primary principle of Grand Unification) (30')
4. Bài nói chuyện phổ biến khoa học của GS. Cao Long Vân: Những khuynh hướng mới trong Vật lý lý thuyết (New trends in Theoretical Physics) (30')
5. Bài nói chuyện của GS. Đỗ Đình Chiểu: Giới thiệu nghiên cứu về Nano từ tại ĐH Grenoble (30')
6. Cracker-tea

Thứ Năm, ngày 9 tháng 8 năm 2012

BUỔI SÁNG:

08:30 – 10:00 **PHIÊN TIỂU BAN 5**

TIỂU BAN A5:

Chủ tọa: Nguyễn Quang Báu

08:30 - 08:50	Bui Duc Tinh and Le Minh Thu, **Electrical conductivity in type-II superconductors under a magnetic field** Người trình bày: **Bùi Đức Tĩnh** (*Đại học Sư phạm Hà Nội)*	**O-27**
08:50 - 09:10	Bui Dinh Hoi, Le Thi Kim Dung, Nguyen Quang Bau, **On the Hall Effect in Parabolic Quantum Wells with an In-plane Magnetic Field in the Presence of a Strong Electromagnetic Wave (Laser Radiation)** Người trình bày: **Bùi Đình Hợi** (*Trường Đại học Khoa học tự nhiên Hà Nội)*	**O-28**
09:10 - 09:30	Le Van Vinh, Nguyen Thi Trang and Pham Khac Hung, **The structure and mechanical properties in amorphous Si3N4 under pressure** Người trình bày: **Lê Văn Vinh** (*Trường Đại học Bách Khoa Hà Nội)*	**O-29**
09:30 - 09:50	N. B. Yen, T. A. Chu, N. A. Viet, **Application of autocatalic system on the finance movement research** Người trình bày: **Nguyễn Bảo Yến** (*Viện Vật lý, Hà Nội)*	**O-30**

TIỂU BAN B5:

Chủ tọa: Đặng Văn Soa

08:30 - 08:50	H.T.Hung, V.N.Huyen, N.H.Thao, P.V.Dong and H.N.Long, **On Peccei-Quinn symmetry and quark masses** Người trình bày: **Hà Thanh Hùng** (*Trường Đại học Sư phạm Hà Nội 2)*	**O-31**
08:50 - 09:10	Cao Hoang Nam, Ha Thanh Hung, Dinh Phan Khoi, Phung Van Dong, **Neutron Anomalous Magnetic Moment in the Gauge-Higgs Unification** Người trình bày: **Cao Hoàng Nam** (*Viện Vật lý, Hà Nội)*	**O-32**
09:10 - 09:30	P. V. Dong, H. N. Long and V. V. Vien, **Flavor symmetries S_3 and S_4 in 3-3-1 models** Người trình bày: **Võ Văn Viên** (*Trường Đại học Tây Nguyên)*	**O-33**
09:30 - 09:50	Tran Huu Phat and Nguyen Van Thu, **Chiral phase transition in compactified space-time** Người trình bày: **Nguyễn Văn Thụ** (*Trường Đại học Sư phạm Hà Nội 2)*	**O-34**

10:00 – 10:30 **Nghỉ giữa buổi**

10:30 – 11:10 **PHIÊN TIỂU BAN 6**

TIỂU BAN A6:

Chủ tọa: Nguyễn Ái Việt

10:30 - 10:50	Vu Van Hung, Hoang Thi Giang and Pham Thi Minh Hanh, **Statistical moment determination of thermodynamic properties of bilayer graphene** Người trình bày: **Hoàng Thị Giang** (*Trường Đại học Sư phạm Hà Nội)*	**O-35**

10:50 - 11:10 Tran Phuoc Duy, Vo Van Hoang, **Heterogeneous melting of Nickel: new insight from atomic mechanism** **O-36**
Người trình bày: **Trần Phước Duy** (*Trường Đại học Bách khoa Tp. HCM)*

TIỂU BAN B6:

Chủ tọa: Đỗ Thị Hương

10:30 - 10:50 Vo Van On and Tran Trong Nguyen, **A Polynomial- Exponential f(R) Gravity Model** **O-37**
Người trình bày: **Võ Văn Ớn** (*Trường Đại học Thủ Dầu Một)*

10:50 - 11:10 Hoang Thanh Phi Hung, Nguyen Luong Quang and Arabindo Roy, **Probing the early phases of star formation with far to near infrared continuum emission** **O-38**
Người trình bày: **Hoàng Thanh Phi Hùng** (*Quảng Bình)*

11:10 – 12:00 **Tổng kết Hội nghị**

TÓM TẮT BÁO CÁO

HỘI NGHỊ VẬT LÝ LÝ THUYẾT TOÀN QUỐC LẦN THỨ 37

(Cửa Lò, 6-9/8/2012)

I-1. Quantum Dynamics of Plasmons in Nanomaterials

Nguyen Van Hieu and Nguyen Bich Ha
Institute of Materials Science, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Cau Giay District, Hanoi, Vietnam

Newly emerging and being rapidly developed, plasmonics is a very perspective direction of research in nanoscience and nanotechnology. Numerous experimental works on a large variety of photonic processes in which the plasmons play substantial roles were done, but there were only few theoretical works on these processes, and they are mainly phenomenological. In the present article we propose an approach based on the functional integral formalism, which would be able to be applied to the theoretical study of all physical processes with the participation of plasmons. After the presentation of the basics of functional integral technique, this technique is applied to the study of systems of interacting electrons in nanomaterials. Dynamical equation of plasmon was derived and quantum plasmonic field was introduced. In the case of homogeneous and isotropic electron gas in three-

dimensional space, this dynamical equation gives rise to the plasmon dispersion exactly coinciding with that derived from the conventional theories. However, the proposed calculation method, based on functional integral technique, can be effectively applied to the study of plasmons in nanostructures with complicated shapes, while the conventional theories are not able to be applied.

I-2. Universal scaling functions of interacting particle systems

Alexander Povolotsky
Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia

The Totally Asymmetric Simple Exclusion Process (TASEP) is the paradigmatic model of non-equilibrium statistical physics. Being exactly solvable, it allows a calculation of correlation functions of particle currents and positions. At the same time, its large scale behaviour is specific for a wide variety of phenomena unified under concept of Kardar-Parisi-Zhang (KPZ) universality class, such as growing interfaces, traffic models and polymers in random media. In the talk we review the derivation of universal correlation functions of KPZ class using the exact solution of the TASEP.

I-3. Excitonic insulator phase in the extended Falicov-Kimball model

Phan Van Nham(1), Holger Fehske(2), Klaus Becker(3)
(1) Institute of Physics, Vietnam Academy of Science and Technology, 10 Daotan, Badinh, Hanoi, Vietnam
(2) Institute of Physics, Greifswald University, D-17489 Greifswald, Germany
(3) Institute of Theoretical Physics, Technical University of Dresden, D-01062 Dresden, Germany.

We explore the spontaneous formation of an excitonic insulator state at the semimetal-semiconductor transition of mixed-valence materials in the framework of the spinless Falicov-Kimball model with direct f-f electron hopping. Adapting the projector-based renormalization method, the existence of excitonic insulator phase at low temperature on

both sides of the semiconductor-semimetal transition is addressed, whereas on the semiconductor side with high temperature the excitonic bound states is typified. To this end we calculate the imaginary part of the dynamical electron-hole pair susceptibility and analyze the wave vector and energy dependence of excitonic resonances emerging in the band gap. We thereby confirm the existence of the exciton insulator and its exciton environment within a generic two-band lattice model with local Coulomb attraction

I-4. Fluctuation induced quantum interactions in the background of bodies with nontrivial dielectric (or magnetic) response

Irina Pirozhenko
Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia

We calculate electromagnetic vacuum energy in the presence of bodies with nontrivial dielectric and magnetic properties. First we consider the sphere-plate system in scattering approach and estimate the limits of possible Casimir repulsion. Second we study Fluctuation induced quantum interactions in the background of the media described by Maxwell fish-eye model. The research is of possible interest for the design of micro(nano)-electromechanical systems.

I-5. On discovery of the Higgs boson at the LHC with the ATLAS detector

Nguyen Thi Hong Van
(1) Institute of Physics, Vietnam Academy of Science and Technology, 10 Daotan, Badinh, Hanoi, Vietnam

Searching for the standard model Higgs boson (or shortly, Higgs) plays a key role in the Large Hadron Collider (LHC) program. Higgs productions and methods of the Higgs search at the LHC will be presented. The Higgs can be searched directly via its decay modes or via precision electroweak measurements which can give results sensitive to the Higgs mass. Finally, the latest search for the Higgs using datasets produced by proton-proton collisions at sqrt(s) = 7 TeV (in 2011) and sqrt(s) = 8 TeV (in 2012) and collected by the ATLAS detector of the LHC will be summarized.

I-6. Thermal Fluctuations and Pairing Reentrance Phenomenon in Hot Rotating Nuclear and Finite Systems

Nguyen Quang Hung
School of Engineering, Tan Tao University, Tan Tao University Avenue, Tan Duc E.City, Duc Hoa, Long An Province, Vietnam

Pairing reentrance phenomena of hot rotating nuclei is studied within the Bardeen-Cooper-Schrieffer (BCS)-based approach, taking into account the effect of thermal fluctuations on the pairing field and coupling to the quasiparticle-pair vibrations at finite temperature and angular momentum within the pairing model plus noncollective rotating along the symmetry axis. The numerical calculations are performed within a doubly-folded equidistant multilevel model as well as several realistic nuclei such as O^{20}, Ne^{22}, Ca^{44}, Ni^{60}, and Ge^{72}. The results obtained for the pairing gaps, total energies, heat capacities, and level densities show that the thermal fluctuations smooth out the superfluid-normal phase transition and leads to the appearance of a thermally assisted pairing or pairing reentrance in hot rotating nuclei, which can be clearly seen in the behavior of pairing gaps obtained at finite temperature and angular momentum [1]. Moreover, in addition to the pairing gap, the heat capacity also serve as a good observable to detect the appearance of the pairing reentrance, whereas such a signature in the level density is rather weak [2]. The formalism is applied to not only nuclear but also any finite hot rotating Fermi systems.

I-7. Computer-aided drug design: basic concepts and application to influenza and Alzheimer's disease

Mai Suan Li
Institute of Physics, Al. Lotnikow 32/46, 02-668 Warsaw, Poland
Institute for Computational Science and Technology, Ho Chi Minh City, Vietnam

The basic concepts and methods used in the computer-aided drug design such as docking, MM-PBSA and steered molecular dynamics (SMD) will be discussed. The main idea of using SMD to screen out potential leads is based on the

hypothesis that the larger is the force needed to unbind a ligand from a receptor the higher its binding affinity. Instead of binding free energy, the rupture force defined as the maximum on the force-time/displacement profile, is employed as a score function. The particular attention will be drawn to recent results obtained by SMD for top-leads for influenza viruses.

Aggregation of beta amyloid peptides is believed to be associated with the Alzheimer's disease. Therefore, one of possible therapeutic approaches is to prevent fibril formation of these peptides. Applying the virtual screening to data base of about 40000 compounds from Eastern herbs we have found several very promising leads for treatment of the Alzheimer's disease. General structural properties of ligands that may control their binding affinity will be discussed.

I-8. Nonlinear quantum scissors - a method for generation of finite-dimensional quantum states

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Problems of quantum-optical states engineering have attracted remarkable interest in last years. Various concepts of such states and methods of their production and manipulation have been presented in numerous papers. They have diverse applications in atomic and molecular, solid-state and nanosystem physics, and also in the quantum information theory. The latter have recently given a stimulating pulse for the investigation of the states defined in finite-dimensional Hilbert space. In this communication we present a method referred as to nonlinear quantum scissors[1], that allow for generation such a states. The method is based on the interaction of quantum nonlinear Kerr-like oscillators with external electromagnetic field [2,3]. We show that under some special conditions, the system's evolution remains closed within a finite set of n-photon Fock states. In consequence, finite-dimensional coherent, squeezed or even maximally entangled states can be generated [1] (and the references quoted therein). 1. W.

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I-9. High-order Harmonic Generation and Extraction of Dynamic Molecular Structures - New Trend of Investigation

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The laser with pulse duration of a few femto-second is available nowadays that gives us new tools to investigate the molecular structures. We review some main results in this direction such as the development of the methods of HHG calculations, the molecular imaging by tomography method, the discovery of the electron interference effect in the HHG spectra, and the affect of the molecular vibration to the HHG spectra. We also discuss about how to extract the molecular structures from HHG spectra based on the newest publications including results of our group.

O-1. First Order Magnetization Process in Magnetic Systems with Random Competing Interactions

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The Ising model with spin Â½ and random competing ferromagnetic (FM), antiferromagnetic (AF) exchange interactions is used for studying on the First Order Magnetization Process (FOMP) in some magnetic systems. Dependence of the magnetization on the temperature, field, and occurrence probability of interaction was obtained during the effective field approximation. It was shown by numerical calculation that the FOMP depends strongly on the strength and occurrence probability of AF exchange interaction. The developed theory is applied for analyzing of FOMP in some magnetic systems.

O-2. Spin dependent compressibility in 2D semiconductor

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The spin dependent compressibility for 2D semiconductor system is calculated with including both the exchange and correlation effects. The influence of temperature, carrier density and spin polarization on the inverse compressibility is reported.

O-3. Light Absorption in Dilute Magnetic Semiconductor Quantum Dots

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(2) Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Cau Giay, Hanoi
The many electron system interacting with a magnetic ion in two dimensional semiconductor quantum dots is studied by unrestricted Hartree-Fock method. The electron-ion magnetic exchange interaction and its influence on the electronic properties and light absorption of charged excitons in dilute magnetic quantum dots are investigated in details in the dependence of the ion location and charging effect.

O-4. Meissner effect in superconductors with a large pair momentum

Nguyen Ngoc Tuan
Hanoi University Of Science And Technology
The close relation between superconductivity and magnetism in cuprates allowed one to propose a new pairing mechanism for Cooper pair: pairing with non-zero momentum that equals to nesting vector of magnetic order. The features of the Meissner effect in superconductors with a finite pairing momentum are analyze within linear response theory.

O-5. Solitary waves in an elastic rod

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(2) Vinh University, Vietnam
Exactly as in the optical case [1], existence of localized or solitary waves in a rod is provided by a balance between nonlinearity and dispersion. In our paper [1] we considered the effect of higher orders of dispersion in creating solitons. We consider now the higher orders of nonlinearity. The leading nonlinearity for longitudinal waves is quadratic which provides to the double dispersion equation (DDE) of Porubov's type [2,3]. In this paper, using the F-expansion method described in [4], we obtain an interesting class of traveling solitary waves for both cases: without cubic nonlinearity and with its presence. As a byproduct, we regain the results obtained previously by other authors [2,3]. Moreover, our analytical solutions describe very well the results obtained by numerical simulations [5]. REFERENCES [1] T. Bui Dinh, V. Cao Long, B. Nguyen Huy, S. Vu Ngoc, Optical solitons in presence of higher-order effects, Photonics Lett. of Poland 2(2) (2010) 97-99. [2] A.V. Porubov, Amplification of nonlinear strain waves in solids. World Scientific, Singapore (2003). [3] V.I. Erofeev, N.V. Erofeeva, Solitons and nonlinear periodic strain waves in rods, plates and shells (a review), Acoust. Phys. 48 (2002) 643-655. [4] S. Zhang, W. Wang, and J. L. Tong, Exact Non-traveling Wave and Coefficient Function Solutions for (2+1)-Dimensional Dispersive Long Wave Equations, Electronic Journal of Theoretical Physics EJTP 5, No. 19 (2008) 177–190. [5] T. Bui Dinh, V. Cao Long, K. Dinh Xuan, K. W. Wojciechowski, Computer simulation of solitary waves in a common or auxetic elastic rod with both quadratic and cubic nonlinearities, Phys. Status Solidi B, 1-7(2012)/DOI 10.1002/pssb.201084221.

O-6. Recent scientific activities in Optics Group, Vinh University

Dinh Xuan Khoa, and Nguyen Huy Bang
Vinh University
In this tall, we focus on our recent studies in nonlinear optics and laser spectroscopy of alkali-metal diatomic molecules. The former area concerning to investigation of coherent

effects in atomic media under optical excitations, such as Electromagnetically Induced transparency (EIT) [1], EIT enhanced Kerr nonlinearity [2, 3]. The later area concerning to application of polarization labeling spectroscopy technique [4] to investigate structure of alkali-metal diatomic molecules [5]. Spectroscopic characterization of excited electronic states is described in several aspects, such as molecular constants [5], potential energy curve [6] and intensity distribution [7]. Some prospects of our researches are discussed.

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O-7. Nén xung đa vòng bằng bộ liên kết phi tuyến kết hợp sợ quang khuyếch đại với nguồn bơm không đổi

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Trên cơ sở tính chất phi tuyến của bộ liên kết và khả năng khuếch đại của sợi quang, hệ nén xung đa vòng đã được đề xuất. Sử dụng các biểu thức của hệ số truyền qua bộ liên kết và biểu thức gần đúng của biên độ sóng khuếch đại, quá trình nén xung đã được mô phỏng. Kết quả cho thấy, hệ số nén xung phụ thuộc vào cường độ xung vào, hệ số truyền qua sợi phi tuyến, độ rộng xung vào. Sau mỗi vòng khuếch đại, hệ số nén tăng lên đáng kể. Chúng tôi, đã tìm ra một bộ tham số mà sau quá trình nén được kết quả tối ưu.

O-8. Image of an emitting dipole by a superlens

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We consider the emission pattern of a three-dimensional pointlike dipole situated near a left-handed-medium slab. Unlike earlier work, we focus on the direction normal to the slab surface. It is shown that the evanescent field may help to narrow the major peak of the image created by the propagating field.We point out that care has to be taken when applying Snell's law to the superlens problem. In particular, it cannot explain why the focus is shifted away from the ideal position when material absorption decreases below some threshold value.

O-9. Correlation effect for diffusion in disordered system

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Diffusion rate for particles in disordered system is influenced by two disorder types: the energetic and geometric disorder. Several previous studies shows that the energetic disorder is mainly responsible for diffusion in disordered lattice which has been quantified by the correlation coefficient. This effect

may be important for diffusion in fluids, but still not studied yet. In present paper we focus on how the correlation effect exhibits for dynamics in the alumina liquid and what it connects to the motion of particles in the liquid. The models consisting of 2000 particles have been constructed at temperature from 2400 to 4000 K and upon pressure from 0 to 20 GPa. We found that the transitions AlOx -> AlOxÂ±1 are not randomly proceed through cations, but strongly localized in some small regions. It means that they are correlated spatially. The correlation coefficient determined here is strongly depends on the temperature and pressure. In particular, the localization leads to existence of large cluster of non-exchanging units AlOx. The percolation of domains with high and low frequent transitions is also analyzed and discussed here.

O-10. Influences of solvent on geometry and electronic structure of PbS surface

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Surface-related properties and influence of solvent play important roles in lead sulfide nanocomposites which has been attracted numerous researches due to their wide range of applications from optoelectronics to biology. This paper represents our ab initio study on geometry and electronic structure of PbS surface. Here the influence of solvent was statically included using the conductor-like screening model (COSMO). The results show that the screening charges from solvent enhance the surface rumpling and crystal bonding of the surface but suppress the surface relaxation. However such solvent effects tend to saturate when the dielectric constant increases.

O-11. Transformation of low-Energy High-Current Electron Beam in the Plasma Channel

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At the moment low-energy (10-30 keV) high-current (up to 20 kA) electron beams are very important and widely used in

practice, such as for surface treatment of materials. Typically, the pulse duration of such beams are a few microseconds, the energy density of the beams is sufficient (up to 20J/cm2) for the pulsed surface melting of any materials, including refractory metals. As we know, the beam is easily created with circular shape, but the metal surface is diverse. Thus, the problem of the transformation of a circular high-current electron beam into other (particularly rectangular) one arises. In this paper, we will investigate the electron beam transformation in the plasma channel under the influence of :bus-bars geometry current neutralization an external magnetic field and its gradient. Numerical simulation is carried out in MATLAB environment with the method of large particles. The results of theoretical investigations are compared with experiments.

O-12. TDSE Method of Calculating High-Order Harmonic Spectra

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By using the split operator FFT method we construct a exact numerical method for calculating wave-functions of a two dimensional molecular interacting with ultra-short laser pulses. From the calculated wave-functions we calculate high-order harmonic spectra. The concrete results obtained for 2D molecule H2+ are suitable with the previous calculations. Using the obtained HHG spectra of H2+ we analyze the interference effect of electron within the two-emitting-center model and apply them for extracting the information of inter-atomic distance with high precision down to 1%.

O-13. The FK Operator Method for Exact Numerical Solutions of the Schrodinger Equation of a Negatively Charged Exciton in Two-Dimensional Semiconductors

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By using the Laplace transformation, we show that the FK operator method can be applied successfully to solving the Schrodinger equation of a negatively charged exciton in two-dimensional semiconductors to obtain exact numerical solutions. Especially, the algebraic form of the wave-functions built as a basis set in this work would be useful for further applications to other problems of two-dimensional atomic systems.

O-14. Opical diode properties of one-dimensional nonlinear photonic crystals

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We study optical diode properties of one-dimensional photonic crystals made of alternating linear and nonlinear dielectric layers theoretically. More specifically, we consider a photonic crystal consisting of twelve periods of polydiacetylene and titanium dioxide bilayers, where polydiacetylene layers are assumed to have Kerr-type focusing nonlinearity. Using the invariant imbedding method developed by us recently, we calculated the rectify coefficient associated with the transmittances for visible electromagnetic wave incident from the left and right medium. We find that at the frequencies close the higher band edge and in the optical bistability region, the rectify coefficient is larger more than 10 when the intensity of the incident light is about 15MW/cm^2 even the total thickness of the medium is about 2μm. We also calculated the electric field distribution inside the medium and find that the electric field is strongly enhanced when the wave incident from the direction corresponding to a large transmission. We expect this phenomenon can be applied in designing optical diode devices

O-15. Density Functional Based Tight Binding Study on Multiple Wall TiO2 Nanotube

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We report a Density Functional Based Tight Binding (DFTB) study on the structural and electronics properties of multi-layered (ML) wall TiO2 Nanotube, created from some possible rolling-up nanotube's types of rutile and anatase (001) and (110) nanosheets. Strain energy is found to be negative in between the whole nanotube's diameter range of 30-150 Angstrom. We also examine the dependence of interface stress and formation energy on nanotube lateral size. The tensile test have been applied and the Young's modulus of the tubes along the axial growth direction have been estimated showing the diameter's dependences of their mechanical properties. The electronic properties of tubes (e.g., bandstructure, gap, density of state ...) also exhibit diameter-dependent behavior.

O-16. Mg-doped TiO2 for dye-sensitive solar cell: An electronic structure study

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Recently, there has been a renewed interest in TiO2 anatase as charge transfer layer in dye-sensitized solar cells (DSSC). Some experiments suggested that metallic substitution can increase energy transformation efficiency of dye-sensitized solar cell. In this work, electronic structure of Mg-doped TiO2 anatase was calculated on the base of density functional theory (DFT). The results showed that the substitution of ions Mg2+ for ions Ti4+ induced a small lattice expansion ~ 0.8%. However noticeable negative shift of the Fermi energy ~ -0.812 eV and edge of conduction band ~ -1.16 eV as well as the enlargement of band gap ~ 0.04 eV were observed. The effects of such doping-induced changes on energy

transformation efficiency were also discussed.

O-17. Equation of state of nuclear matter at finite temperature

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The Hartree-Fock method with different choices of the effective nucleon-nucleon interaction has been recently used to study the equation of state of cold nuclear matter. In this work, the similar Hartree-Fock study is also done within the Thomas-Fermi model using CDM3Yn interaction to find out the equation of state of nuclear matter at finite temperature. The behaviors of energy per particle, free energy, entropy, and pressure are compared with cold nuclear matter. It is found that temperature effects are small but can be significant in studying hot β stable matter matter which is the main component of neutron star's core.

O-18. Restoration of the parity of correlated microscopic solutions within the HTDA scheme, application to the region of heavy nuclei

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The restoration of the left-right symmetry has been performed in the framework of the Highly Truncated Diagonalization Approach (HTDA) suited to treat correlations in an explicitly particle-number conserving microscopic approach. To do so we have performed parity-projected calculations within a PAV (projection after variation) scheme making use of a generalized Wick's theorem due to L$\ddot{\mathrm{o}}$wdin. It has been implemented within a simple model approach using the Skyrme SkM* effective force for the particle-hole channel and a density-independent delta force for the residual interaction. It has been applied in the region of the second fission barrier of heavy nuclei considering first the

example of the ^{240}Pu compound nucleus. As a result [1,2], we have shown that the $K^{\pi} = 0^+$ fission isomeric state is statically unstable against intrinsic parity breaking modes while the projection does not affect the energy at the top of the intrinsic second fission barrier. Altogether, this leads to an increase of the height of the second fission barrier by about 350 keV affecting thus significantly eg the fission decay lifetime of the considered fission isomer.

O-19. Folding of repeat proteins

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Repeat proteins are present in 14% of known protein amino acid sequences with specific functions generally associated to higher organisms. Frequently, repeat proteins do not have unique, stable 3D structures unlike a majority of globular proteins. Tandem repeats of amino acids are quite often found in proteins associated with neuro-degenerative diseases such as Alzheimer's, Parkinson's and Creutzfeldt-Jacob's. A recent insight shows that the level of sequence conservation in tandem repeats correlates with their propensities to be intrinsically disordered. In this study, we employ a coarse-grained model of protein with a two-letter amino acid alphabet, hydrophobic (H) and polar (P), to examine the sequence-structure relationship in the realm of repeated sequences. We found that unlike random sequences, a fraction of repeated sequences comprises a class of distinguishable bad folders. Our results indicate that Nature may have utilized this class of repeated sequences to design proteins that are intrinsically disordered at physiological temperature.

O-20. Phase diagram of thick polymers

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We investigate the ground state phase diagram of a thick polymer. Here, the polymer is modeled as a chain of spherical beads positioned along the axis of a tube of finite thickness. The tube self-avoidance is imposed by using a three-body potential. Addiotionally, the polymer is subject to a self-attraction given by a pairwise potential. We calculate the ground state phase diagram as function of the tube radius, Δ, and the range of attractive interaction, R_{int}. Both Wang-Landau sampling and simulated annealing methods are utilized in this work. We found that in the vinicity of the line where $R_{int}=2\Delta$, there are separated regions in the phase diagram corresponding to a single helix, a double helix and a planar sheet. Interestingly, there regions are almost unchanged with inreasing chain length. The phase diagram could be used to elucidate the ubiquitous folding motifs of proteins and DNA.

O-21. Dirac fermions in a magnetic Kronig-Penny-type graphene superlattice

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We study the energy band structure and the transport properties of magnetic graphene superlattices with delta-function magnetic barriers and zero average magnetic field (Magnetic Kronig-Penny-type graphene superlattice - MKPGS). Using the T-matrix approach we have exactly derived the dispersion relation for Dirac fermions in MKPGSs regardless of the magnetic field magnitude as well as the ratio between the well width and the barrier width in the periodic vector potential profile. The obtained relation shows an emergence of infinite number of Dirac-like points at finite energy while the original Dirac point is still located at the

same place as that for pristine graphene. Importantly, near the original Dirac point the dispersion and therefore the group velocity renormalization seem to be isotropic that is in sharp contrast to the well-known case of electrostatic KPGSs. Contrarily, the dispersion and therefore the group velocity renormalization near all the finite energy Dirac-like points are strongly anisotropic. The degree of anisotropy is determined as a function of superlattice parameters. An asymmetry in width between the well and the barriers in the periodic vector potential induces a shift of the original Dirac point in the zero-energy plane, keeping the group velocity renormalization isotropic. To find the manifestation of the Dirac fermions behavior recognized we calculated the transmission probability and the conductivity and analyzed obtained results with respect to structure parameters.

O-22. Forecasting Daily Tide Profiles Using Artificial Neural Networks

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As well know the daily rise and fall in sea level, so-called the tide, caused by gravity of the Moon and Sun. We study the forecasting of the daily sea level of tide at Hon Dau coast (Hai Phong city) with a prediction time of 24h. A classification of the historical sea level data is performed by Kohonena's self-organizing map (SOM) technique. The actual forecast is obtained using a two layered feed forward neural network. For training stage, we use the historical tide data from 2000 to 2010 with including the dates of lunar calendar as an input parameter, trained with the back propagation with momentum learning algorithm. The results show the suitability of the adopted methodology for the short term tide forecasting.

O-23. Gauge interaction with space-time dependent coupling parameter and renormalization

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In our previous work we have proposed a gauge mechanism for massive gauge bosons, where the main idea is to introduce some scalar function depending on space-time coordinates in the gauge transformations. Along this line we consider here the possibility of applying this idea to renormalization problem in field theory with gauge interaction. For illustration some simple examples are also given

O-24. Production cross-section of axion in a external electromagnetic field

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We calculate the conversion cross-section of photon into axion in external electromagnetic fields, namely in static electric and magnetic fields and in a wave guide. Our result shows that conversion cross-sections in the strong magnetic field and in the wave guide are enough large to measure axion in the current experiments. We have found the resonant conversion in the wave guide, in which cross-sections are much enhanced.

O-25. On the Non-Abelian SO(8) Gauge Fields as the Fields of a Monopole in a Nine-Dimensional Space

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Dirac's magnetic monopole and Yang's SU(2) monopole are generalized to the non-abelian SO(8) gauge fields in a nine dimensional space. All potential components and strengths of the fields are obtained explicitly. The method used is based on the way that Yang generalized the Dirac's magnetic monopole to the SU(2) gauge fields.

O-26. Coherent state method in constructing representation of

super quantum groups

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The coherent state vector method has been used by some authors to construct representations of superalgebras, but it has just been extended to few simplest quantum superalgebras such as U_q[osp(2|1)] and U_q[gl(1|1)], whose creating/destroying operators are commutative with each other. In this talk, we show how to use this method to build boson-fermion realization of bigger quantum superalgebras U_q[gl(2|1)] and U_q[osp(2|2)]. These algebras have non-commutative creating/destroying operators, therefore, our works can be considered as a reference in utilizing the method for other quantum superalgebras. We choose these algebras because it has many applications in mathematical physics and quantum physics such as non-commutative geometry, conformal field theory, integrable system, quantum gravity, cosmology and condensed matter physics.

O-27. Electrical conductivity in type-II superconductors under a magnetic field

Bui Duc Tinh and Le Minh Thu
Hanoi National University of Education

The time-dependent Ginzburg-Landau approach is used to investigate linear response of a strongly type-II superconductor. Thermal fluctuations, represented by the Langevin white noise, are assumed to be strong enough to melt the Abrikosov vortex lattice created by the magnetic field into a moving vortex liquid. The nonlinear interaction term in dynamics is treated within self-consistent Gaussian approximation and we go beyond the often used lowest Landau level approximation to treat arbitrary magnetic fields. The results are compared to experimental data on high-Tc superconductor Bi_{2}Sr_{2}CaCuO_{8}.

O-28. On the Hall Effect in Parabolic Quantum Wells with an In-plane Magnetic Field in the Presence of a Strong

Electromagnetic Wave (Laser Radiation)

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The Hall effect in a quantum well (QW) with a parabolic potential $V(z)=m\omega_{z}^{2}z^{2}/2$ (where m and ω_{z} are the effective mass of electron and the confinement frequency of QW, respectively), subjected to a crossed dc electric field $\vec{E_{1}}=(0,0,E_{1})$ and magnetic field $\vec{B}=(0,B,0)$ ($\vec{B}$ is in-plane of the plane of free motion of electrons), in the presence of a strong electromagnetic wave (EMW) characterized by electric field $\vec{E}=(E_{0}\sin(\Omega t),0,0)$ (where E_{0} and Ω are the amplitude and the frequency of EMW, respectively), is studied theoretically utilizing quantum kinetic equation for electrons. By considering the electron â€“ acoustic phonon interaction, we obtain analytic expressions for the components σ_{zz} and σ_{xz} of the Hall conductivity as well as the Hall coefficient with a dependence on B, E_{1}, E_{0}, Ω, temperature T of the system and the characteristic parameters of QW. These expressions are fairly different in comparison to those obtained for bulk semiconductors. The results are numerically evaluated and graphed for a specific quantum well, GaAs/AlGaAs, to show clearly the dependence of the Hall conductivity and the Hall resistance on above parameters. The influence of the EMW is interpreted by using the dependences of the Hall conductivity and the Hall resistance on the amplitude E_{0} and the frequency Ω of EMW and by using the dependences on the magnetic field B and the dc electric field E_{1} as in the ordinary Hall effect.

O-29. The structure and mechanical properties in amorphous Si3N4 under pressure

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We present the simulation of amorphous silicon nitride (a-

Si3N4) with density ranged from 2.4 to 3.4 g cm-3 using molecular dynamic method. The local structure has been analyzed through the pair radial distribution function, bond angle distribution. The simulation reveals that although the fractions of basic units SiNx strongly changes with the density, the partial bond angle distributions of basic units SiNx are identical for all constructed models. Here x=3, 4, 5. This result enables us to establish a relationship between the bond angle distributions and the fractions of basic units SiNx. The numerously ideal tetrahedrons SiN4 have been found in the a-Si3N4 upon compression. These tetrahedrons play an important role on the mechanical behavior of a-Si3N4 systems.

O-30. Application of autocatalic system on the finance movement research

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another application of autocatalic system has been shown in this presentation. this concept is quite familiar in chemical physics, but it's the very new one in econophysics. some comparisons has been made, thus we found that price index also follow the autocatalic systems rules, in a determined time. some important parameters has been introduced. the large application of this results on the prediction of financial crisis has also been presented

O-31. On Peccei-Quinn symmetry and quark masses

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We show that there is an infinite number of U(1) symmetries like Peccei-Quinn symmetry in the 3-3-1 model with minimal scalar sector. Moreover, all of them are completely broken due to the gauge symmetry breaking with the model's scalars. There is no any residual Peccei-Quinn symmetry. Because of the minimal scalar content there are some quarks that are massless at tree-level, but they can get consistent mass

contributions at one-loop due to this fact.

O-32. Neutron Anomalous Magnetic Moment in the Gauge-Higgs Unification

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(1) Institute of Physics, VAST
(2) Hanoi University of Education II
(3) Vinh University

We study the neutron anomalous magnetic moment (AMM) in a five dimensional gauge-Higgs unification scenario compactified on $ M^4 \times S^1/Z_2 $ with the bulk gauge symmetric group $ SU(3)_C \times SU(3)_L \times U(1)_X $. The detailed calculation for the neutron AMM by the exchange of KK modes of gauge bosons, their scalar partners, Higgs bosons and quarks will be performed at the one loop level.

O-33. Flavor symmetries S_3 and S_4 in 3-3-1 models

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(1) Institute of Physics, VAST, 10 Dao Tan, Ba Dinh, Ha Noi
(2) Department of Physics, Tay Nguyen University, Buon Ma Thuot, DakLak.

We propose two 3-3-1 models based on S_3 and S_4 flavor symmetries responsible for fermion masses and mixings.

O-34. Chiral phase transition in compactified space-time

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(2) Department of Physics, Hanoi University of Education II, Hanoi, Vietnam

The chiral phase transition of linear sigma model with constituent quarks at finite temperature and chemical potential is crutinized in a non-simply connected space-time where the compactified dimension with length is taken along the Oz direction. It results that corresponding to untwisted and twisted quarks the phase diagrams in the (T, a)-plane are quite different from each other. Here, untwisted (twisted) quark denotes the quark field which satisfies the periodic

(anti-periodic) boundary conditions and $a= 1/L$. In the chiral limit the chiral phase transition for untwisted quark is first-order for all values of a, while for twisted quark it is first-order at low a and becomes second-order at higher values of a. In the physical world with explicit symmetry breaking, it is found that the chiral phase transition for untwisted quark is first order at high values of a and eventually ends up with a critical end point at low a, and for twisted quark it is the crossover transition everywhere.

O-35. Statistical moment determination of thermodynamic properties of bilayer graphene

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Xuan hoa, Vinh Phuc, Viet Nam

Thermodynamic properties of bilayer graphene are investigated using the moment method in statistical (SMM) dynamics taking into account the anharmonicity effects of the lattice vibrations. The nearest neighbor distance, thermal expansion coefficient, specific heat at the constant volume and Young modulus of the bilayer graphene are calculated as a function of the temperature. .In the present study, the influence of temperature on the thermodynamic quantities of graphene and bilayer graphene have also been studied, using three different interatomic potentials. We discuss the temperature dependence of the thermodynamic quantities of the graphene and bilayer graphene and compare our calculated results with those of the experimental results.and other theories.

O-36. Heterogeneous melting of Nickel: new insight from atomic mechanism

Tran Phuoc Duy, Vo Van Hoang
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Heterogeneous melting used to be proposed to initial from the surface until the total melting. Recently, we have done

intensive computation of heterogeneous melting and found that not only the pre-melting taken place sooner than the melting point, but also homogeneous melting takes place inside the models. Moreover, we found the free surface effects on the heterogeneous melting of the models. The larger the free surface is, the more heterogeneous the melting is, but the less homogeneous it is.

O-37. A Polynomial- Exponential f(R) Gravity Model

Vo Van On(1) and Tran Trong Nguyen(2)
(1) University of Thu Dau Mot
(2) University of Natural Sciences –Vietnam National University , Ho Chi Minh City

In this paper, we introduce a f(R) gravity model with Lagrangian of polynomial – exponential form of scalar curvature R. We also point out that this f (R) gravity model can describe a universe with an accelerating phase of expansion at late time , it has the cosmological viability and also passes local tests in Solar system

O-38. Probing the early phases of star formation with far to near infrared continuum emission

Hoang Thanh Phi Hung(1), Nguyen Luong Quang(2) and Arabindo Roy(2)
(1) Lệ Thủy - Quảng Bình - Việt Nam
(2) The Canadian Institute for Theoretical Astrophysics (CITA), Canada

The early phases of star formation are obscured by high level of interstellar dust which can be probe in emission at infrared wavelengths. We study the dusty environment around star-forming cores with new data from infrared space telescopes (Herschel, Spitzer, Akari and WISE) in order to infer the evolutionary phases of the star forming cores. We then suggest an evolutionary sequences of star formation which start with interstellar turbulence, which lead to filament formation and finally to core formation

PA-1. Microscopic derivation of three-component Ginzburg-Landau functional

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A microscopic derivation of three-component Ginzburg-Landau (GL) field theory and the conditions of its validity in ferromagnetic superconductors are presented. The conditions when microscopically derived or phenomenological GL models fail and a microscopic description should be resorted, are also investigated. The investigation shows that three-component GL model can be used for addressing a wide range of questions in multiphase coexistence systems, in particular vortex physics and magnetic response.

PA-2. Rotary Inverted Pendulum and Control of Rotary Inverted Pendulum by Artificial Neural Network

Nguyen Duc Quyen(1), Ngo Van Thuyen(1), Nguyen Quang Hoc(2) and Nguyen Duc Hien(3)

(1) University of Technical Education, 1 Vo Van Ngan, Thu Duc, Ho Chi Minh City

(2) Hanoi National University of Education, 136 Xuan Thuy, Cau Giay, Hanoi

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Inverted pendulum is an unstable and highly nonlinear system. It is used as a common model for applications in linear and nonlinear control engineering. This paper presents the physical structure, the kinetic model of rotary Inverted pendulum system and the method of identifying and controlling this system by an artificial neural network. This network is a mathematical model based on the structure and the function of biological neural network. This is a state-of-the-art method of controlling which has many advantages such as the control of nonlinear objects, the ability of learning and accumulating experiences and the adjustment for changes of any parameter in the system

PA-3. Cyclotron-phonon resonance in semiconductor superlattices

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(1) National Education Union of Vietnam

(2) Department of Physics, Hue University's College of Education
(3) Sai Gon University.
A theory of phonon-assisted cyclotron resonance (PACR) in semiconductor superlattices (SSL) is presented. Using operator projection technique, expressions for absorption powers are obtained when the electrons are scattered by polar optical phonons in SSL. Extra peaks in the absorption spectrum due to transitions between Landau levels accompanied by emission and absorption of phonons are predicted and can be found in numerical results for GaAs materials. The results show that the intensities of the PACR peaks are directly proportional to the strength of the electron-phonon interaction. These intensities are strong enough to be detected in cyclotron resonance experiments. Hence, by studying the intensity of PACR peaks, one can directly determine the strength of the electron-phonon interaction.

PA-4. Topological insulating phase in the Haldane - Falicov - Kimball model

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Effects of electron correlations on a topological insulating phase are studied within a combination of the Haldane and the Falicov - Kimball model. The Haldane model provides the existence of topological insulating phase, while electron correlations are the essence of the Falicov - Kimball model. A mean field approximation is adopted to investigate the combined model. There is a competition between the trivial topological charge-ordered phase and topological insulating phase. A phase diagram is also presented.

PA-5. Electric Potential Profile of Spherical Soft Particle with a Point Charged Hardcore

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(2) Hanoi Pedagogical University 2, Xuan Hoa, Phuc Yen, Vinh Phuc

(3) Department of Health and Physics,Thai Binh Medical University

The electrostatic potential profile of a spherical soft particle was derived by analytically solving the Poisson-Boltzmann equations on a spherical coordinate. The soft particle was assumed to consist of a point charged hard core and a charged outer layer. The problem was solved at the low charge approximation, the continuity of the potential and of the electric displacement field were applied as the boundary conditions. The contribution of the core to the potential profile was investgated with various values of its charge and its dielectric constant. The presence of charged-core strongly modified the local potential (within the particle). The surface potential and the potential distribution in the salt solution were found to be independent of the core dielectric constant and weakly dependent on the core charge.

PA-6. Treatment of graphene-metallic lead coupling in simulation of top-gated sub-100 nanometer graphene channel field-effect-transistors

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The operation and the performance of top-gated sub-100 nanometer semiconducting graphene field-effect transistors are reported by considering appropriately the issue of graphene-metallic lead coupling. By assuming the physisorption contacts between the source/drain electrodes and the graphene channel the formation of the source and drain regions due to the charge transferred effect at the two ends of the channel was reproduced. The current-voltage characteristics were then calculated. It is found that the current depends on the gate voltage via the exponential law

for samples with channel lengths shorter than 40 nm, but for samples with longer channels the ambipolar behavior is observed. Particularly, the current saturation with a rather small output conductance of 126 S/m is realized in a sufficiently large range of drain voltage due to the dominance of the thermionic emission and conventional tunneling mechanisms to the band-to-band tunneling one. A rough assessment of the device performance was also carried out. It reveals an extremely high cutoff frequency in the order of 103 GHz and a linear scaling rule for transistors with the channel length longer than 40 nm. The behavior and magnitude of these quantities are very consistent with a recent experimental study for sub-100 nm devices fabricated by using the selfalignment technique.

PA-7. Studying Blocking Effect for Many Particles Diffusion in one-Dimensional Disordered Lattice

Mai Thi Lan, Pham Thai Binh, Nguyen Van Hong, Pham Khac Hung
Ha Noi University of Sciences & Technology

The diffusion in one-dimensional disordered lattice has been studied using kinetic Monte-Carlo method. The simulation has been conducted for a chain consisting of 4000 sites with periodic boundary conditions. The site and transition energies are adopted in accordance to Gauss distribution. We consider three type lattices: the site disordered lattice; transition disordered lattice and combined lattice. Furthermore we focus on the influence of energetic disorder and particle's concentration on diffusivity. In particular, the blocking effect concerning existence of many particles has been clarified under different temperature and energetic conditions.

PA-8. Coherent Potential Approximation Study of the Mott Transition in the Half-filled Asymmetric Hubbard Model

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(2) Institute of Physics, Hanoi, Vietnam

We investigate the Mott transition in the half-filled asymmetric Hubbard model with an on-site Coulomb repulsion U and a

spin-dependent hopping integral t_σ by means of the coherent potential approximation. We found that the two spin species undergo the Mott transition simultaneously at a certain critical value U_C. We also compute density of states, the double occupation and characterize their behavior in the different phases. Our results are in good agreement with the recent dynamical mean-field theory predictions.

PA-9. Mott Transition of the Half-filled Hubbard Model in a Two-dimensional Frustrated Lattice

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(2) Institute of Physics, Hanoi, Vietnam

Using coherent potential approximation we study zero-temperature Mott transition of the half-filled Hubbard model in a two-dimensional square lattice with geometrical frustration. It turns out that the geometrical frustration reduces the gap between the Hubbard bands. As a result the metallic phase is stabilized up to a fairly large value of the on-site Coulomb interaction. We found that the critical value U_C for the Mott transition is enhanced by the geometrical frustration. Our results are in good agreement with the ones obtained by the single-site dynamical mean-field theory.

PA-10. Effect of size Dispersion on the Averaged Magnetic Susceptibility of Ensembles of Semiconductor Quantum Rings

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In this paper we theoretically study the effect of size dispersion on the averaged magnetic susceptibility of ensembles of three-dimensional asymmetrical InGaAs/GaAs quantum rings. We use the effective one-electronic-band Hamiltonian with smooth three-dimensional confinement potential mapping the actual geometrical and material composition of the rings. Our efficient mapping method allows us to find energy states of the electrons confined in three-dimensional semiconductor quantum rings with very complex

geometries. Then, we are able to calculate the magnetic susceptibility of an individual single electron nano-ring with fixed geometrical and material parameters. Considering dispersion of the ring's rim radius, we simulate combined homogeneous and inhomogeneous broadening of the averaged magnetic susceptibility of the ensembles of semiconductor quantum rings. The averaged magnetic susceptibility of the rings' ensembles demonstrates stable temperature dependence unlike an individual ring's magnetic susceptibility. Our simulation results are in a good agreement with the experimental observations.

PA-11. Key Electron Scattering Mechanisms in non-doping Zn-polar ZnO/MgZnO heterostructure at Low-Temperature

Nguyen Thanh Tien(1) and Vo Huu Cau(2)
(1) Cantho University
(2) Hue University

We present a theoretical study on the mobility of two-dimensional electron gas (2DEG) in non-doping Zn-polar ZnO/MgZnO heterostructure. We investigate the role of all possible scattering mechanisms affect to the mobility of two-dimensional electron gas exist in this structure. We show that the alloy disorder (AD) and polar surface roughness (PSR) scattering are two key scattering mechanisms affect to the mobility of 2DEGs in non-doping Zn-polar ZnO/MgZnO heterostructure. Our theory is able to explain experimental data about the 2DEG mobility dependence on the electron density at low-temperature.

PA-12. Trapping cold atoms by a Silicon nanopillar

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Institute of Physics 10-Dao Tan-Ba Dinh-Hanoi

We present a new method of trapping cold atoms using a silicon nanopillar. With this method, the cold atom moving near a silicon nanopillar is captured by sending the strong electromagnetic field through the silicon nanopillar. This field generates an evanescent wave around the silicon nanopillar. By evanescent effect, the wave decays away from the silicon nanopillar producing an attractive optical potential for trapping

neutral atom. We consider some possible boundary conditions leading to the non-trivial bound state solution. Our result is also compared to the two most recent models concerning trapping of cold atoms by using a single wall carbon nanotube and an optical fiber.

PA-13. Calculations of the Acoustoelectric Current in a Rectangular Quantum Wire

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The acoustoelectric current in a rectangular quantum wire with an infinite potential is calculated by using the quantum kinetic equation for the distribution function electrons interacting with internal and external phonons. The analytic expression for the acoustoelectric current in the rectangular quantum wire with an infinite potential is obtained. The dependence of the expression for the acoustoelectric current on the temperature of the system T, the acoustic wave number q and the parameters of the rectangular quantum wire with an infinite potential are obtained. The theoretical results are numerically evaluated, plotted and discussed for the specific rectangular quantum wire with an infinite potential GaAs. The results are compared with those for normal bulk semiconductors to show difference.

PA-14. Electronic properties and transport in graphene nanomesh based structures

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Motivated by recent experiments [1,2] on the bandgap

engineering in graphene, we have considered the formation of bandgap and the transport in graphene nanomesh (GNM) based structures using atomistic quantum simulation within a tight binding model [3]. The formation of bandgap opening has been investigated in the lattices with different nanohole shapes, lattice parameters, and with disorder effects. It was shown that (i) in perfect GNM lattices the dependence of the bandgap on structural parameters is more complicated than that previously reported in literature [4,5], and (ii) with the presence of disorders all GNM lattices become semiconducting which is in line with experimental observations. Our studies suggest that the GNM lattices offer various possibilities of improving the transport properties such as, for instance, high On/Off current ratio and strong negative differential resistance in graphene devices.

PA-15. Molar Specific Heat under Constant Volume of Molecular Cryocrystals of Nitrogen Type with HCP Structure: Contribution from Lattice Vibrations and Molecular Rotational Motion

Nguyen Quang Hoc(1), Nguyen Ngoc Anh(2), Nguyen The Hung(2), Nguyen Duc Hien(2) and Nguyen Duc Quyen(3)
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The analytic expression of molar specific heat under constant volume of molecular cryocrystals of nitrogen type with hcp structure is obtained by the statistical moment method and the self-consistent field method taking account of the anharmonicity in lattice vibrations and molecular rotational motion. Numerical results for molecular cryocrystals of N2 type (N2, CO) are compared with experiments.

PA-16. Thermodynamic Properties of Molecular Cryocrystals of Nitrogen Type with FCC Structure: Contribution from Lattice Vibrations and Molecular Rotational Motion

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The analytic expressions of thermodynamic quantities such as the Helmholtz free energy, the internal energy, the entropy, the molar specific heats under constant volume and under constant pressure, etc. of molecular cryocrystals of N2 type with fcc structure are obtained by the statistical moment method and the self-consistent field method taking account of the anharmonicity in lattice vibrations and molecular rotational motion. Numerical results for molecular cryocrystals of N2 type(N2, CO,CO2 and N2O) are compared with the experimental data.

PA-17. Electronic energy band structure of carbon nanotubes with quinoid structure

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The quinoid structure with two different bond lengths has been proposed for all types of carbon nanotubes (i.e., armchair, zigzag, and chiral). In this work we study electronic energy band structure of carbon nanotubes with Quinoid structure by using the tight-binding approximation. Effect of alternation bonds on band gap and the Fermi level is also investigated. The numerical calculations are performed with value of the difference between long and short bond lengths being up to 0.004 nm. The results are compared with well-know results for pristine carbon nanotubes.

PA-18. Photostimulated quantum effects in quantum wells with a paraboloic potential

Bui Duc Hung, Nguyen Vu Nhan, Luong Van Tung , and Nguyen Quang Bau
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The quantum theory of the photostimulated effects in

quantum wells has been studied based on the quantum kinetic equation for electrons with a parabolic potential . In this case, electrons system in quantum wells is placed in a constant electric field , a electromagnetic wave and in the presence of an intense laser field The effect of constant electric field , in quantum wells appears a constant current carrier along vector . But, in the presence of laser radiation and polarized electromagnetic wave can influence that current carrier, and do appear an electric field intensity vector with open circuit conditions. Hence, the analytic expressions of electric field intensity vector along the coordinate axes has been calculated. The dependence of the components on the frequency ï— of the laser radiation field, the frequency ï· of the electromagnetic wave field, the frequency of the parabolic potential are shown. From the analytic results, when , the result will turn back to the photostimulated kinetic effects in semiconductors.

PA-19. Quasi-bound states in a gate-tunable disk-like graphene quantum dot

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Due to the Klein tunneling in graphene the electrostatic confinement potentials can not induce a bound state, but only the quasi-bound (resonant) states with a finite carrier life-time. We suggest a realistic model of disk-like graphene quantum dots which exhibit the quasi-bound states with carrier life-time long enough for practical applications. In the suggested model a quantum dot is characterized by the three parameters - the radius R of the circular top gate, the confinement potential magnitude , and the field in the dot boundary region. The last two parameters, and , play a critical role in determining the carrier life-time of quasi-bound states and both can be easily tuned by independently varying the voltages, applied to the top gate and to the back one. By solving the Dirac equation we calculated the resonant position as well as the level width of quasi-bound states for

modeled quantum dots with different , , and and for various values of the electron angular momentum . Obtained results give an estimation for the dependence of the quasi-bound states life-time on the quantum number as well as the dot parameters and provide a range of parameter values when the quasi-bound states life-time could be long enough.

PA-20. Condensation kinetics of polaritons in semiconductor quantum wire

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The kinetics of the boson condensation for polaritons interacting in semiconductor quantum wire is studied within rate equations. The numerical results are performed of the quasi-stationary excitation. The resulting first-order spatial coherence of condensed polaritons are in qualitative agreement with experiment.

PA-21. Các tính chất vận chuyển của khí điện tử giả hai chiều trong giếng lượng tử SiGe/Si/SiGe : Ảnh hưởng của nhiệt độ và từ trường

Nguyen Quoc Khanh, Nguyen Minh Quan and Nguyen Ngoc Thanh Nam
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Chúng tôi đã tính độ linh động, điện trở và thời gian tán xạ của khí điện tử giả hai chiều trong giếng lượng tử SiGe/Si/SiGe ở nhiệt độ bất kỳ cho cả hai trường hợp có hoặc không có từ trường song song đối với hai cơ chế tán xạ tạp chất và nhám bề mặt. Chúng tôi xem xét hiệu ứng nhiều hạt, sự phụ thuộc vào bề dày lớp và chuyển pha kim loại-cách điện. Ở nhiệt độ thấp kết quả của chúng tôi phù hợp với kết quả của A. Gold (J. Appl. Phys. 108, 063710 (2010)) và với các kết quả thực nghiệm gần đây. Các kết quả ở nhiệt độ và từ trường khác không của chúng tôi kết hợp với các thí nghiệm sẽ cho phép xác dịnh các cơ chế tán xạ chủ yếu, các tham số tán xạ và hiệu ứng nhiều hạt.

PA-22. Các tính chất vận chuyển của khí điện tử giả hai chiều

trong cấu trúc dị thể Si/SiGe : Ảnh hưởng của nhiệt độ và từ trường

Nguyen Quoc Khanh, Nguyen Ngoc Thanh Nam and Nguyen Minh Quan

Trường Đại học Khoa học Tự nhiên Tp. HCM - 227 Nguyễn Văn Cừ, Q.5, Tp. HCM

Chúng tôi đã tính độ linh động, điện trở và thời gian tán xạ của khí điện tử giả hai chiều trong cấu trúc dị thể SiGe/Si ở nhiệt độ bất kỳ cho cả hai trường hợp có hoặc không có từ trường song song đối với hai cơ chế tán xạ tạp chất và nhám bề mặt. Chúng tôi xem xét hiệu ứng nhiều hạt, sự phụ thuộc vào vị trí pha tạp và chuyển pha kim loại-cách điện. Ở nhiệt độ thấp kết quả của chúng tôi phù hợp với kết quả của A. Gold (Semicond. Sci. Technol. 26, 045017 (2011)) và với các kết quả thực nghiệm gần đây. Các kết quả ở nhiệt độ và từ trường khác không của chúng tôi kết hợp với các thí nghiệm sẽ cho phép xác dịnh các cơ chế tán xạ chủ yếu, các tham số tán xạ và hiệu ứng nhiều hạt.

PA-23. Simulation of mechanical properties of amorphous Ni and Ni nanowires

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Molecular dynamics simulation with Sutton-Chen type of embedded atom method is used to study the mechanical properties of amorphous Ni and Ni nanowires. An uniaxial tensile strain along the [001] axis with varying strain rates is applied to the sample to investigate the effects of strain rates and thermal conditions on the deformation characteristics and mechanical properties of the systems. The deformation mechanism of the systems is investigated in detail. The effect of structure on the observed deformation modes in models is also discussed.

PA-24. Nonlinear Optically Detected Electrophonon Resonance Line-width in Doped Semiconductor Superlattice

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In this paper, the analytic expression for nonlinear absorption power (NAP) in doped semiconductor superlattice (DSSL) are obtained by using the operator projection technique in the case of electron-optical phonon scattering. We have obtained nonlinear optically detected electrophonon resonance (NODEPR) condition as a function of well width and concentration of the donor impurities. Anomalous behaviors of the NODEPR spectrum such as the splitting of NODEPR peaks for two photon absorption process are discussed. From the graphs of the NAP, we obtaine the NODEPR line-width as profiles of curves. Computational results show that the NODEPR line-width increases with temperature and decreases with well width. The contribution of two photons absorption process to absorption power is smaller than ones of one photon process.

PA-25. Cyclotron Resonance Line-width in Graphene
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In this paper, we study the line-width of cyclotron resonance peak in graphene. Analytical expressions are derived for absorption power using projection operator methods. The dependence of absorption power on the photon energy is numerically calculated and graphically plotted. From the graphs of the absorption power, we obtained cyclotron resonance line-width (CRLW) as profiles of curves. The dependence of CRLW on the magnetic field B, and on the temperature T are considered.

PA-26. Khảo sát tiết diện sinh Neutron theo phân bố góc trong phản ứng (P,N) với các mức năng lượng bắn phá khác nhau lên bia NIKEN
Nguyen Quoc Thai

Dong Thap University

Khảo sát tiết diện sinh neutron trong phản ứng (p,n) với các mức năng lượng bắn phá khác nhau, ta nhận thấy rằng tiết diện sinh neutron trong phản ứng (p,n) phụ thuộc vào góc khối. Tiết diện sinh neutron tập trung nhiều nhất ở vùng góc khối bằng 0 đến 30độ tức là khu vực theo phương của proton tới và mở rộng xung quanh một góc khoảng 30độ.

PA-27. The influence of Electromagnetic wave on the relative magnetoresistance in quantum wells with parabolic potential in the presence of magnetic field

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The relative magnetoresistance in quantum wells with parabolic potential in the presence of magnetic field under the influences of electromagnetic wave is theoretically studied based on a set of quantum kinetic equations for the electron â€“ phonon system. Analyzing the analytical expressions obtained, we see that the relative magnetoresistance depends on the intensity of electromagnetic waves , magnetic field B, the frequency of the radiation and the relaxation time of carrier. Comparing with the results obtained in case of bulk semiconductors, we see the differences and the influences of finite-size effects on the relative magnetoresistance.

PA-28. Dynamical response of a quantum wire electron system

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(2) Institute of Physics, Vietnam Academy of Science and Technology

The dynamical response of an electron system confined in a semiconductor quantum wire is calculated within the random phase approximation. The dielectric constant mismatch and the effect of the metallic outer shell are taken into account.

PA-29. Impact Of The External Magnetic Field And The Confinement Of Phonons On The Nonlinear Absorption

Coefficient Of A Strong Electromagnetic Wave By Confined Electrons In Compositional Superlattices

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Impact of the external magnetic field and the confinement of phonons on the nonlinear absorption coefficient (NAC) of a strong electromagnetic wave (EMW) by confined electrons in compositional superlattices is theoretically studied by using the quantum transport equation for electrons. The formula which shows the dependence of the NAC on the energy ($\hbar \Omega$), the amplitude (E0) of the strong EMW, the temperature (T) of the system, the energy ($\hbar \Omega_{B}$) of external magnetic field and quantum number m characterizing confined phonons is obtained. The analytic expressions are numerically evaluated, plotted and discussed for a specific of the GaAs-Al0.3Ga0.7As compositional superlattices. The results show clearly the difference in the spectrums and values of the NAC in this case from those in the case with out the impact of the external magnetic field and the confinement of phonons.

PA-30. Multiple-degeneracy electron correlations in quantum mixtures of ultracold atoms

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Quantum mixtures of ultracold atoms with multiple degeneracy are modeled by a multiple-degeneracy Falicov-Kimball model. The model is analyzed using the dynamical mean field theory. Multicolor charge-ordered or multicolor segregated phase are stabilized at low temperature depending on the model parameters, while the homogeneous mixture appears at high temperature. A phase diagram is also presented

PA-31. Investigation of the thermodynamic properties of the multi compernent alloys

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By the moment method we obtain the analytic expression of the Helmholtz free energy of the multi component alloy with face-centred cubic (fcc) and body-centred cubic (bcc) structure. Using the obtained expression of the Helmholtz free energy, we obtain the state equation, the equation for equilibrium long-order parameter and the analytic expressions for thermodynamic quantities of multi component alloy with cubic (fcc) and (bcc) structure such as the isothermal compressibility, the thermal expansion coefficient, the specific heats at constant volume CV and at constant pressure CP. etc. Our theoretical results are applied to investigate the multi component alloys 76Ni-15Cr-9Fe, 66Ni-29Cu-3Al, 35Ni-50Fe-15Cr, 60Ni-24Fe-16Cr. The numerical results for the order parameters, the specific heats, etc. are shown to agree well with the experimental data.

PA-32. The surrounded atom theory of order-disorder phase transition in binary alloys

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(2) University of Natural Sciences, Ho Chi Minh City National University

In this paper, the surrounded atom model is developed to study the order-disorder phase transition in binary alloys. We calculate the configurational free energy of the alloys, derive the equation of equilibrium and determine the critical temperature of the phase transition.

PA-33. Study of Tracer Diffusion Mechanism in Amorphous Fe-based Alloys

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Tracer diffusion mechanism in amorphous Fe and Fe80B20 solids is studied using the statistic relaxation model containing 200000 atoms. It was found a large number of bubbles which could break up and leads to diffusion. A bubbles diffusion mechanism is proposed and the diffusion coefficient determined in term of this mechanism is in reasonable agreement with experimental data. The decrease in diffusion coefficient upon thermal annealing observed experimentally for most amorphous alloys is interpreted as a result of reduced number of bubbles in system. Keywords: Amorphous alloys; Tracer diffusion; Bubble; Simplex.

PA-34. Molecular dynamics study of microstructure, refractive index and anomalies in SiO2

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(1) Vinh University of Technology Education
(2) Nam Dan 2 High School - Nghe An
(3) Nghi Loc 3 High School - Nghe An.

Microstructures, refractive index and anomalies in SiO2 have been investigated by means of a molecular dynamic method. The simulation is conducted for systems prepared at six different temperatures from 2100 to 3000 K. The microstructure properties is analyzed through the pair radial distribution function, coordination number, bond-angle distribution. We focus on the correlation between structural characteristics and refractive index under temperature. The simulation reveals The appearance of refractive index anomalies and density as temperature increases.

PA-35. Molecular dynamics study of microstructure and refractive index of TiO2

Doan Thi Thanh Binh(1), Tran Trung Nguyen(2), Bui Danh Hao(2), Le The Vinh(2)
(1) Nghi Loc 3 High School - Nghe An
(2) Vinh University of Technology Education.

Microstructures and refractive index of liquid TiO2 have been investigated by means of a molecular dynamic method. The simulation is conducted for systems prepared at six different temperatures from 1100 to 3100 K. The microstructure

properties is analyzed through the pair radial distribution function, bond-angle distribution. We focus on the correlation between structural characteristics and refractive index under temperature. The simulation reveals the refractive index decreases linearly as temperature increases.

PA-36. Structure and Dynamics of Liquid MgO under high pressure

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Microstructure, dynamics and diffusion in liquid MgO have been studied by Molecular dynamics Simulation. Model consists of 2000 atoms were constructed under a wide pressure range and at temperature of 3800 K. The local structure is analyzed through the coordination distribution, topology statistics of basic structural units MgOx (x=4, 5, 6). As regards to the structural dynamics, the processes bond-breaking/reconstruction, spatially heterogeneous dynamics, clustering, structural stability (life time of basic structural units) are investigated in detail. Structural dynamics assists us to better understand various important atomistic (molecular) properties and clarified the diffusion mechanism in liquid MgO.

PA-37. Dependence of Lattice Parameter and Order Parameter on Temperature and Pressure for Cu3Au Alloy

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(1) College of Armor
(2) Le Qui Don University of Technology

The dependence of lattice parameter and order parameter for Cu3Au alloy is represented by the equation of state and the equation of order parameter. These equations in simple analytic form are obtained by the statistical moment method.

Numerical results of the lattice parameter and the order parameter from obtained equations in different temperatures and pressures are in good agreement with experiments.

PA-38. Equation of State and Thermal Expansion of Metals with FCC Structure:Applications to Cu, Ag, Au, Al and Ni

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(1) Le Qui Don University of Technology
(2) College of Armor
(3) Hanoi National University of Education
(4) Hanoi University of Trade Union

The equation of state, the expressions of lattice parameter and thermal expansion coefficient in general form are obtained by the statistical moment method. Applying to Cu, Ag, Au, Al and Ni metals, we determine these properties in simple analytic form for each metal. Numerical results for the thermal expansion coefficient of these metals in different temperatures and pressures are in good agreement with experiments.

PA-39. Paramagnetic Susceptibility of Metals in the Theory of Q-Deformed Fermi- Dirac Statistics

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(3) Tank Armour Officers Training School, Tam Duong, Vinh Phuc.

Contribution of the free electrons to the paramagnetic susceptibility of metals at low temperature is investigated by using the q-deformed Fermi-Dirac statistics. Besides the general Pauli term, in our analytic expression of the paramagnetic susceptibility, the contribution of the q-deformed is also taken into account. Our numerical evaluation for some typical metals Na, K, Cs, Rb and Ba shows the adequation with one measured in experimental. In the low temperature limit, we also pointed out the weakly

temperature dependence of the paramagnetic susceptibility of the metals.

PA-40. Investigation of the Vitrification Process of Monatomic Lennard-Jones System with Free Surfaces.

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Glass formation in simple monatomic LJ system with free surfaces has been studied by molecular dynamics (MD) simulations. Glass with two free surfaces is obtained by cooling from the melt. Atomic mechanism of glass formation is monitored via spatio-temporal arrangement of solid-like atoms in the system upon cooling. Solid-like atoms are detected using the Lindemann freezing-like criterion. Free surfaces significantly enhance atomic mobility in the system compared to that of the bulk and induce the formation of so-called layer structure of the interior of both liquid and glassy states. The temperature dependence of layering structure and the origin of layering is discussed. We found three characteristic temperatures related to the vitrification process. Temperature dependence of structure and various thermodynamic quantities of the system upon cooling is also presented and discussed via potential energy, radial distribution function (RDF), local bond-pair orders detected by Honeycutt-Andersen analysis, radial density profile and radial atomic displacement distributions.

PA-41. Isotopic effect in Debye-Waller factor of crystalline germanium

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In this work, the statistical moment method has been used to study the effect of isotopic mass difference on extended X-ray absorption fine structure (EXAFS) Debye-Waller factor of

crystalline germanium. We derived the temperature-dependent analytical expressions of the parallel mean-square relative displacement as well as the atomic mean square displacements of diamond-type crystals. Numerical calculations have been performed for two isotopes ^{70}Ge and ^{76}Ge in range of temperature from 20 K to 600 K. Our results are compared with previous studies by J. Purans et al. (Phys. Rev. Lett., 2008) and A. Sanson (Sol. Stat. Sci., 2010) and the good agreement is found.

PA-42. g - Deformed crystal lattice vibration

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In this paper we construct a g - Deformed crystal lattice vibration for kind difference atomic string, consider an energy spectrum of this vibration.

PA-43. The microstructure and diffusion in silica liquid under high pressure

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Abstract: the static and dynamic properties of silica (SiO2) liquid are investigated by molecular dynamics simulation. To clarify the anomalous behavior of diffusion under compression we have traced the evolution (the breaking/reconstruct of the bond Si-O) of the basic structural units SiOx (x=4, 5, 6) with time under pressure from 0 to 25 GPa. The investigation reveals that diffusion of atoms is due to the transition Si[n] -> Si[n+1] (here Si[n] mean Si atom bond with n oxygen atoms). There are two types of transition: 1/ the transition causes the exchange the coordinated oxygen atoms; 2/ the transition only leads to forward-backward movement of oxygen atoms between SiOx units. The results show that the diffusion coefficient is proportional the rate of transitions and concentration of SiO5 units. Besides, diffusion coefficient is also depended strongly on correlation effect that is characterized by the distribution of the transitions in model.

PA-44. Elasticity Modulus and Elasticity Constant for

Compounds of Quantum Crystals

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Using statistical moment method to study and calculate elasticity modules and elasticity constants of compounds of quantum crystals such as ArF, NeF, XeF, KrF and XeCl. Obtained results are compared with other calculations and experiments.

PA-45. Activation Volume for Diffusion in Silicon

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The activation volume is the difference between the volume of system in states have atom diffuse and have not. In this study, we used the statistical moment method (SMM) with the four order approximation expansion of interaction potential energy, i.e, we have mentioned the effects of anharmonic lattice vibration, to calculate activation volumes for self-diffusion and impurity-diffusion in silicon crystal. Numerical results for Si, B, P and As diffusion in silicon are performed and compared to experimental data showing the good agreement.

PA-46. Molecular dynamics simulation of the mechanical properties of amorphous aluminum and nano-crystal embedded in amorphous aluminum.

Nguyen Thi Trang, Le Van Vinh and Pham Khac Hung
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We present the simulation of amorphous aluminum and nano-crystal embedded in amorphous aluminum using molecular dynamics method with Sutton-Chen version of the embedded method potentials. The elastic and plastic properties of these materials were investigated by applying uniaxial deformation. The results show that the density and nano-crystalline size

affect on the mechanical properties of materials.

PA-47. Thermodynamic properties of some rare-earth alloys

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Thermodynamic properties of rare-earth alloys have been studied using staistical moment method. The analytic expressions of the Helmholtz free energy and thermodynamic quantities were obtained. Present SMM results of nearest neighbor distance, linear thermal expansion coefficient and specific heats at constant pressure for Al2Ce3, AgCe3, Th(1-x)Cex ... are compared with the experimental results.

PA-48. Thermodynamic properties of ceria thin film : temperature and pressure dependence

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The moment method in statistical (SMM) dynamics is used to study the thermodynamic quantities of the CeO2 thin films taking into account the anharmonicity effects of the lattice vibrations and influence of high pressure. The nearest neighbor distance, thermal expansion coefficient, bulk moduli, specific heats at the constant volume and constant pressure of the CeO2 thin films are calculated as a function of the temperature and pressure The SMM calculations are performed by using the Buckingham potential for the CeO2 thin films .In the present study, the influence of temperature, pressure and thicknese on the thermodynamic quantities of CeO2 thin film have also been studied, using three different interatomic potentials We discuss the temperature, pressure, and thicknese dependences of the thermodynamic quantities of the CeO2 thin films and compare our calculated results with those of the experimental results.

PA-49. The spatial heterogeneity and anomalous slowdown for dynamics in silica liquid

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In this paper we study the spatial heterogeneity and anomalous slowdown for diffusion in silica liquid by means of molecular dynamic simulation. The model consisting of 1998 particles and using the BKS potential has been constructed at the temperature from 2600 to 4500 K. Furthermore, we track the evolution of network units with x=4, 5 and 6 over different time. The simulation shows that the diffusivity depends strongly not only on the rate of the exchanging the coordinated oxygens, but also on the correlation effect. This effect is caused by the specific distribution of the exchanging coordinated oxygens through the space which leads to spatially heterogeneous dynamics in the liquid. To quantify the observed effects we have calculated the correlation coefficient F and h . Analyzing the temperature dependence of both quantities F and h we found that the slowdown in dynamics near glass transition point is ascribed from percolation of the domains where high frequent exchanging coordinated oxygens occurs.

PA-50. Monte Carlo Simulation of the Phase Transition in a Shelf-Organized System

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In this work, we introduce a new model of shelf-organized system with including some physical interaction between the individuals, such as Morse and chemical potentials. The individuals can move freely in a square lattice of linear size L, and its velocity is determined by a 2D vector in the (x, y) plane with a constant absolute. The main parameter is the average velocity of the individuals which is considered as the order parameter of XY spin system. Using Monte-Carlo simulation method, we show clearly two phase transition at low and high noise (η). The transition at low noise corresponds to the schooling/flocking behavior, and that at high noise corresponds to the runaway behavior. The

simulated results are in good agreement with the experimental observations of fishes.

PA-51. Quá trình khuếch tán ngược và phương pháp chống ô nhiễm khí quyển do bụi và khí thải công nghiệp

Vu Ba Dung
Hanoi University of Mining and Geology

Khuếch tán là một trong những quá trình cơ bản và phổ biến nhất của tự nhiên. Lý thuyết Fick cho rằng chiều của dòng khuếch tán luôn ngược chiều gradient nồng độ (quá trình khuếch tán xuôi - forward diffusion). Tuy nhiên, trong một số trường hợp có thể xảy ra quá trình khuếch tán ngược (backward diffusion), tức là dòng khuếch tán cùng chiều với với gradient nồng độ. Phương trình mô tả quá trình khuếch tán ngược và hệ số khuếch tán âm đã được các tác giả được đưa ra và thảo luận trên cơ sở lý thuyết nhiệt động lực học không thuận nghịch và. Từ đó các tác giả đã đưa ra một phương pháp khống chế ô nhiễm bụi và khí thải công nghiệp trong khí quyển.

PA-52. Backward Diffusion Process and the Method of Control of Polluted Atmosphere by Dust Ad Industrial Exhaust

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Ha Noi University of mining and Geology

The diffusion is the best elementally and general processes in nature. Fick law saw that diffusion currents are opposite direction of concentration gradient (forward diffusion). However, in some cases the backward diffusion could happening, that's diffusion currents are the same direction of concentration gradient. Base on irreversible thermodynamic theory the backward diffusion is presented and discussed by authors, and once method of control of polluted atmosphere by dust and industrial exhaust are also recommended.

PA-53. Effects of ribosomal exit tunnel on protein's cotranslational folding

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In vivo, folding of many proteins occurs during their synthesis in the ribosome and continues after they are released from the ribosomal exit tunnel. In this research, we investigate the confinement effects of the ribosome on the cotranslational folding of protein 1PGA by using a coarse-grained model and molecular dynamics simulation. The exit tunnel is modeled as a hollow cylinder attached to a plane surface whereas a Go-like model is adopted for the protein. Our results show that protein's secondary structures including the alpha-helix and the beta-hairpin are able to formed within the exit tunnel and the formation of tertiary structures follow two different folding routes.

PA-54. Therapy Model for Long-term Treatment of HIV Infection

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We analyze the effectiveness of HIV infection therapies with different types of drug. Here, the drug effect are modelled as a periodic function with the period of one day. It appears that linear-release drug is more appropriated than other therapies. The obtained result might be useful for HIV treatment.

PA-55. Characterization of G Protein Coupled Receptors through the use of bio- and chemo- informatics tools

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G-protein-coupled receptors (GPCRs) are the largest membrane-bound receptor family expressed by mammalians

(encompassing more than 1% of the genome). They are involved in an enormous variety of intra- and extracellular signaling, including detection of light, sense of smell, neurotransmission, inflammation, and cardiac and smooth muscle contractility [Kroeze et al., J Cell Sci 116,4867 (2003); Sakmar et al., Curr Opin Cell Biol 14, 189 (2002)]. Ligand (or photon) binding to GPCRs activates a cascade of events, producing an electrical signal as output. They are of utmost pharmaceutical relevance, being the targets of almost 30% of all marketed drugs [Landry and Gies, Fundam Clin Pharmacol 22, 1 (2008)]. The aim of this study is to perform a systematic and detailed analysis of sequence-structure relationships of known GPCR structures. A web-server for the automatic modeling and ligand docking of GPCRs at different activation states has been developed. Based on the modeling and docking results, we perform the MM/CG simulation for the obtained receptor/ligand complexes for checking the stability of the ligand in binding site.

PA-56. Folding of proteins in a presculpted free energy landscape

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In recent years, extensive studies have indicated that the free energy landscape of proteins is largely determined by the symmetry of a tube and geometrical constraints played by the hydrogen bonds. In this study, we investigate the role of hydrophobic interaction in the folding of proteins in this presculpted free energy landscape. We consider two models for the hydrophobic interaction: the HP model for hydrophobic (H) and polar (P) sequences, and the Go model as an idealized system with optimized potentials for folding to a given native structure. Monte Carlo simulations are carried out for two sequences of length of 48 amino acids, whose ground states are a three-helix bundle and a GB1-like structure. We found that for systems of the same native state,

folding of the HP sequence is much more complex than the Go model. Comparison of the two models gives us insights into the role of hydrophobic interaction and sequence specificity in protein folding.

PA-57. Simple information measurement model for financial market

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it has been used since longtime some temperature terms for financial market, such as "hot", "cold", "iced". but there has not been built yet a model to measure the market temperature. as the continue of the previous work which has been presented about the boltzmann and gaussian model, here comes the idea about the information measurement for financial market. a simple model has been proposed, in which some characteristic parameters of financial market have been used to measure market temperature

PA-58. pH-Dependence of the Optical Bio-Sensor Based on DNA - Semiconductor Graphene Nanoribbons

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The pH dependence of the optical biosensor from DNA and semiconductor graphene nanoribbons (SGR) is investigated. Heller et al (Science 311, 508 (2006)) have demonstrated the first model of this kind of nano biosensors by wrapping a piece of double-stranded DNA around the surface of single-walled carbon nanotubes (CN). This new type of optical biosensor in the first time can be placed inside living cells and detect trace amounts of harmful contaminants using near infrared light. In our design model, instead of CN with cylinder shape we take semiconductor graphene nanoribbons (SGR) with flat geometry. Using the simple exciton theory in nanostructures, the periodic boundary conditions neglecting the edge effect, and the phenomena of B-Z structural phase

transition of DNA, we investigate working principle and pH dependence of this new class of optical biosensor DNA-SGR responded to the presence of target ions. We've shown the range of parameters for workable conditions of this biosensor was indicated that the solution should have pH from 6 to 9, which is applicable for the living environments

PA-59. Studying the Mechanical properties of Neuroglobin by Computer Simulation

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The discovery recently of neuroglobin (Ngb), expressing in the cytoplasm of nerve cells in the brain and in the retina of vertebrates, is a identified member of the globin superfamily. The function of neuroglobin depends not only on its structure, but also on mechanical properties. In this study, we combine the Zacharias model and Morse potential for investigating the flexibility of neuroglobin. Throughout the simple model, our results show the suitable with other works.

PA-60. Phase Transition in an Ising Spin Glass Face-Centered Cubic Lattice

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We study the nature of the phase transition in the face centered cubic (FCC) lattice with the Ising spin glass model. With a standard Monte-Carlo method and the powerful Wang-Landau flat-histogram method, we carry out in this work intensive simulations with many value of p(%) being the ratio of number of ferromagnetic bonds and antiferromagnetic bonds. We show that the first-order transition has been destroyed with a tiny amount of ferromagnetic bond p ~ 0.01%. With increasing p, the antiferromagnetic phase

changes to spin glass and then to ferromagnetic phase. Various physical quantities such as energy, specific heat, magnetization and susceptibility are shown and discussed

PB-1. The Spherically – Symmetric Pressure free Collapse of the White - Black Hole in the Vector Model of Gravitational Field

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(1) University of Thu Dau Mot
(2) University of Natural Sciences –Vietnam National University , Ho Chi Minh City

In this paper, we investigate the spherically – symmetric pressure collapse of a white – black hole in the vector model of gravitational field from the point of view of an observer at infinity and on the surface of the star. The obtained results have many interesting differences compared with that in the spherically – symmetric pressure collapse of the black holes. We have also obtained the metric of space – time in the white - black hole in modified Eddington – Finkelstein coordinates and modified Kruskal – Szekeres coordinates.

PB-2. Isospin dependence of the pressure of asymmetric nuclear matter

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Isospin dependence of the pressure of asymmetric nuclear matter in the extended Nambu-Jona-Lasinio (ENJL) model is studied by means of the effective potential in the one-loop approximation. The equations of state (EOS) starting from the effective potential is investigated. Our numerical results show that the critical temperature for the phase liquid-gas transition decreases with the increasing neutron excess.

PB-3. Higgs sector in the Next Minimal Supersymmetric Standard Model

Nguyen Chinh Cuong
Hanoi National University of Education

To solve the μ problem of Minimal Supersymmetric Standard Model (MSSM), single field S is added to build Next Minimal Supersymmetric Standard Model (NMSSM). Vacuum enlarged with non-zero vevs of the neutral-even CP is the combination of $ H_u$, $ H_d$ and S. The scalar part of $\hat{S}$ combined with neutral scalar parts of $\hat{H}_u$ and $\hat{H}_d$ in the real parameters (CP violation passed) creates three neutral scalar particles including one particle of even CP and two particles of odd CP. The result shown that the higgs sector of NMSSM varies much compared with MSSM and it contains important information about the CP violation of this model.

PB-4. The effects of renormalzation evolution group on a S_4 flavor symmetry and leptogenesis

Dang Trung Si and Nguyen Thanh Phong
Cantho University

We study the supersymetric seesaw model in a S_4 based flavor model. It has been shown that at the leading order, the model yields to exact tri-bimaximal pattern of the lepton mixing matrix and zero lepton-asymmetry of the decays of heavy right-handed neutrinos. By considering the renormalization group evolution (RGE) from high energy scale (GUT scale) to low energy scale (seesaw scale), the off-diagonal terms in the combination of the Dirac Yukawa-coupling matrix can be generated and the degeneracy of heavy right-handed Majorana neutrino masses can be lifted. As a result, the flavored leptogenesis successfully realized. We also investigate how the effective light neutrino mass m_{ee} associated with neutrinoless double beta decay can be predicted along with the neutrino mass hierarchies by imposing experimental data on the low-energy observables. We find a link between the leptogenesis and the neutrinoless double beta decay characterized by m_{ee} through a high energy CP phase, which is correlated with the low energy Majorana CP phases. It is also shown that the effects of RGE on leptonic mixing angles are negligible

PB-5. S_4 flavor symmetry with soft-breaking and physical consequences

Truong Trong Thuc and Nguyen Thanh Phong
Cantho University
We study the supersymetric seesaw model in a S4 based flavor model. It has been shown that at the leading order, the model yields to exact tri-bimaximal pattern of the lepton mixing matrix and zero lepton-asymmetry of the decays of heavy right-handed neutrinos. By introducing a soft-breaking term in Dirac-neutrino mass matrix, a non-zero Ue3 is generated leading to the non-zeros of mixing angle ⊟13 and Dirac CP violating phase ⌐CP, and we also obtained the deviations of the values ⊟12 and ⊟23 from their tri-bimaximal values. In addition, non-zero lepton asymmetry from the decays of right-handed neutrinos is generated, as a result, by a reasonable choice of model parameters compatible with low-energy data, the baryon asymmetry of the Universe is successful generated through flavored leptogenesis

PB-6. Electromagnetic detection of heavy radions

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(3) Trường Đại học Sư Phạm Hà Nội Số 136 Xuân Thủy, Cầu Giấy, Hà Nội
An attempt is made to present some experimental predictions of Randall-Sundrum (RS) model with the heavy radions. We calculate the total cross-section for photon-radion conversions in external electromagnetic fields, namely strong magetic fields, wave guide and resonant cavity. The radion mass is chosen in the range of Higgs mass in the standard model, the required VEV (Ĩ›Ñ„) is about 0.68 TeV. We have found some resonant conversions in which cross-sections are much enhanced, which can be measurable in current experiments.

PB-7. Probing neutron skin in the nuclear charge exchange reaction

Bui Minh Loc(1), Dao Tien Khoa(2), Dang Ngoc Thang(2), and Le Xuan Chung(2)
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The two-channel coupling formalism was used to reproduce the proton elastic scattering and (p, n) charge exchange exciting 0+ isobaric analog state ((p, n)IAS) reaction data. The nucleon optical potential and (p, n)IAS form factor were calculated by folding model using the density- dependence CDM3Y6 interaction and nuclear ground state density from analysis of the high- energy 208Pb(p, p) data. Our result indicates that the neutron skin thickness and also the nuclear symmetry energy at low nuclear matter densities can be determined by precise measurements and a good description for (p, n)IAS.

PB-8. Properties of Yang-Mills field with Axially Symmetric External Color Charge Sources

Nguyen Quoc Hoan
Hanoi University of Science and Technology
We present solutions of Yang-Mills equations with two point color charge sources and for topological indices n > 2. The space distributions of corresponding field strengths and energy density are simulated and plotted. The dependence of the field strengths and the total energy on topological indices is discussed. By using the same algorithm of solving we obtain the solutions for the Yang-Mills field due to a series of color point charges which lie in a straight line.

PB-9. Non - Abelian classical Solution of Yang-Mills - Higgs Theory

Nguyen Van Thuan
Hanoi National University of Education
In this paper, we analyze a non - Abelian extension of the Yang - Mills - Higgs action for the SU(2) group. We obtain a non - Abelian classical solution for the SU(2) Yang - Mills fields coupled with two Higgs fields. We also find the energy expression of this solution. Some particular cases of the

solution are considered.

PB-10. Lepton flavor violation in the minimal supersymmetric 331 model.

Pham Thuy Giang(1), Le Tho Hue(1), Do Thi Huong(1), Hoang Ngoc Long(1) and Nguyen Huy Thao(2)
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We establish formulas to calculate lepton flavor violating processes in the economical supersymmetric 331 model such as branch ratios of Higgs decays to (muon, tauon) and tau to three muons. By numerical analysis these formulas, we also show that the first process can be detected in present experiments but the second is too small to detect.

PB-11. An eikonal representation for scattering amplitude of the dirac particles on smooth potentials and quasipotential equation

Nguyen Suan Han(1) , Nguyen Nhu Xuan(2) , Phan Thi Giang(1)
(1) Vietnam National University, Hanoi, Department of Theoretical Physics
(2) Le Qui Don Technical University - Hanoi

By the Logunov-Tavkhelidze quasipotential equation the deduction of an eikonal representation for scattering amplitude of the spin Â½ particles on smooth potentials is performed. The discussion proceeds within the framework of the two-component description, and on the basis of the Dirac equation.

PB-12. A mechanism for mass creation from space-time extradimensions

Dao Vong Duc(1) and Nguyen Mong Giao(2)
(1) Institute of Physics, Hanoi
(2) Institute of Physics, HCM City

In this work we consider a mechanism for the creation of particle mass in space-time with extradimensions. It is based on the periodicity condition dictated from the compactification

of extradimensions. The resulting mass of each particle is completely determined by some function of compactification length. It is also shown that the exsistence of tachyon having negative squared mass is closely related to time-like extradimensions

PB-13. The q– Deformed Bose – Einstein Statistics Distribution With Phase Transformation Temperature of Superconductor

Luu Thi Kim Thanh, Tran Thai Hoa, Nguyen Minh Vuong
Hanoi Pedagogical University No.2

We apply the q-deformed Bose – Einstein statistics distribution to determine Bose - Einstein condensation temperature, we obtained the result that Bose - Einstein condensation temperature not only depends on the concentration but also depends on parameters deformation q. Then the phase transformation tempearature of superconductor for Zinc is derived.

PB-14. Stochastic Processes in Quantum Optics

Cao Long Van(1), Dinh Xuan Khoa(2), Doan Quoc Khoa(3), Wieslaw Leoński(1), Nguyen Thanh Vinh(2)
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(3) Pedagogical University of Quang Tri, Vietnam.

A typical problem of Quantum Optics is the resonance interaction of several lasers with an atomic (molecular) system, where laser lights are fluctuating in amplitude and phase, and collisions between the elements of the system are frequently taken into account. Because of the very complicated (or even obscure) microscopic nature of all relevant relaxation mechanisms, they are modeled by classical time-dependent random processes. Thus, the dynamical equations describing the problem become stochastic differential equations. Except in certain specific cases, as in the case of the chaotic white noise, these equations cannot be solved in finite terms. When the coherence time of the noise (laser light or collisions) is comparable time scale of the atomic system, obtaining an

exact solution of such stochastic equations is very difficult. One of the most useful stochastic models has been proposed by Wodkiewicz and co-workers [1, 2, 3, 4] and is based on the so-called pre-Gaussian process. It is composed of a finite number of independent two-step random telegraph signals. The strength of the pre-Gaussian formalism derives from the exact solubility of wide classes of stochastic equations. Even in the case of one random telegraph signal one can obtain several interesting results concerning various phenomena in Quantum Optics. In our talk we would like to present some of them.

PB-15. Cellular Automata and Matlab

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Stephen Wolfram published in 1983 the first of a series of papers which investigate systematically a very basic but essentially unknown class of cellular automata, called elementary cellular automata. He published further in 2002 his result in a book A New Kind of Science, which leads to very important conclusion that the discoveries about cellular automata did not concern isolated facts, but also have significance for other disciplines of science [1]. On other hand, MATLAB language with a wide range of applications in solving technical problems is very useful in analyzing, visualizing and exploring data. In some cases it is even faster than traditional programming languages as C, C++, Fortran In this paper, we shall reconsider the system composed of a large number of two-level subsystem investigated in [2] which models various problems of contemporary physics and engineering, sometimes even social sciences. Several results obtained there are reproduced in a faster and effective way. In the next, we extend this model to the two-dimentional case, where some interesting results are obtained and discussed in detail. All calculations are realized by MATLAB language. Obtained results show the universality and effectiveness of CA formalism as a tool for dissipation investigations which is

nicely demonstrated by MATLAB

PB-16. Higher-order nonclassical properties of two-mode nonlinear charge coherent states

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In this paper, the higher-order squeezing and the higher-order antibunching in two-mode nonlinear charge coherent states are studied. The analytical expressions of conditions for existing the higher-order squeezing and the higher-order antibunching are obtained. It is showed that these states exhibit all the higher-order squeezing, the higher-order antibunching behaviors. However, the higher-order antibunching may or may not exist depending on the parameters of these states.

PB-17. Joint Remote State Preparation with Absolute Security

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Joint remote state preparation (JRSP) is a quantum network protocol which, by means of local operations and classical communication, allows a number of separate senders to cooperate in preparing a quantum state for a distant receiver, usually via shared maximal entanglement as the quantum channel. The security level of all the existing JRSP protocols is that any subgroups of the senders cannot identify the state to be prepared, but the whole group can. Here, we show that, in order to avoid leakage of full information to the whole group of senders when they all reveal their partial information to each other, non-maximal entanglement should be used together with judicious information splitting. As an illustration, we consider the case of two-sender JRSP of an arbitrary two-qubit state employing minimum non-local resource in terms of three Bell-like pairs. We design two explicit protocols. The first protocol requires the receiver to have an ancilla and to be capable of performing a quantum gate followed by a collective measurement on the ancilla and the part of a priori shared entanglement, while the second protocol does not at

all. A surprising fact we find out is that the second protocol is not only simpler in execution but also succeeds with a higher probability than the first one. More interestingly, the second protocol's security is absolute in the sense that the state of concern can by no means be reconstructed even though all the three participants (i.e., two senders plus a receiver) collude with each other.

PB-18. Nghiệm phương trình dao động tử ngẫu nhiên Chaos

Phan Hoang Chuong
Đại học CNTT-ĐHQG TPHCM

Chuyển dộng Chaos, gồm chuyển động ziczac và dao động, tạo quỹ đạo xác suất. Trước đây đã xét chuyển động ziczac dạng khuyếch tán nhiệt, nay xét dao động với việc tìm nghiệm phương trình Schrodinger cho dao động tử với biến tọa độ ngẫu nhiên Wiener, sử dụng giải tích ngẫu nhiên đưa về phương trình Hermit, dùng phương pháp Monte-Carlo và khai triển Ito-Taylor tìm nghiệm trường hợp 1 chiều với nguồn độc lập thời gian.

PB-19. New Two-Mode Photon-Added Displaced Squeezed States

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(2) Center for Theoretical Physics, Institute of Physics, 10 Dao Tan, Hanoi

We introduce new nonclassical states by simultaneously adding arbitrary numbers of photons to both modes of the two-mode displaced squeezed state. Our states thus contain as a particular case those in [J. Phys. B 34, 1059 (2001)] in which only photons of either mode are added. We study various nonclassical behaviors of the new states. Especially, we also deal with the quasi-probabilistic distribution function of these states in phase space representation.

PB-20. Production of free-Travelling trio Coherent State

Truong Minh Duc(1), Tran Quang Dat(1) and Nguyen Ba An(2)

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Trio coherent states were introduced in [1] and schemes for their generation as vibrational states of a trapped ion inside a crystal were proposed in [2]. To be useful in global quantum information processing, however, trio coherent states should be in form of three optical fields that can travel in any directions in open space. Here, we design a possible experimental scheme to produce such a free-traveling trio coherent state by using four cross-Kerr media, four 50:50 beam-splitters, two phase-shifters and three on/off detectors. We also discuss in detail the feasibility of our scheme. [1] N. B. An and T. M. Duc, J. Opt. B 4, 80 (2002). [2] N. B. An and T. M. Duc, Phys. Rev. A 66, 065401 (2002); H. S. Yi, N. B. An and J. Kim, Phys. Lett. A 315 , 6 (2003).

PB-21. Bistability characteristics of the reflected signal through a Symetric Nonlinear Michelson Interferometer

Nguyen Manh An, Nguyen Van Hoa and Nguyen Van Thoai
Hong Duc University
General relationship between the intensity of the input signal and the intensity of the reflected signal through a Symmetric Nonlinear Michelson Interferometer (SNMI) were calculated and investigated. That we can confirm that SNMI operating as an optical bistable device if we select the appropriate structural parameters. References [1]. Demtroder W (1982), Laser Spectroscopy, New York. [2]. Sakata H. (2001), “Photonic analog-to digital conversion by use of nonlinear Fabry -Perot resonators”. Appl.Phys., 40, 240-248 [3]. N. V. Hoa, H. Q. Quy, Proc. of The GVS6, Chemnitz, May 25-31 (2003). [4]. H. Q. Quy, V. N. Sau, N. V. Hoa, Commun.in Phys. Vol 13, No.3 (2003) pp. 157-164. [5]. H. Q. Quy, N. V. Hoa, Proc. of The GVS7, HaLong, March 28-April 3 (2004). [6]. N. V. Hoa, H. Q. Quy, V. N. Sau, Commun.in Phys. Vol 15, No.1 (2005) pp 6-12.

PB-22. Bistable Characteristic of signal transmitted through the symmetric Nonlinear Michelson Interferometer

Nguyen Manh An, Nguyen Van Hoa and Nguyen Van Thoai
Hong Duc University
Symmetric Nonlinear Michelson Interferometer (SNMI) operating as optical bistable device has been theoretically investigated. The general output-input intensity relation is introduced for case the output signal transmitted through SNMI. The bistable characteristic (hysteresis) is calculated and presented for some cases the structural parameters were selected specifically. References [1]. Demtroder W (1982), Laser Spectroscopy, New York. [2]. Sakata H. (2001), "Photonic analog-to digital conversion by use of nonlinear Fabry-Perot resonators". Appl.Phys., 40, 240-248 [3]. N. V. Hoa, H. Q. Quy, Proc. of The GVS6, Chemnitz, May 25-31 (2003). [4]. H. Q. Quy, V. N. Sau, N. V. Hoa, Commun.in Phys. Vol 13, No.3 (2003) pp. 157-164. [5]. H. Q. Quy, N. V. Hoa, Proc. of The GVS7, HaLong, March 28-April 3 (2004). [6]. N. V. Hoa, H. Q. Quy, V. N. Sau, Commun.in Phys. Vol 15, No.1 (2005) pp 6-12.

PB-23. Using a Nonlinear Coupler to Sort a Sequence of Weak and Strong Pulses

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(2) Quangnam University
In this article, the nonlinear threshold of a nonlinear coupler is defined based on an investigation into the dependence of the power transfer efficiencies of a nonlinear coupler on the input intensity. The sorting of a sequence of weak and strong pulses by the nonlinear coupler is simulated.

PB-24. Affect of the Distribution of Molecular Alignment to the Molecular Imaging by the Tomographic Method

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We consider the affect of the distribution of molecular alignment to the quality of the molecular imaging. First, we

calculate the high-order harmonic spectra of N2 by the Lewenstein model with consideration of the distribution of the molecular alignment and analyze the dependence of the HHG on the alignment angle. Then we extract the HOMO of N2 from the HHG spectra by the tomographic method and compare with the ones obtained by the same method from experimental HHG data. The results show that there is a distribution of alignment that gives a very good comparison between the N2 HOMO images obtained from the simulated and experimental data. This explains why the previous simulation with the perfect molecular alignment could not lead to suitable image of N2.

PB-25. Femtosecond supercontiuum generation in short pieces of a microstructured silica fiber

Le Cong Nhan
Sai Gon University

Microstructured optical fibers (MOF) are a new source for supercontinuum (SC) generation. The micro structure of MOF can confine the laser pulse in a small diameter of silica and the zero dispersion wavelength (WZD) favors the soliton propagation. Those enhance the non linear phenomena because a high excitation density is created and kept during the propagation. In this work, we study the dependence of SC spectrum on the fiber lengths and show the role of difference nonlinear phenomena like: self phase modulation, cross phase modulation, four wave mixing, Raman stimulation, soliton propagation…which are responsible for the SC generation.

PB-26. Tối ưu hóa thông số tự do của phương pháp toán tử cho bài toán nguyên tử Hydro

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Chúng tôi sử dụng phương pháp toán tử FK để giải bài toán nguyên tử Hidro khi không có trường ngoài theo sơ đồ vòng lặp, kết quả bài toán hội tụ rất nhanh về nghiệm chính xác

bằng số cho cả hàm sóng và năng lượng. Chúng tôi chỉ ra rằng tốc độ hội tụ của bài toán phụ thuộc vào tham số tự do. Vùng giá trị tối ưu của tham số tự do (vùng cho tốc độ hội tụ cao nhất) được chỉ ra rõ ràng cho từng trạng thái của nguyên tử Hidro (trạng thái cơ bản, trạng thái kích thích thứ nhất và thứ hai). Một điều kiện phổ quát để chọn tham số tự do được đưa ra, kết quả chọn tham số tự do theo điều kiện này khá phù hợp với vùng giá trị tối ưu của tham số tự do cho tốc độ hội tụ cao nhất.

PB-27. Polariton condensate in real space

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Polariton condensate is studied in the Gross-Pitaevskii equation approximation. The pattern formation in the polariton condensate is investigated under different conditions of pumping and interacting modes. A scenario of the polariton condensate is presented by mean of evolution of the statistical characteristics.

PB-28. Extracting the inter-atomic distance by the use of the electron interference effect in the high-order harmonic spectra of CO2

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We analyze the electron interference effect in the high-order harmonic spectra of CO2 molecule for not only the parallel but also the perpendicular components and show how to apply this effect to extracting the inter-atomic distance. The simulation gives a very good precision for the O-O distance and we propose a method for an experimental confirmation based on the simulated data.

PB-29. On the Hurwitz's 1, 2, 4, 8 theorem and applications

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We review the Hurwitz's theorem proved in 1898 that every normed division algebra with an identity is isomorphic to one of the following four algebras (R, C, H and O) orresponding to the real numbers, the complex numbers, the quaternions and the octonions. First, we check the statement from this theorem that the product of the sum of n squares by the sum of n squares is the sum of n squares in a bilinear way only when n is equal to 1, 2, 4 or 8 by the numerical method. Then we discuss the relation of this theorem to the fundamental problem of physics such as the existence of the monopoles. In the 2-dimensional space there is no monopole field (the case of 1). In the 3-dimensional space the monopole is the Dirac's magnetic monopole (the case of 3). In the 5-dimensional space the monopole is the Yang's SU(2) monopole (the case of 4). The last is the case of 4 for the 9-dimensional space where the SO(8) monopole exists.

PB-30. Fidelity of quantum teleportation through the decoherence channels

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In this paper, different from the Physical Review A 78, 012312 (2008), we have fully studied the quantum fidelity when performing quantum teleportation an unknown quantum state via the GHZ or W decoherence channel due to interaction with the environment. Our calculations indicate that the same decoherence channel, when preparing the GHZ state or W state as quantum channel, the GHZ state loses more quantum information than or less quantum information than the W state depends on the physical nature of the channel, type of decoherence channel and decoherence time. The results of the average fidelity is completely consistent with the quantum entanglement of quantum GHZ state or W state.

PB-31. Optically detected magneto-phonon resonance line-widths in rectangular quantum wires

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(2) Dong Thap University
(3) National Education Union of Vietnam
In this paper, we use the operator projection technique to obtain the general analytic expression for the absorption power of a electromagnetic wave caused by confined electrons in rectangular quantum wires (RQW). Optically detected magneto-phonon resonance (ODMPR) effect in a specific GaAs/AlAs RQW is investigated. Anomalous behaviors of the ODMPR spectra are discussed. From the graphs showing the dependence of the absorption power on the photon frequency, we obtain ODMPR line-widths as profiles of curves. Computational results show that the ODMPR line-widths are directly proportional to magnetic field, temperature and decrease with wire's size.

PB-32. First rotational spectroscopic observation of the 2^1Π state of NaLi

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The alkali-metal diatomic molecules have been attractive for both theoreticians and experimentalists because they have a relatively simple electronic structure. Their electronic structure is frequently considered by theoreticians as a very convenient model for introducing approximations which can be further applied to more complex molecular systems. From the experimental point of view, alkali-metal diatomic molecules with their main absorption bands lying in the visible and UV regions are very convenient objects for investigations with modern laser spectroscopy techniques. Investigations of alkali-metal molecules have recently experienced additional impetus since the formation of molecular Bose-Einstein condensates [1]. As in several experimental techniques

related to cold molecules involve optical excitation either in the formation or detection stages, a need of precise spectroscopic characterization for excited molecular states has arisen.

Among alkali-metal diatomic molecules, NaLi is particularly interested because it has permanent dipole moment, thus can therefore be manipulated with external electric fields. Experimental investigations for the NaLi molecule, however, encounter two dilemmatic problems. The first one is the spectral overlaps due to a large number of allowed electric dipole transitions between various rovibrational energy levels. The second one is the difficulty in producing NaLi molecules is gas phase due to a big difference in melting-point temperatures between Na and Li bulks. Up to date, number of studied electronic states is quite limited [3-8]. As was suggested by the Schawlow's group, the problem for spectroscopic overlaps could be surmounted by using the so called polarization labelling spectroscopy (PLS) technique [2]. Although the polarization spectra are Doppler limited but they are greatly simplified due to labelling process.

In this work, we report our PLS observation for NaLi. Over 730 spectral lines in the $21\Pi \leftarrow 11\Sigma+$ band up to near dissociation limit have been identified. To our knowledge, this is the first time the rotational structure of NaLi in the 21Π state has been resolved.

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(2009) 124307.

PB-33. Experimental determination of molecular constants for the 2^1Π state of NaLi

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The alkali-metal diatomic molecules with their main absorption bands in the UV-VIS region are very convenient for modern laser spectroscopy techniques. Experimental investigations for these molecules have further promoted since the emergence of molecular Bose-Einstein condensates (see [1] and references therein). As several experimental techniques related to cold molecules involve optical excitation either in the formation or detection stages, an accurate need of precise spectroscopic characterization of excited molecular states has arisen.

Among alkali-metal diatomic molecules, NaLi is particularly interested because it is the lightest hetero-nuclear type and has permanent dipole moment, thus can be manipulated with external electric fields. Several experimental investigations for NaLi were performed to study up to the 71Π excited states [2-7]. Although the 21Π state was investigated [4] but its rotational characterization was not described due to low resolution of experimental data.

In this work, we determinate molecular constants for the 21Π state of NaLi from set of 732 spectral lines [8]. Using the linear least-squares fitting method, an optimum set of molecular constants, which corresponds to dimensionless root mean of squares of deviation σ = 0.62 within 0.1 cm-1 experimental uncertainty, have been derived.

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PB-34. Population density distribution of vibrational levels in the 2^1Π state of NaLi molecule

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The advent of femto-second laser spectroscopy techniques opens ways to explore dynamical processes in molecules after optical excitations. The molecular dynamics has been now an interesting field for spectroscopists, biologists, and chemists in order to understand intermolecular/intramolecular transitions. As in experiments concerning to molecular dynamics, the population distribution of vibrational levels in the excited electronic states is crucial information for setting parameters [1]. Recently, alkali-metal diatomic molecules are particular interested for this kind of spectroscopic experiment because of their simple electronic structure and their spectra lying in UV-VIS region, which is easily excited by commercial laser sources. Therefore, knowing of vibrational population characterization for this kind of molecules is needed.

In this work, we calculate population density of vibrational levels up to the near dissociate limit of the 21Π of NaLi by using Numerov-Cooley method [2]. The confidence of calculation is tested by comparing Franck-Condon factors to

the experimental spectra of $21\Pi \leftarrow 11\Sigma+$ band system [3].

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PB-35. Construction of potential curve for the 3^1Π state of NaLi molecule by the IPA and DPOTFIT methods

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Knowing of potential energy curves (PEC) of diatomic molecules plays important role in atomic and molecular physics because it can provide information for prediction of atomic colissions, chemical bondings, and dispersion forces. Construction of PECs from experimental data therefore attracts great attention of spectroscopists. There are revelral ways to archieve this goal. Perhaps the simplest one is to fit the data to the simple Morse function in which only two adjustable parameters to be determined. More adjustable parameters can be introduced to get more flexible form of PEC, but however for modern accurate spectroscopic measurements such models are not sufficient enough for interpretation of overal data. Up-to-date, twoo methods for construction of a PEC which is satisfy a given accurate demand. The first one is the Inverted Perturbation Approach (IPA) which was proposed by Kosman et al [1] and Vidal et al [2] and then developed by Pashov et al [3]. The second method is to fit directly spectroscopic data to analytical

potential model, known as DPOTFIT, which was proposed by R.Leroy [4]. Though both methods are fully quantum mechanical but requirement in application is somehow different.

In this paper we present construction of PEC for the 31Π of NaLi molecule by means of IPA and DPOTFIT methods. Here, the previous PEC which was determined numerically by the semi-classical Rydberg-Klein-Rees method reported in the previous work [5] is employed as a trial. Some important aspects concerning to the constructed potential are discussed.

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PB-36. EIT enhanced Kerr nonlinearity in the five-level cascade scheme of Rb^85 atoms

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Recently, we have witnessed a growing interest on the creating nonlinear optical material of large Kerr nonlinear index of refraction since it can be used for many interesting applications, such as cross-phase modulation for optical shutters [1], self-phase modulation for generating optical solitons [2], four-wave mixing processes for frequency

conversion [3], entangled states for quantum information processing [4], and low light-level optical bistable devices [5]. In conventional Kerr material, its nonlinear index is so small so that the nonlinear effect is significant for strong light intensity, thus for short pulses. The advent of electromagnetically induced transparency (EIT) [6] has opened a promising way to enhance significantly Kerr nonlinearity of atoms around resonant frequency without absorption. Several works concentrated to the three-level atomic systems (see [7] and ref. therein) in which an intense laser light induces atoms to create an EIT window corresponding to a narrow region of giant Kerr index.

Extension of spectral region of EIT enhanced Kerr nonlinearity in atoms is straightforward to realized applications. In order to attain this goal, we propose to use a five-level cascade scheme in Rb85 induced by a light strong coupling laser under EIT condition. Using perturbation theory we derive an expression of the nonlinear Kerr index in an analytical form. Influence of parameters of coupling field, namely, frequency detuning and intensity, on the Kerr index is discussed.

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PB-37. EIT enhanced Kerr nonlinearity in the four-level lambda

scheme of Rb^85 atoms

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PB-38. EIT with double fano continuum and broad-band coupling laser

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In our previous paper [1], electromagnetically induced transparency (EIT) for ïŒ-like systems introduced in [2] has been considered, where the laser coupling light applied in the model is assumed to be a -correlated, Gaussian, Markov, stationary process (white noise) [3]. We now investigate a similar scheme, where the continuum involved in the problem is replaced by one with so-called double Fano structure [4]. We derive a set of coupled stochastic integro-differential equations which can be averaged exactly. This leads to the exact formula determining the stationary solution for the electric susceptibility. Dispersion and absorption spectra for EIT are found and compared with those obtained previously in [1,2,4]. References [1] K. Doan Quoc, V. Cao Long, W. Leoński, Phys. Scr. T147 (2012) 014008. [2] A. Raczyński, M. Rzepecka, J. Zaremba and S. Zielińska-Kaniasty, Opt.Commun. 266, 552 (2006). [3] V. Cao Long and M. Trippenbach, Z. Phys. B – Condensed Matter 63, 267 (1986). [4] W. Leoński, R. Tanaś and S. Kielich, J. Opt. Am. B4, 72 (1987).

PB-39. Study of Electrodynamic and Radiation Characteristics of a Coaxial and a Planar-Coaxial Vircator

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The results of experimental and theoretical investigations of microwave radiation excitation in coaxial vircator with a radially symmetric divergent beam are presented in the paper. The influence of system geometry and beam parameters on the formation of virtual cathode and emission characteristics has been conducted. Theoretical studies have been carried out using numerical simulation program based on particle-in-cell method. The dependence of current, frequency characteristics and radiation power on geometry and beam parameters has been obtained experimentally and numerically. In the experiment, using an input voltage pulse with peak value of 550 kV the average voltage obtained on the diode is 450 kA and the diode current is 50 kA, the peak value of output microwave power of coaxial vircator is observed to be over 300 MW in frequency band 2.95-3.1 GHz.

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DANH SÁCH TÊN VIẾT TẮT

Tên CQ viết tắt	Tên CQ đầy đủ
CĐ KT-KT Phú Lâm	Trường Cao đẳng KT-KT Phú Lâm
CĐ nghề CG và TL	Trường Cao Đẳng Nghề Cơ Giới Và Thủy Lợi
CĐCN Huế	Trường Cao đẳng Công nghiệp Huế
CĐCT HCM	Trường Cao đẳng Công thương Tp. HCM
CĐGD VN	Công đoàn Giáo dục Việt Nam
CĐSP Hà Nam	Trường Cao đẳng Sư phạm Hà Nam
CT CPTM Minh An	Công ty CPTM Minh An
ĐH An Giang	Trường Đại học An Giang
ĐH Bạc Liêu	Trường Đại học Bạc Liêu
ĐH Cần Thơ	Trường Đại học Cần Thơ
ĐH Công Đoàn	Trường Đại học Công đoàn
ĐH Đồng Tháp	Trường Đại học Đồng Tháp
ĐH Duy Tân	Trường Đại học Duy Tân
ĐH Hải Phòng	Trường Đại học Hải Phòng
ĐH Huế	Trường Đại học Huế
ĐH Mỏ HN	Trường Đại học Mỏ - Địa chất Hà Nội
ĐH Paris	Đại học Paris
ĐH Phạm Văn Đồng	Trường Đại học Phạm Văn Đồng
ĐH Quảng Nam	Trường Đại học Quảng Nam
ĐH Sài Gòn	Trường Đại học Sài Gòn
ĐH Tân Tạo	Trường Đại học Tân Tạo
ĐH Tây Nguyên	Trường Đại học Tây Nguyên
ĐH Thủy Lợi	Trường Đại học Thủy Lợi
ĐH Tiền Giang	Trường Đại học Tiền Giang

ĐH Vinh	Trường Đại học Vinh
ĐH Xây dựng	Trường Đại học Xây Dựng
ĐH Y Thái Bình	Trường Đại học Y Thái Bình
ĐH Zielona Gora Hà Lan	Trường Đại học Zielona Gora Hà Lan
ĐHBK HCM	Trường Đại học Bách khoa Tp. HCM
ĐHCN HN	Đại học Công nghiệp Hà Nội
ĐHCNTP Tp. HCM	Trường Đại học Công Nghiệp Thực Phẩm TP HCM
ĐHHĐ Thanh Hóa	Trường Đại học Hồng Đức
ĐHKH Huế	Trường Đại học Khoa Học Huế
ĐHKHTN HCM	Trường Đại học Khoa học tự nhiên Tp. HCM
ĐHKHTN HN	Trường Đại học Khoa học tự nhiên Hà Nội
ĐHKT Lê Quí Đôn	Trường Đại học Kỹ thuật Lê Quí Đôn
ĐHQG HCM	Phòng TN VLTT, Khoa Khoa Học Ứng Dụng, Trường Đại học Bách Khoa, Trường Đại học Quốc gia Tp. HCM
ĐHSP Đà Nẵng	Trường Đại học Sư phạm - Trường Đại học Đà Nẵng
ĐHSP HCM	Trường Đại học Sư phạm Tp. HCM
ĐHSP HN	Trường Đại học Sư Phạm Hà Nội
ĐHSP HN 2	Trường Đại học Sư phạm Hà Nội 2
ĐHSP Huế	Trường Đại học Sư phạm Huế
ĐHSP KT Vinh	Phòng Đào tạo, Trường Đại học SP Kỹ thuật Vinh
ĐHSP Thái Nguyên	Trường Đại học Sư phạm Thái Nguyên
ĐHSPKT Nam Định	Trường Đại học Sư phạm Kỹ thuật Nam Định
ĐHSPKT Vinh	Trường ĐHSP Kỹ thuật Vinh
ĐHTD Một	Trường Đại học Thủ Dầu Một
Đoàn 871 BQP	Đoàn 871 Bộ Quốc Phòng
HV KTQS	Học Viện kỹ thuật quân sự
HVPK-KQ	Học viện phòng không không quân

INC	Institut des Nanosciences et Cryogénie
ISIC Vietnam	ISIC Vietnam
JINR Dubna	Bogoliubov Laboratory of Theoretical Physics, JINR
NXBGD VN	Nhà xuất bản Giáo dục Việt Nam
QB	Quảng Bình
Sở GD&ĐT Quảng Ninh	Sở Giáo dục và Đào tạo tỉnh Quảng Ninh
Sở GD&ĐT Vĩnh Phúc	Sở GD&ĐT Vĩnh Phúc
SQ công binh	Trường Sỹ quan công binh
SQTTG	Trường sĩ quan tăng thiết giáp
SYSUniv.	SUN YAT SEN UNIVERSITY
TC Comm. Phys.	Tạp chí Communications in Physics
THPT Nam Đàn	Trường THPT Nam Đàn 2 Nghệ An
THPT Nghi Lộc	Trường THPT Nghi Lộc 3 Nghệ An
TPUni.	Tomsk Polytechnic University
UTE	Faculty of Electricity and Electronics, University of Technical Education
VKH&CN TT HCM	Viện Khoa học và Công nghệ Tính toán, Tp. HCM
VKHCNVN	Viện Khoa học và Công nghệ Việt Nam
VKHKT hạt nhân	Viện Khoa học và Kỹ thuật hạt nhân
VKHVL	Viện Khoa học Vật liệu
VNLNT VN	Viện Năng lượng nguyên tử Việt Nam
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VVL, HCM	Viện Vật lý, Tp. Hồ Chí Minh
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