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ACADEMIA SINICA**

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II

Review of Research Projects

GENERAL INTRODUCTION

The Institute of Physics was founded in Shanghai in 1928 and was reestablished in Taiwan in 1962, with Dr. Ta-You Wu as its first Director. The succeeding Directors of the Institute were: Dr. W. N. Wang (1976-1977), Dr. E. K. Lin (1977-1989), Dr. L. T. Ho (acting, 1989-1990), Dr. T. T. Tsong (1990-1999), Dr. Y. D. Yao (acting, 1999-2002), Dr. Maw-Kuen Wu (2002-2004), and Dr. S. P. Li(acting, 2004- present). In 1966, the Institute, together with the National Tsing-Hua University and the National Taiwan University, co-organized the Physics Research Center, under the auspices of the National Science Council, in order to promote physics research in Taiwan. In 1970, an interdisciplinary research program for atmospheric science and fluid mechanics was initiated in the Institute of Physics, and later a similar program for biophysical research in 1975. During the First Five-Year Plan (1981-5) of the Academia Sinica, the original two-story Physics Building was replaced by a four-story building at the same site in April, 1983. The Institute's scope of research was then further expanded to include theoretical physics, covering mainly field theory and particle physics, nuclear physics, and statistical and computational physics. Since the beginning of the Second Five-Year Plan (1986-91), the Institute has continued to grow, both in research staff and facilities. To meet the demands of rapidly growing research activities in the Institute, a new ten-story building immediately adjacent to the original building was completed in 1999. The Physics Building is named the "Ta-You Hall" to commemorate its first director, who passed away on March 4, 2000.

At present, the Institute has 38 research staff: 2 distinguished research fellows, 23 research fellows, 8 associate research fellows, 2 assistant research fellows, 1 research technologist, and 2 associate research technologist. The Institute also maintains 200 temporary employees, which include visiting scholars, postdoctoral research associates, as well as research assistants and graduate students. Current research areas can be grouped into three main categories: Nanoscience, Complexity, Medium and High Energy Physics. Specific interests are in the areas of particle physics and cosmology, experimental high-energy physics, nuclear physics, condensed-matter and surface physics, statistical and computational physics, biophysics, as well as fluid mechanics and nonlinear physics. The Institute of Physics is expected to play an increasingly important role in the development of physics and technology in Taiwan.



The Institute of Physics Logo

The logo for the Institute of Physics was the winning design from a logo submission contest held by the Institute. It was an idea born on April 15, 2003 by Dr. Chia-seng Chang, an Institute Fellow, with the following spirit in mind:

The letters I.O.P are drawn with the additive primary colors blue, green, and red, and they are placed in such a way that one can depict $G \cdot \epsilon \cdot h \cdot k$, the 4 fundamental constants which represent classical mechanics, electromagnetism, quantum mechanics, and statistical mechanics. With further imagination, one can conceive the number 1928 from the design, which is the year the IOP was founded.

Nanoscience Research Group

Nanoscience and nanotechnology have become the major research focus in the Institute. We have already built up our capabilities and expertise during the past few years. To further enhance our research strength we have decided that all our efforts and interests will be grouping into the following categories:

- (i) Development of state-of-the-art research tools for nano-science
- (ii) Synthesis and characterizations of nano-structures, nano-materials
- (iii) Manipulation and control of single atom and single molecules
- (iv) Theoretical modeling and simulations of nano-system

The followings are the research groups that involve in nanoscience researches and summaries of their research activities:

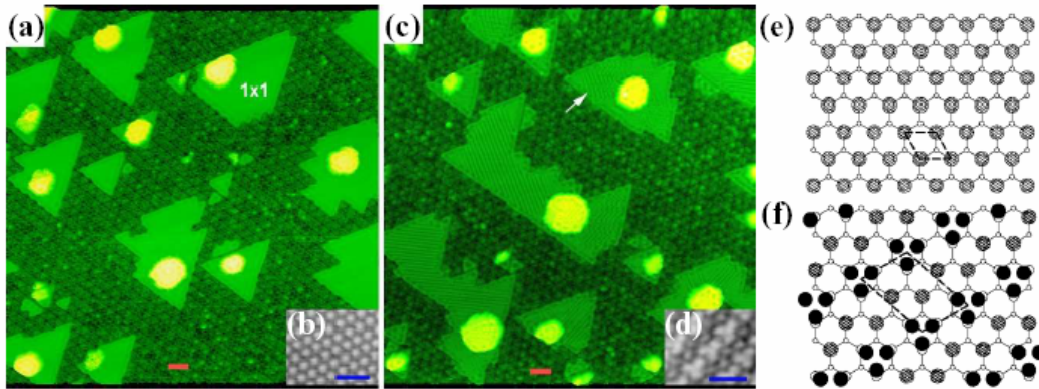
I. Surface Physics and Nanoscale Microscopy

This research group includes six faculty members (Tien-Tzou Tsong, Ching-Ming Wei, Jason Chia-Seng Chang, Ing-Shouh Hwang, Yeu-Kuang Hwu, Wei-Bin Su) and routinely maintains a size of around 20 researchers comprised of visiting scholars, post-doctors, assistants, and students. We have established several major research tools such as scanning tunneling microscopy (STM), atomic force microscopy (AFM), field ion microscopy (FIM), transmission electron microscopy (TEM), photoemission electron microscopy (PEEM), low energy electron diffraction (LEED), Auger spectroscopy (AES), x-ray microscopy and etc. In past years, our focus has been on studying surface dynamics, film growth mechanisms, principles of atomic manipulation, quantum phenomena associated with low dimensionality, and microscopic instrumentations. In next five years, we plan to make progress in

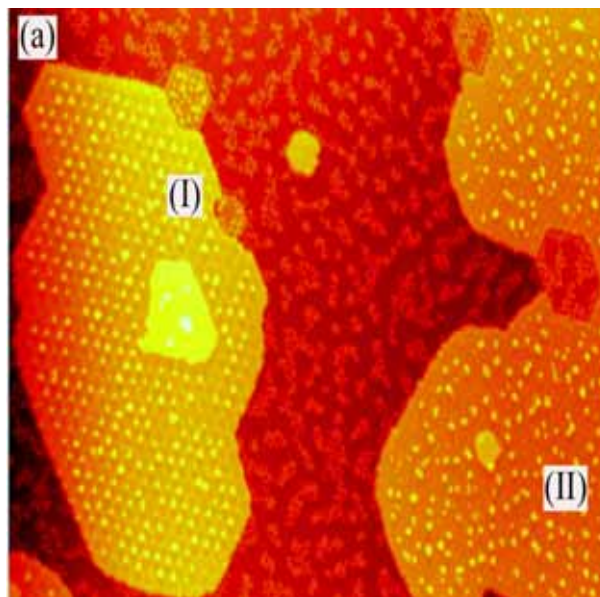
investigating the site-specific and shape-related properties of nanoscale objects with atom-resolvable STM; analyzing the real-time correlation between the functionality of a quantum dot or quantum wire and its structure with the TEM/STM combined system; designing quantum phenomena laboratory at the atomic scale with ultra-low temperature STM equipped with superconducting magnet; improving the resolution of x-ray radiology to nanometer scale; and modeling nanomaterials with calculations and simulations. Some past research accomplishments are summarized in the following:

- We have developed a new, simple, and easily reproducible method of preparing single-atom tips by electroplating Pd or Pt on single-crystal W(111) tips followed by thermal annealing in a vacuum. (Nano Lett. **4**, (2004) 2379)
- We have studied a reversible, temperature-driven structural surface phase transition of Pb/Si(111) nanoislands and found that the transition temperature decreased with decreasing island and domain size. (Phys. Rev. Lett. **93**, (2004) 106101)
- We have utilized the electronic Moirè patterns found on 2D lead (Pb) quantum islands as a template to grow self-organized 2D clusters (nanopucks). Both the size distribution and spatial arrangement of the Ag nanopucks are analyzed and found to be commensurate with the characteristics of the template island, which exhibits a bi-layer oscillatory behavior. (Submitted to Phys. Rev. Lett.)
- We have determined the structure of a type of surface magic cluster by a combination of scanning tunneling microscopy, density-functional calculations, and dynamical low energy electron diffraction. The unprecedented detailed structure information provided by the diffraction measurement is consistent with direct microscopic imaging and theoretical calculations. (Phys. Rev. Lett. **92**, (2004) 066103)
- We have investigated the structural, electronic, and optical properties of hydrogen passivated silicon nanowires along [110] and [111] directions with diameter d up to 4.2 nm from first principles. The size and orientation dependence of the band gap is investigated and the local-density gap is corrected with the GW approximation. Quantum confinement becomes significant for $d < 2.2$ nm, where the dielectric function exhibits strong anisotropy and new low-energy absorption peaks start to appear in the imaginary part of the dielectric function for polarization along the wire axis. (Phys. Rev. Lett. **92**, (2004) 236805)
- We have used angle-resolved photoemission measurements of the electronic structure to show layer-resolved quantum well states in atomically uniform Pb films, which can be correlated with dramatic variations in thermal stability. The odd film thicknesses $N = 5, 7$, and 9 monolayers show sharp quantum well states. The even film thicknesses $N = 6$ and 8 do not, but are much more stable than the odd film thicknesses. (Phys. Rev. Lett. **93**, (2004) 026802)
- We have shown that a ‘phase-contrast’ technique can image blood vessels in real

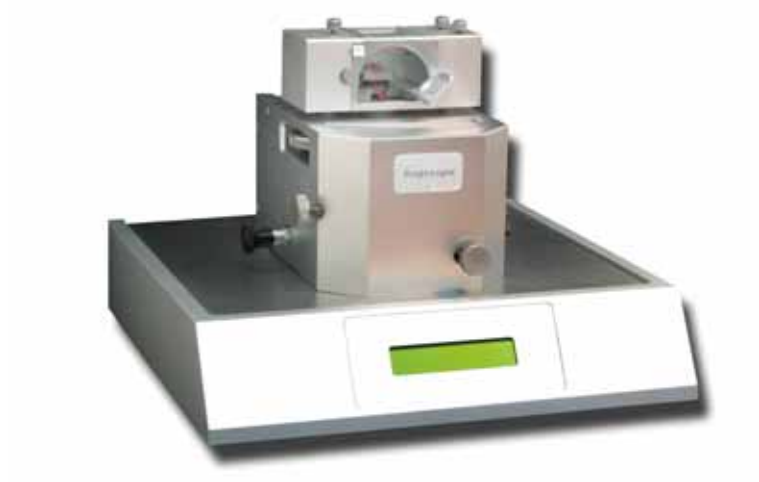
time and at resolutions of less than ten micrometres — a level of detail not seen before even with contrast agents. The technique used a beam of ‘white’ X-rays (containing a range of wavelengths), generated by a synchrotron accelerator. (Reported by Nature **427**, (2004) 800)



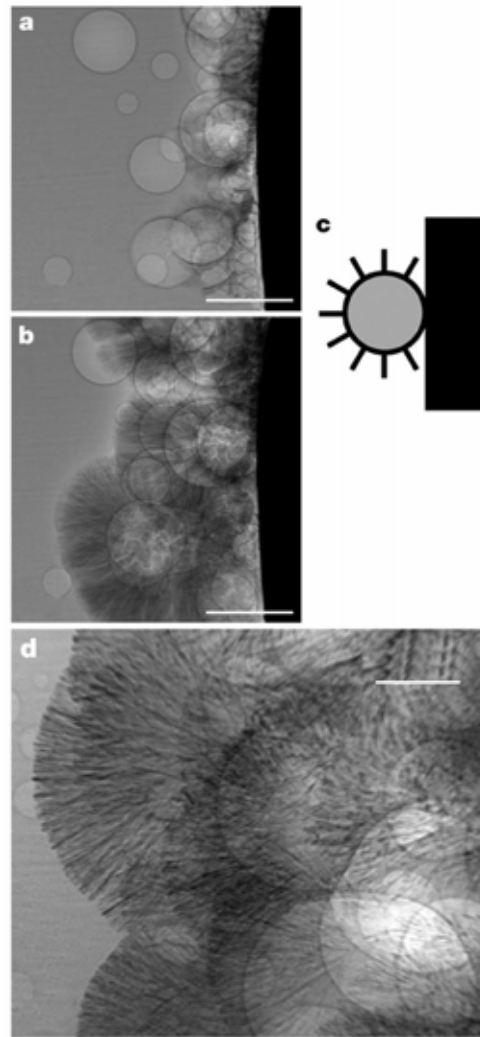
(a) Room-temperature STM topograph showing regions of the 1x1 phase surrounded by Si(111)-(7x7), taken at a sample bias of + 2 V and a tunneling current of 0.15 nA. Red scale bars: 5 nm. (b) High-resolution image of the 1x1 phase. Blue scale bars: 1 nm. (c) STM image of $\sqrt{7}$ domains at 190 K, taken at a sample bias of + 2 V and a tunneling current of 0.15 nA. (d) High-resolution image of the $\sqrt{7}$ phase. (e) and (f) illustrate the atomic models of the 1x1 and $\sqrt{7}$ phases, respectively.



The electronic Moiré patterns found on 2D lead (Pb) quantum islands as a template to grow self-organized Ag nanopucks on islands.



Homemade Atomic Force Microscope



Phase-contrast microradiographs showing the growth of zinc on hydrogen bubbles. **a**, **b**, Images (taken 6 s apart) showing growth of zinc dendrites. **c**, Diagram of radial dendritic growth along the electric-field lines. **d**, Image showing the microstructure of the dendrites. Scale bars, 300 μm (**a**, **b**) and 200 μm (**d**).

II. Optic materials and semiconductor physics

This research group consists of two faculty members and some research associates. The major research interest covers a broad range of topics concerned with the fundamental properties of shallow-levels in semiconductors and with impurity related issues of importance to semiconductor physics and technology, e.g., single and multiple donors and acceptors, shallow excited states of deep-level impurities, defect interaction on the atomic scale such as impurity-pair or complex formation. Crystal growth technique of some optical materials is also being studied hoping to

manufacture useful tunable solid state lasers.

III. Nanomaterial and low temperature physics

The nanomaterial and low temperature physics research group was first established in 1989. Now it involves two full-time faculty members and maintains a size of around 15 researchers comprised of visiting scholars, post-doctors, assistants, and students. Our research interests include phenomena that associated with strongly correlated electrons such as heavy fermion physics, Kondo effect and high temperature superconductivity. Other areas include the understanding of quantum-size effects on the above mentioned phenomena and others such as thermopower and thermoconductivity in alloys and/or semiconductors. We have developed our own research equipments such as a SQUID magnetometer operated in He3 cryostat, low-temperature microcalorimeter, and measurements of thermopower & thermoconductivity, transport measurements to 20 Tesla in a dilution refrigerator; magnetic susceptibility and electrical resistivity measurements at high pressure up to 20 kilobars. We also have setups for the preparation of nanoparticles, thin film and single crystals. Some past research accomplishments are summarized in the following:

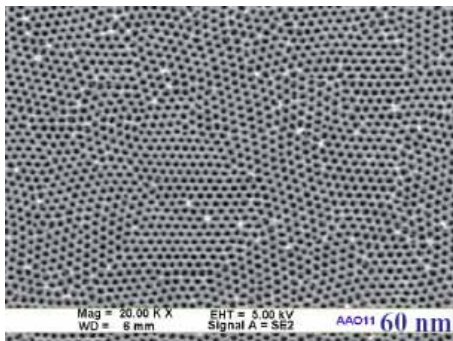
- We have observed several interesting quantum-size effects on the magnetism or superconductivity in nanomaterials of heavy fermion systems.
- We have developed new methods for the production of high quality magnetic/or superconducting nanoparticles and thin films
- We have developed a new wide-range low temperature sensor for calorimeter application using transition metal oxides.
- We have observed the coexistence of magnetic order and superconductivity in Ru-based double perovskite oxides.



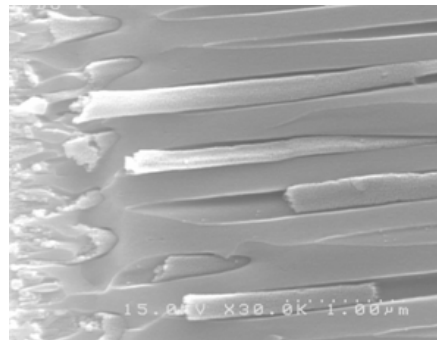
Dilution Refrigerator



Excimer laser ablation



Al_2O_3 template with $d \sim 50$ nm



Y_2O_3 nanowire array with $d \sim 150$ nm

IV. Spintronics and magnetotransport physics

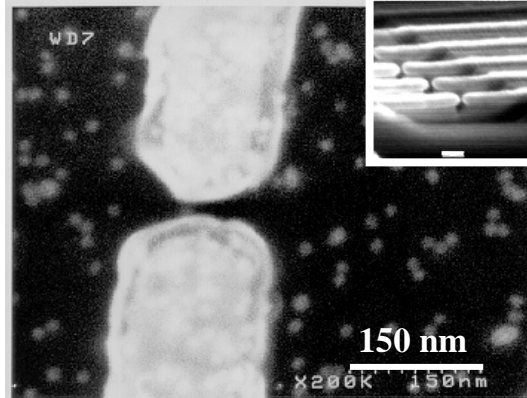
This research group was established more than twenty years. Currently it includes four full-time members of the institute and maintains about 40 researchers comprised of visiting scholars, post-doctors, assistants, and students. Our research areas cover wide-range of topics associated with interesting magnetic properties such as the interface properties between ultra-thin magnetic films on semiconductor; magnetic

superlattices; magnetic coupling in multilayer magnetic/superconductor thin films, patterned magnetic nano-structures and etc. Other topics such as the magnetostriction of single-layered or multi-layered magnetic films; the magneto-optical effect; the piezoresistance (or the elastic properties) of metal (magnetic or non-magnetic) films are also of our research interests. We have established the capabilities to create artificial nano-patterned magnetic structures and ultra-thin magnetic multilayer films. We have also developed a very sensitive technique to measure at low temperature the very small current perpendicular to plane (CPP) resistance of large area thin films with our SQUID pico-voltmeter setup. This technique provides us the possibility to further understand the interplay between spin-relaxation and Andreev reflection at the ferromagnetic/superconducting interface and to quantitatively study the Andreev reflection as functions of different physical quantities. We have built up a highly sensitive “Optical-cantilever” system that can be used to measure the saturation magnetostriction (ϵ) of a magnetic thin film. We have also built up a “Resistance-cantilever” system, which can be utilized to measure the strain gauge factor (G) of a thin-film sample. A “Polar Kerr effect magnetometer” has been developed to study the polar Kerr rotation, polar Kerr ellipticity, and reflection coefficient of MO multi-layers.

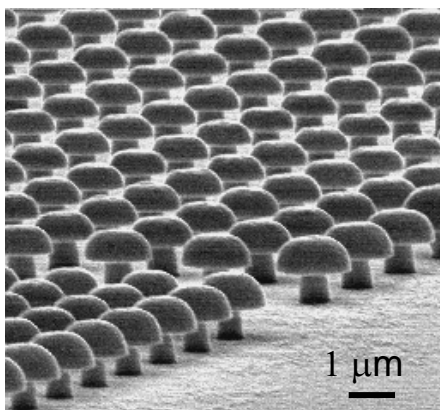
V. Quantum electronics physics

Taking advantage of modern electron-beam lithography technology, we are able to fabricate various nanometer-scaled electronic devices with the critical dimension as small as 30 nm. The objective is two-fold: to study novel (quantum) effects associate the small length scale of the devices and to utilize these effects for applications such as signal detection or information processing. The relevant length scales range from electron wavelength to phase breaking length, or spin relaxation length in magnetic systems. The materials that may be employed are superconductors, ferromagnets, semiconductors and novel materials such as carbon nanotubes and other synthesized nanowires, colloidal particles. These materials are patterned or arranged into one-dimensional narrow wires, quantum dots and point contacts. In area of fundamental research, we investigate superconductor-insulator phase transitions as well as interplay between magnetism and superconductivity. In addition, a project on shot noise properties in nanoelectronics is initiated. In application-oriented researches, we wish to study electron transport properties of devices with synthesized materials such as carbon nanotubes, colloidal particles or DNA molecules. Our recent research activities include: Transport properties of Multiwalled Carbon Nanotubes; Single electron memory cells with Au colloidal islands; Single electron transistors made of silicon; Spin injection in GaAs/AlGaAs heterostructures; Spin transport in

ferromagnetic-superconductor-ferromagnetic single electron transistors; Quantum phase transitions in one-dimensional arrays of small Josephson junctions; and Fabrication of CdSe 2D photonic crystals.



An SEM image of the fabricated device; the gate electrode is not shown. The inset shows the suspended Au leads before attachment of Au particles; the scale bar is 150 nm. The source and drain electrodes are bridged by C60-Au-C60 nano-particles, acting as an electrometer, and the gate electrode is also attached by a chain of C60-Au nano-particles, acting as a charge storage cell.



Two-dimensional arrays of high refractive index structures can be fabricated using a combination of e-beam lithography for pattern definition and electrochemical deposition for structure formation. The potential of this method is demonstrated for CdSe, where nanopillars, walls, and crosses are prepared. Such arrays have potential in optical device applications such as photonic crystals and waveguides

VI. Theoretical condensed matter physics

This group consists of two faculty members and more than 15 postdoctors, visiting scholars and research assistants including graduate students. The major research interests are High temperature superconductivity; Nano-materials; Protein structure prediction; Protein folding; Quantum Monte Carlo method. Cold trapped atoms: physics in low dimension, optical lattices, spinor Bose condensates and Fermionic superfluids; electric transport and noise properties in superconducting quantum point contacts; properties of unconventional superconductors

Principal Investigators

Jason Chia-Seng Chang

Research Fellow

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Research Interest: Surface physics and chemistry; Principles of atomic manipulation; Quantum effects in low-dimensional systems; Nanostructure sciences, and Development of SPM.

Yang-Yuan Chen

Research Fellow

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Research Interest: Low temperature physics, Low temperature specific heat Heavy Fermion, Nanoparticle, Thermoelectricity, Ground freezing.

Chii-Dong Chen

Associate Research Fellow

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Research interests : High operating temperature single electron transistors, Transport properties of nano-materials and bio-molecules, Physics and applications of Superconducting/Ferromagnetic nanostructures.

Selected publications

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Research fellow

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Research Interest: Semiconductor Physics; Impurities and Defects in Crystals; Infrared Spectroscopy.

Ing-Shouh Hwang

Research Fellow

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Research interest: Surface science; Semiconductor physics; Scanning probe microscopy; Surface atomic and molecular dynamics; Mechanism of epitaxial growth.

Yeu-Kuang Hwu

Research Fellow

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Research Interests: Application Research of Synchrotron Radiation, Photoelectron Spectromicroscopy Using Synchrotron Radiation.

S. U. Jen

Research Fellow

Tel : 886-2-2789-9621 / physjen@gate.sinica.edu.tw

Research Interests: Electron transport properties of ferromagnetic materials; Magnetostriction and application; Magnetic domains and domain walls; Magnetic anisotropy.

T. K. Lee

Research fellow

(For personal information, please see Complex System Research Group)

S. F. Lee

Associate Research Fellow

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Research interests include transport and magnetic properties and quantum phenomenon in metallic thin films and nano-structures.

Yung Liou

Associate Research Fellow

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Research interests: The growth mechanism, structure, physical properties and applications of magnetic, metal, oxide and diamond thin films. Methods of growing thin films: molecular beam epitaxy of single crystal metal and magnetic thin films and superlattices; magnetron sputtering of metal and oxide films and multilayers; microwave plasma chemical vapor deposition of diamond films. The film structure, composition, surface morphology and magnetic properties.

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Assistant Research Fellow

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Research Interest: Surface science, Scanning probe microscopy, Epitaxial growth of metal on semiconductor, Nanoscience, Observation of surface electronic structure.

Wan-Sun Tse

Research fellow

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Research Interests: Raman and Infrared spectroscopy, Laser and Nonlinear Crystals.

Tien-Tzou Tsong

Distinguished Research Fellow

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phtsong@ccvax.sinica.edu.tw; tsongtt@phys.sinica.edu.tw

Research Interest: Surface Science; Surface Electron and Atom Dynamics; Atomic

Resolution Microscopy; Field Emission Phenomena.

Ching-Ming Wei

Research Fellow

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Research Interest: Surface science; Electron holography; Ab initio total energy calculations.

Maw-Kuen Wu

Distinguished Research Fellow & Director

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E-mail: mkwu@phys.sinica.edu.tw

Y. D. Yao

Research Fellow

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Research Interests: Nano-Science, Magnetism, Low Temperature Physics, Superconductivity, Electrical Optics, Thin Films, and Nanosize Structures and their Physical Properties. Published about 310 papers.

S. K. Yip

Research fellow

Tel: 886-2-2789-6785 / yip@phys.sinica.edu.tw

Research Interests: Superconducting phenomena; Quantum fluids; Strongly correlated electron systems.

Visiting Scholars and Postdoctoral Research Associates
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Shih-Hsin Chang ; Yuh-Kuei Chang ; Chang-Hong Chien ; Mon-Shu Ho ; Hsin Hsiu ; Yuan-Yuan Hsu ; Min-Yie Jan ; Ivo Klik ; Hong-Shi Kuo ; Watson Kuo ; Sonnathi Neeleshwar ; Sistla Muralidhara Rao ; Yunn-Shin Shiue ; Jai-Lin Tsai ; Wen-Li Tsai ; Chang-Rem Wang ; Shieh-Yueh Yang ; Chin-Chung Yu ; Yuan-Liang Zhong ◦

Selected Publications

- A01 Y. C. Chen, Y. D. Yao, S. F. Lee, Y. Liou, J. L. Tsai, and Y. A. Lin, Quantitative analysis for magnetization reversal in submicron S-patterned structures with narrow junctions by magnetic force microscopy, *Appl. Phys. Lett.* 86, 053111 (2005).
- A02 S.U.Jen and C.C.Lin, *Thin Solid Films* 471,218 (2005).
- A03 K. Meikap, Y. Y. Chen, and J. J. Lin, Anomalous temperature and disorder dependences of electron-phonon scattering rate in impure $V_{1-x}Al_x$ alloys, *Phys. Rev. B* 69, 212202 (2004).
- A04 Y.T. Fan, W.H. Lee and Y.Y. Chen, Antiferromagnetic spin wave in Ce_2PdGe , *Phys. Rev. B*, 69, 132401 (2004).
- A05 T. -H. Chen, Y. Liou, T. J. Wu and J. Y. Chen, "Enhancement of organic light-emitting device performances with Hf-doped indium tin oxide anodes", *Appl. Phys. Lett.* 85, 2092-2094 (2004).
- A06 Y. W. Huang, C. K. Lo, Y. D. Yao, L. C. Hsieh, J. J. Ju, D. R. Huang, and J. H. Huang, Magneto current in a bipolar spin transistor at room temperature, *Appl. Phys. Lett.* 85, 2959 (2004).
- A07 W. B. Jian, W. B. Su, C. S. Chang, and Tien T. Tsong, to appear in *Phys. Rev. Lett.* (2003).
- A08 L.T.Ho, "Singly Ionized Magesium-Oxygen Complex Impurities in Silicon", *Phys. Stat. Sol. (C) O*, 721 (2003).
- A09 F.Xu, Y.C. Liao, M.J. Wang, C.T. Wu, K.F. Chiu and M.K. Wu, *J. Low Temp.Phys.* 131, 569, (2003).
- A10 S. U. Jen, T. C. Wu, C. H. Liu, *J. Magn. Magn. Mater.* 256, 54 (2003).
- A11 Ya-Wen Su, Cen-Shawn Wu, Chia-Chun Chen, Chii-Dong Chen, *Advanced Materials*, 15, 49 (2003)
- A12 T. K. Lee, C. M. Ho and Naoto Nagaosa,"Theory for slightly doped antiferromagnetic Mott insulators", *Phys. Rev. Lett.* 90, 67001 (2003).
- A13 S. T. Wu and S. K. Yip, "Superfluidity in the interior gap states", *Phys. Rev. A*, to appear (May, 2003).
- A14 S. K. Yip, "Supercurrent and noise in point contact between two different superconductors", submitted (2003).
- A15 S. K. Yip, "Two Dimensional Superconductivity with Strong Spin-Orbit Interaction", *Phys. Rev. B* 65, 144508 (2002).
- A16 C. S. Wu, C. D. Chen, S. M. Shih, W. F. Su, *Applied Physics Letters*, 81, 4595 (2002).
- A17 C. D. Chen, Watson Kuo, D. S. Chung, J. H. Shyu, C. S. Wu, *Physical Review Letters*, 88, 047004, (2002).
- A18 C.I. Chou, R.S. Han, S.P. Li and T.K. Lee,"Guided simulated annealing method for optimization problems", *Phys. Rev. E* in press.
- A19 C. D. Chen, Y. D. Yao, S. F. Lee and J. H. Shyu, *J. Appl. Phys.*, 91, 7469 (2002).
- A20 M. T. Lin, C. H. Ho, Y. D. Yao, R. T. Huang, C. C. Liao, F. R. Chen, and J. J. Kai, *J. Appl. Phys.*, 91, 7475 (2002).
- A21 S. J. Xiong, and Y. D. Yao, *Jpn. J. Appl. Phys.*, 41, 4530 (2002).

- A22 J. S. Tsay, Y. D. Yao, C. S. Yang, W. C. Cheng, T. K. Tseng, and K. C. Wang, *Surf. Sci.*, 513, 93 (2002).
- A23 Y. Y. Chen, Y. D. Yao, C. R. Wang, S. H. Lin, A. Czopnik, M. R. Ali, and J. C. Ho, *Phys. Rev. B*, 66, 212404 (2002).
- A24 Jun-Jih Liang, S. F. Lee, W. T. Shih, W. L. Chang, and Y. D. Yao, *J. Appl. Phys.* 92, 2624 (2002).
- A25 C.-M. Wei and M. Y. Chou, *Phys. Rev. B* 66, 233408 (2002).
- A26 W. L. Tsai, P. C. Hsu, Y. Hwu, C. H. Chen, L. W. Chang, J. H. Je, H. M. Lin, A. Groso, and G. Margartondo, *Nature* 417, 139 (2002).
- A27 C.R. Wang, Y.Y. Chen, Y.D.Yao, C.L. Chang, Y.S. Weng and C.Y. Wang, *Journal of Magnetism and Magnetic Materials* 239, 524 (2002).
- A28 Y.Y. Chen, Y.D. Yao, C.R. Wang, S.H. Lin, A. Czopnik and J.C. Ho, *Phys. Rev. B*, 66, 212404(2002).
- A29 S. M. D. Rao, J. K. Srivastava, H. Y. Tang, D. C. Ling, C. C. Chung, J. L. Yang, S. R. Sheen and M. K. Wu, *J. Crystal Growth*, Vol. 235, 271 (2002).
- A30 I.G. Chen, F.C. Chang, M.K. Wu, *Superconductor Science & Technology*, Vol.15, 717 (2002).

High and Medium Energy Physics Group

I. Theory Program

A. Particle Phenomenology

- (1) B meson wave function in k_T factorization
- (2) Transition to perturbative QCD in two-photon collisions
- (3) Weak phase from $B \rightarrow \pi\pi, K\pi$ decays
- (4) Polarizations in $B \rightarrow VV$ decays
- (5) Final-state interactions in hadronic B decays
- (6) Strong and weak decays of pentaquarks
- (7) Radiative B decays
- (8) Out of equilibrium and RHIC physics
- (9) Photon production from nonequilibrium disoriented condensates in a spherical expansion
- (10) Loop gravity
- (11) p-brane production in fat brane or universal extra dimension scenario
- (12) Nonperturbative bound on high multiplicity cross sections in theory in three dimensions from lattice simulation
- (13) Neutrino mass and neutrino oscillation
- (14) Quantum bit commitment

B. Particle Astrophysics and Cosmology

- (1) Decaying superheavy dark matter and subgalactic structure of the Universe
- (2) Bound on the time variation of the fine structure constant driven by quintessence
- (3) Observational strategies of CMB temperature and polarization experiments
- (4) Density perturbation in inflationary universe
- (5) Correlated hybrid fluctuations from inflation with thermal dissipation
- (6) Off-equilibrium dynamics of the primordial perturbations in the inflationary universe

C. Theoretical Nuclear Physics

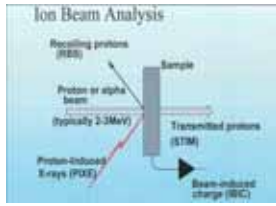
- (1) Cascade production in heavy-ion collisions at SIS energies
- (2) Two-level model and magnetic field effects on the hysteresis in n-GaAs
- (3) Tsallis information theory

II. Nuclear Physics Experiments

We have a on-site facility of 3MV 9SDH-2 pelletron tandem accelerator which was installed in 1989. Since then the accelerator became an important facility for

experimental research in the low energy nuclear physics, accelerator based atomic physics, and applied accelerator technology. The accelerator system has two negative ion sources, SNICS for solid source material and Alphasource for noble gases Helium-3 and Helium-4, capable of producing a wide range of ion beam species. The ion-beams for a given charged (q) state with a maximum energy $E=3(q+1)\text{MeV}$ can be obtained and selected by an analyzing magnet to meet experimental need. There are three beamlines available with different scattering chambers for various research needs, especially the newly-installed Oxford micro-beam system (Fig. 1). We have made the accelerator available for outside users. Every year a fraction of the machine time was provided to people of domestic institutions such as Institute of Atomic and Molecular Sciences, Academia Sinica, the National Tsing-Hua University, National Taiwan University and National Sun Yat-sen University

As for the high energy nuclear experiment, we participate at two international projects: SPring-8 LEPS experiment (Fig. 2) and BNL PHENIX experiment (Fig. 3). Photon beam with maximum energy up to 2.5 GeV can be generated from the backward Compton-scattering of incident eV laser photons with 8 GeV electrons circulating inside the storage rings of synchrotron facility, SPring-8 in Japan. We study the mechanism of interactions between photon and quarks at a few GeV via the reconstruction of $\gamma N \rightarrow \phi N$ reaction. In year 2003, we published the first observation of pentaquark state Θ^+ (1540) which decays into neutron and kaon. The following confirmations by other experiments have triggered tremendous effort of studying pentaquark experimentally and theoretically. In Brookhaven National Lab, U.S., RHIC collider can create a collision of Au nuclei of center of mass energy to be 200 GeV. PHENIX experiment is capable of measuring the di-lepton and photon signal of Quark Gluon Plasma. The experimental confirmation of QGP will greatly help the understanding the effect of finite temperature and baryon density on QCD and also the story of universe creation.



The newly-installed Oxford micro-beam system.



Spring-8 LEPS experiment



BNL PHENIX experiment

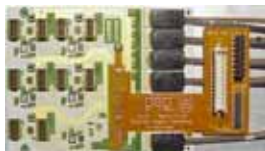
III. Particle Physics Experiments

(A) Collider Experiment CDF at Fermilab

For the next decade, Fermilab Tevatron Collider remains the highest energy frontier of particle physics. With the completion of Main Injector (which will enhance the luminosity) and with the upgrade of the collider detectors (CDF and D0), Tevatron Run II provides the potential for discovery of new phenomena and opportunities for the precision measurements in hadron collider physics. The Collider Detector at Fermilab in Run II (CDF II) is a general-purpose solenoidal detector that combines precision charge particle tracking with fast projective calorimetry and fine-grained muon detection for the study of p anti-p collisions. Precision measurement of the top mass and the W mass are primary goals of CDF II. Search for Higgs and new phenomena beyond the Standard Model will be explored



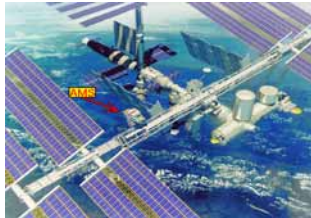
1: Insertion of silicon detector to the CDF II detector.



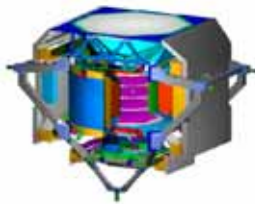
2: DOIM on Port Card

(B) AMS Experiment at International Space Station

The goal of the AMS experiment is to build the first precision magnetic spectrometer to be placed on the International Space Station in 2005 to search for anti-matter and dark matter in the Universe and to study cosmic ray physics and other exotic phenomenon. A simplified detector successfully operated on board the space shuttle Discovery for 10 days in June 1998, already producing important results. The AS group is leading the Taiwan participation in AMS, which includes the construction of the superconducting magnet, electronics and computing systems, as well as simulation and analysis.



1. AMS at the International Space Station



2. AMS Detector : Schematic Design

(C) Neutrino and Astro-particle Physics Group

The group was started in 1997 with the goal of pursuing an experimental program in neutrino and astro-particle physics in Taiwan. The TEXONO Collaboration, at present 40-member strong, has been built up, under the leadership of the Academia Sinica group, and with the participation of several major research institutes from Mainland China. The efforts represent the first big research collaboration among scientists from Taiwan and Mainland China. The "flagship experiment" is based on scintillating crystal and solid state detectors placed near the core of Kuo-Sheng Nuclear Power Plant II at the northern coast of Taiwan to study various low-energy neutrino interactions. This is the first particle physics experiment performed in Taiwan. World-level results have been achieved in the search of neutrino magnetic moment. Our efforts and achievement have been widely covered by the international press. Various R&D projects are pursued, in further enhancing the detector techniques, in

developing methods to measure trace radiopurities, in developing advanced electronic modules and in exploring the feasibilities of future experiments in areas like Dark Matter searches and the investigations of sonoluminescence.

1. Headlines in Taiwan Journal, with the Kuo-Sheng Nuclear Power Plant.



2. TEXONO Collaboration Members.



3. The shielding and control room at the Kuo Sheng Neutrino Laboratory.



(D) LHC-ATLAS at CERN and the GRID Project

The European Laboratory of Particle Physics (CERN) is building the World's largest hadron collider, the Large Hadron Collider (LHC), which is expected to commission in 2006 and will allow us to explore the new frontier of physics at the TeV energy scale. Two general purpose detectors, namely ATLAS and CMS, are being constructed for LHC experiments. The high energy physics group of the Institute joined ATLAS Collaboration in September 1999. The main responsibility of the Taiwan team in ATLAS is to develop and produce compact opto-packages for the inner detectors (PIXEL and Semi-Conductor Tracker (SCT)), as well as the high-speed (1.6GHz) transmitter and receiver modules for the optical link of the Liquid Argon Calorimeter (LAr). A miniature optopackage (1.6mm in height) which consists of two VCSEL's (Vertical Cavity Surface Emitting Laser) and one Epitaxial Silicon PIN diode has been developed by Taiwan for SCT to readout the 6 million channel silicon micro-strip detector. The SCT opto harness is now in production phase. The final design review (FDR) for the PIXEL optical link was held in February 2003. Our design is well received and become the baseline. The other responsibility for inner detectors is to provide the 12-channel VCSEL and PIN array modules for use in the readout driver (ROD) of both SCT and PIXEL.

(E) Grid Computing

Taiwan formally joined LCG project since September 2002. The Institute is working with the Computing Centre of Academia Sinica (ASCC) building up the LCG infrastructure in Taiwan. Academia Sinica will be the Tier-1 Center of LCG in Asia and the formal non-funded member of EGEE (Enabling Grid for E-ScienceE). In the meantime, Academia Sinica acts as first Regional Operation Center and Core Infrastructure Center of EGEE to provide Grid operation and support services for Asia Pacific Area.

Grid computing is expected to be the "next big thing" of information technology and application. It may very well change the way we use computing resources whether it is for commercial, industrial or research purpose. As in the case of World-Wide-Web, the need of high energy physics research is once again leading and guiding the revolution. ASCC and the Institute is working hard to keep Taiwan abreast of the ensuing change. With more than 70 sites joining in the LCG project, Taiwan plays a leading role in Asia. Proof by the Data Challenges in 2004, LCG becomes the first world-wide production quality Grid System for LHC requirements of PetaFLOPS-scale computing in 2008.

Principal Investigators

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Research Interest: Relativistic Heavy Ion Collisions, Quark Nuclear Physics, Vector Meson Photoproduction.

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Ph.D., Purdue University

Research Interest: Particle Physics Phenomenology.

Chi-Yee Cheung

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Suen Hou

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Research Interests: High energy physics, instrumentation, two-photon interactions, optical data transmission links.

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Ph.D., Princeton University.

Research Interests: Particle physics, field theory, nonlinear physics.

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PhD., University of Washington, Seattle, USA.

Research Interests: Theoretical physics; particle and field theory.

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Ph. D., SUNY at Stony Brook, U.S.

Research Interest: Perturbative Quantum Chromodynamic, *B* physics

Cheng-Chien Lin

Associate Research Fellow

Tel : 886-2- 2782-6433 / sclin@sinica.edu.tw

Ph.D., The University of Edinburgh

Research Interests: Grid Computing, Computational Physics, Digital Library System, Computational Sciences

Kin-Wang Ng

Research Fellow

Tel : 886-2-2789-6702 / nkw@phys.sinica.edu.tw

Ph.D., University of Minnesota, USA.

Research Interests: Particle astrophysics and cosmology; early universe; inflationary cosmology and quantum fluctuations; dark matter; cosmic microwave background.

Ming-Lee Chu

Research Technologist

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National Chiao Tung University

Ping-Kun Teng

Research Fellow

Tel : 886-2- 2789-6792 / pkteng@sinica.edu.tw

Rensselaer Polytechnic Institute.

Research Interests: Particle physics, Nuclear Physics.

Yiharn Tzeng

Research Fellow

Tel : 886-2- 2789-6795 / htzengyh@ccvax.sinica.edu.tw

Ph. D., Physics, UCLA

Research Interest: Theoretical Nuclear Physics, Intermediate Energy Nuclear Physics, Nuclear Many-Body Problems and Nuclear Structure, Quark Models, Hypernuclear Systems.

Henry Tsz-King Wong

Associate Research Fellow

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Ph.D. in Physics, California Institute of Technology, USA.

Research Interests: Neutrino Physics and Astrophysics, Astro-particle Physics, Particle Physics Instrumentation, Cross-Strait Academic Collaboration.

Wai-Bong Yeung

Research Fellow

Tel : 886-2- 2789-6705 / phwyeung@ccvax.sinica.edu.tw

Ph. D., Univ. of Maryland.

Research Interests: Elementary Particle Physics, Field Theory, Theory of Gravitation, Physics of Ferrofluid.

Hoi-Lai Yu

Research Fellow

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My Projects Digital and Physics:

<http://www.phys.sinica.edu.tw/~hoilai/>

Ph.D., University of Pittsburgh, USA.

Research Interests: Field Theories, Cosmology, Non-equilibrium Physics, Digital Physics and Cosmology.

Yueh-Chung Yu

Associate Research Fellow

Tel : 886-2- 2789-6769 / phycyu@ccvax.sinica.edu.tw

Ph.D., University of North Texas.

Research Interest : Accelerator based atomic physics and materials characterization.

Visiting Scholars and Postdoctoral Research Associates
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Ting-Hua Chang ; Yong-Hui Liu ; Biao Xin ; Yi-Fang Wang ; Ke-Jum Dong ; Ting-Yang Chen ; Jia-Lun Ping ; Jia-Qi Lu ; Yong-Yeng Keum ; Khiang, Chua-Chun ; Yen-Chu Chen ; Chung-Hsien Chou ; Li-Shing Hou ; Rong-Shyang Lu ; Hau-Bin Li ; Di Qing ; Zhong-Liang Ren ; Venkatesh Singh ; Chang-Chun Wan ; Chia-Ming Kuo ; Ashfaq Ahmad ; Mirta Ankush ; Yuh-Kuei Chang ; Huei-shih Liao ; Shih-Yuin Lin ; Jie Jun Tseng ; We-Fu Chang ; Chun-Shie Wu ; Kosuke Odagiri ; Dmitry S. Oshuev ◦

Selected Publications

- B01 H.Y. Cheng, C.K. Chua and A. Soni, “Final state interactions in hadronic B decays”, Phys. Rev. D71, 014030 (2005).
- B02 C.Y. Cheung and W.M. Zhang “Nonperturbative Determination of Heavy Meson Bound States”, Phys. Rev. D 60, 014017-1 (1999).
- B03 S.P. Li and S.C. Wang, “Learning Bayesian Networks by Lamarckian Genetic Algorithm and Its Application to Yeast Cell-Cycle Network Reconstruction from Time-Series Microarray Data”, LNCS 3141, 49 (2004).
- B04 Makiko Nagashima and H.N. Li, “ k_T factorization of exclusive processes”, Phys. Rev. D67, 034001 (2003).
- B05 D.Boyanovsky, De. Vega, D.S. Lee, S.Y. Wang and H. L. Yu “Dynamical renormalization group approach to the Altarelli-Parisi equations”, Phys. Rev. D65, 045014 (2002).
- B06 K.-W. Ng , “Complex visibilities of cosmic microwave background anisotropies”, Phys. Rev. D 63, 123001 (2001).
- B07 Y. Tzeng, S.Y.T. Tzeng and T.T.S.Kuo, “Hypernucleus Ca40-Lambda and recent hyperon-nucleon potentials”, Phys. Rev. C65 047303 (2002).
- B08 T.Nakano, W.C. Chang et al. (LEPS Collaboration), “Evidence for a Narrow $S=+1$ Baryon Resonance in Photoproduction from the Neutron”, Phys. Rev. Lett. 91, 012002 (2003).
- B09 Y.C. Yu, A.R. Azordegan, H.L. Sun, J.L. Duggan, F.D. McDaniel, E.K. Lin, C.W. Wang, and G. Lapicki, “Charge state dependence of L-shell x-ray production cross sections of Ni, Cu, Zn, Ga, and Ge by 12 MeV oxygen ions”, Nucl. Instr. Meth. in Phys. Research B150, 27 (1999).
- B10 S. Hou, Belle collab., K. Abe et al., “Observation of large CP violation in the neutral B meson system”, Phys. Rev. Lett. 87, 091802 (2001).
- B11 P.K. Teng, CDF Collaboration, “Search for New Physics in Photon-Lepton Events in Collisions at $\sqrt{s} = 1.8$ TeV”, Phys. Rev. Lett. 89, 041802 (2002).
- B12 M.J. Wang, CDF Collaboration (F. Abe et al.), “Observation of Diffractive b-Quark Production at the Fermilab Tevatron”, Phys. Rev. Lett. 84, 232 (2000).
- B13 S.C. Lee, AMS Collaboration, “The Alpha Magnetic Spectrometer(AMS) on the International Space Station: Part I - results from the test flight on the space shuttle”, Phys. Rept. 366, 331 (2002).

B14 H.B. Li, Henry T-K Wong et al., TEXONO Coll. “Limit on Neutrino Magnetic Moment from the Kuo-Sheng Reactor Neutrino Experiment”, Phys. Rev. Lett. 90, 131802 (2003).

Complex System Research Group

Complex systems are systems consisting of many simple elements which interact with each other nonlinearly. In general, the most interesting aspect of complex systems is the cooperative behavior among the elements mediated by their nonlinear interaction. Such cooperative behavior is manifested in the spatial and/or temporal patterns, which give the systems a variety of structures. In our institute, there are nine faculty members and more than ten postdocs and several graduate students working in different areas of complexity and non-linear science. Our studies of nonlinear and complex systems involve the following directions.

I. Basic and Applied Research on Hydrodynamics and Atmospheric Physics

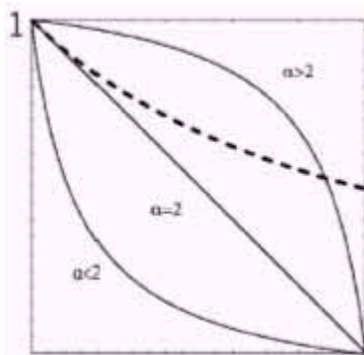
Measurement of strong wind characteristics had been carried out the coastal area of Taiwan. Semi-Lagrangian cloud model, a nonlinear atmospheric fluid dynamic model with phase changes, has been developed for better understanding of meso-scale weather phenomena and numerical experiments of this model has been made using ensemble prediction technique to investigate the storm characteristics, such as the life cycle of the storm, precipitation area and amount of cumulated rainfall. (Bao-Shi Shau, Chung-Yi Tseng)

II. Complex fluids, such as polymer and surfactant solutions, electrorheological fluids, and granular fluids, are among the most important materials studied in basic and applied sciences. We investigated phase transitions of binary liquid mixture with polymer and discovered a possible universality class at the critical point. In two-dimensional hopper flow experiments, we are searching for a basic understanding of the jamming phenomenon. On vertically vibrating platforms, we are studying the phase transitions of granular gas as well as the conformations of granular chains. (Kiwing To). Rheology data of protein and DNA solution may reveal the molecular structures as well as the formation mechanism of these biologically important macromolecules and single-molecule measurements have just been started (Chi-Keung Chan). Other nonlinear phenomena we studied include spiral wave dynamics in chemical reaction (Chi-Keung Chan); pattern formation in fracture phenomena(Kwan-tai Leung).

III. Statistical and Computational Physics Approach to Complex Systems

Laboratory of Statistical and Computational Physics (LSCP, website: <http://www.sinica.edu.tw/~statphys/>) at our institute is devoted to frontier research in statistical and computational physics (SCP), applications of SCP to problems in

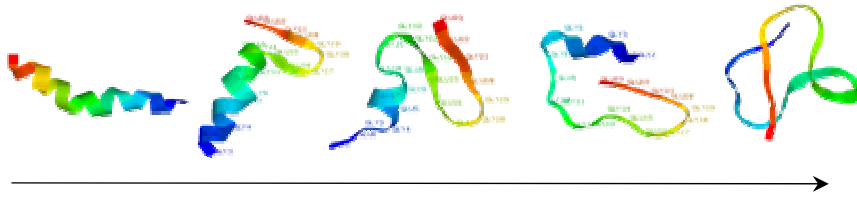
physical, biological, and social sciences, sponsoring meetings in SCP, and promoting education and research of SCP in developing countries. The research topics at LSCP include: equilibrium critical systems, such as the Ising, dimer, and percolation models; non-equilibrium critical systems, such as sand-pile and avalanche models; synchronization in nonlinear coupled systems and analysis of physiological data; models of biological evolution; analytic and numerical studies of macromolecules, polymer, DNA, RNA, and proteins; stochastic dynamic model for stock-stock correlations; universality and scaling in statistical data of literary works. (Chin-Kun Hu, Simon C. Lin)



Exact phase diagram for an asymmetric avalanche process, which shows the critical density of particles ρ_c as a function of parameters α and μ of toppling rules in the model. This figure is taken from Phys. Rev. Lett. 87, 084301(2001)

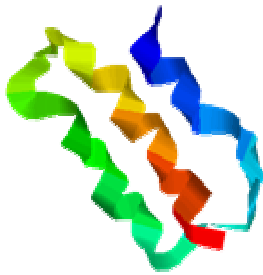
IV. Biology-Inspired Physics

Biological organisms are likely the most complex and the least understood systems that one can imagine, due to their intricate biochemical and physical interactions among macromolecules. Biology is essentially an experimental science with huge amount of data, physicists hope to distill basic principles from them. Because all biological processes operate in a thermal environment, statistical physics is an indispensable tool in studying them. Equipped with such tools, we have been studying theoretically: biological and physiological signals (such as heart beat); development of algorithms and simulations of macromolecules (DNA, RNA and proteins) with parallel computers (Chin-Kun Hu), development of new optimization algorithms to study complex systems including protein structure prediction (Ting-Kuo Lee); and collective behavior of self-propelled particles manifested in flocking models (Kwan-tai Leung). Moreover, Experimental studies on synchronized firing of neural net has also been carried out (Chi-Keung Chan).



Breakdown of protein structure due to increasing side chains interaction

Breakdown of protein structure due to increasing side chains interaction.



A 3-D protein structure obtained by using the optimization algorithm and a minimal energy model developed by us.



xperimental setup for synchronous firing of neural net.

Principal Investigators

Chi-Keung Chan

Research Fellow

Tel : 886-2-2789-6790

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Ph. D., Physics Department, University of Pittsburgh

Interests: nonlinear phenomenon in the dynamic behaviors of complex fluid systems, phase separation dynamics of simple fluids, polymer solutions and surfactant solutions, granular flows, Light scattering & imaging techniques, firing in neural net.

Chin-Kun Hu

Research Fellow

Tel : 886-2- 2789-6720

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Ph.D., National Tsing Hua University

Interests: Statistical and computational physics, nonlinear science, theoretical biophysics, complex systems.

Ting-Kuo Lee

Distinguished Research Fellow

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Ph.D., Brown University, USA.

Research Interest: High temperature superconductivity;
Nano-materials; X-ray crystallography; Protein structure;
Protein folding; Quantum Monte Carlo method.

Kwan-tai Leung

Research Fellow

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Ph.D., University of California, Santa Barbara

Research Interests: Nonequilibrium statistical mechanics;
phase transitions & critical phenomena;
modeling of nonlinear & complex systems.

Simon C. Lin
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Tel : 886-2-2789-9254
sclin@sinica.edu.tw
Ph.D., University of Edinburgh, Scotland.
Research Interest: Computational Physics, Statistical
Mechanics, Scalable Algorithm in Simulated Annealing, Cluster
Computing, Internet Strategic Planning, Digital Library/Museum.

Bao-Shi Shiau
Research Fellow
Tel : 886-2-2789-6749
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Ph.D. in Mechanical Engineering, National Taiwan University.
Research Interest: Wind Engineering, Environmental Engineering in
Ocean and Atmosphere.

Kiwing To
Research Fellow
Tel : 886-2- 2789-6770
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Ph. D., Physics Department, University of Pittsburgh
Research Interests: Phase transitions and critical phenomenon;
physics of fluids and hydrodynamics; electrorheological fluids;
granular materials; polymer physics.

Chung-Yi Tseng
Research Fellow
Tel : 886-2-2789-6748
cytseng@phys.sinica.edu.tw
Ph. D. in Meteorology, University of Oklahoma, U. S. A. ;
Research Interests : Meteorological Numerical Modeling,
Atmospheric Radiation and Remote Sensing.

Visiting Scholars and Postdoctoral Research Associates
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Ruey-Lin Chen ; Ruben Ghulghazaryan ; Rong-Sheng Han ; Nickyolay Izmailian ; Wen-Johg Ma ;
Amalendu Sau ; Hayryan Shura ; Brajendra Kumar Singh ; Hsin-Tza Wu ; Ming-Chya Wu ;
Wen-Chang Yang ◦

Selected Publications

- C01 Bao-Shi Shiau, and Yuan-Bin Chen, *Observation on Wind Turbulence Characteristics and Velocity Spectra Near the Ground at the Coastal Region*, Journal of Wind Engineering and Industrial Aerodynamics, Vol.90, Issue 12-15, pp.1671-1681 (2002).
- C02 Bao-Shi Shiau, and Wen-Chan Yang, *Numerical Simulation on the Dilution of Ocean Outfall Discharges in the Keelung City of Taiwan*, The 2nd International Conference on Marine Water Discharges, Istanbul, Turkey (2002).
- C03 Bao-Shi Shiau, Ta-Chun Chen, and Yun-Pei Ko, *Coastal Hydrodynamic Modeling of Oil Slick Transport in Western Waters of Taiwan*, The 5th World Congress on Computational Mechanics, Vienna, Austria (2002).
- C04 張博雄, 曾忠一, 2003: 三維可壓縮半拉格朗日法雲模式的研究. 投稿大氣科學..
- C05 曾忠一等人, 2003: 由 NOAA 衛星可見光資料決定氣溶膠參數. 天氣預報與分析, 175, 1-12.
- C06 鍾明珠, 曾忠一, 2004: 利用 AVHRR 和 OCI 資料求取大氣中的氣溶膠參數. 氣象預報與分析, 179, 11-20.
- C07 Kiwing To, Coexistence curve exponent of a binary mixture with a high molecular weight polymer, Phys. Rev. E 63, 26108, 2001.
- C08 Kiwing To, Pik-Yin Lai and H.K. Pak, Jamming of granular flow in a two-dimensional hopper, Phys. Rev. Lett. 86, 71, 2001.
- C09 Kiwing To and Pik-Yin Lai, Jamming pattern in a two-dimensional hopper, Phys. Rev. E 66, 011308, 2002.
- C10 Kiwing To, Effect of hopper angle on jamming probability in 2-dimensional hoppers, Chin. J. Phys. 40, 379, 2002.
- C11 Kiwing To, Dynamics of granular chain, AIP Conference Proceedings Vol 708(1) pp. 247-248, 2004.
- C12 H. J. Choi, S. T. Lim, Pik-Yin Lai and C. K. Chan, Turbulent Drag Reduction and Degradation of DNA, Phys. Rev. Lett. 89, 088302 (2002).
- C13 C. Tung and C. K. Chan, Dynamics of spiral waves under phase feedback control in a Belousov-Zhabotinsky reaction, Phys. Rev. Lett. 89, 248302 (2002).
- C14 K.-t. Leung, L. Jozsa, M. Ravasz and Z. Neda, Spiral cracks without twisting, Nature 410, 166 (2001).
- C15 Z. Neda, K.-t. Leung, L. Jozsa, M. Ravasz, Spiral cracks in drying precipitates,

- Phys. Rev. Lett. 88, 095502 (2002).
- C16 N. Sh. Izmailian and C.-K. Hu. Exact universal amplitude ratios for two-dimensional Ising models and a quantum spin chain, Phys. Rev. Lett. 86 , 5160-5163 (2001).
- C17 V.B. Priezzhev, E.V. Ivashkevich, A.M. Povolotsky, and C.-K. Hu. Exact phase diagram for an asymmetric avalanche process, Phys. Rev. Lett. 87, 084301 (2001).
- C18 H.-P. Hsu, U. H. E. Hansmann, and S. C. Lin, Structure determination of organic molecules from diffraction data by simulated annealing, Phys. Rev. E. 64, 056707 (2001).
- C19 H. P. Hsu, S. C. Lin, and U. H. E. Hansmann, Energy landscape paving for X-ray structure determination of organic molecules, Acta Crystallographica A, 58, 259 (2002).
- C20. C.-Y. Lin, C.-K. Hu, and U. H.E. Hansmann. Parallel tempering simulations of HP-36, Proteins -- Structure, Function and Genetics 52, 436 (2003).
- C21. A.M. Povolotsky, V.B. Priezzhev, and C.-K. Hu, Transition from Kardar-Parizi-Zhang to Tilted Interface Critical Behavior in a Solvable Asymmetric Avalanche Model, Phys. Rev. Lett. 91, 255701 (2003).
- C22. H. Watanabe, Satoshi Yukawa, N. Ito, and C.-K. Hu, Superscaling of percolation on rectangular domains, Phys. Rev. Lett. 93, 190601 (2004).
- C23 C. I. Chou and T. K. Lee, Guided simulated annealing method for crystallography, Acta Crystal A58 , 42 (2002).
- C24 C. I. Chou, R. S. Han, S. P. Li and T. K. Lee, Guided simulated annealing method for optimization problems, *Phys. Rev. E* **67**, 066704 (2003).
- C25 C.I. Chou, R. S. Han, T.K. Lee and S. P. Li , A guided Monte Carlo approach to optimization problems, *Lecture Notes in Computer Science* **2690**, 447 (2003).

III

List of Ongoing Research Projects

List of Ongoing Research Projects

中央研究院物理研究所九十三年度計劃清單一覽表

(2003 年 8 月 ~ 2005 年 7 月)

主持人	計 劃 名 稱	執行期間	計劃編號
曾忠一	半拉格朗日法雲模式的改進-系集預報	92.08.01 - 93.07.31	NSC92-2111-M-001-003
鄭海揚	重強子現象學之研究(2/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-016
陳志強	神經網路中同步發火現象之研究II-同調共振之研究	92.08.01 - 93.07.31	NSC92-2112-M-001-024
杜其永	顆粒氣體的實驗研究(1/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-028
吳建宏	宇宙微波背景各向異性的干涉性觀測(1/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-029
李湘楠	B物理中的量子色動力學(1/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-030
余岳仲	輕離子誘發重元素之K-層游離截面研究	92.08.01 - 93.07.31	NSC92-2112-M-001-031
侯書雲	CDF實驗物理研究(總計劃)及子(計畫三)—實驗數據分析與新粒子搜尋	92.08.01 - 93.07.31	NSC92-2112-M-001-036
鄧炳坤	CDF實驗物理研究(子計畫二)—CDF實驗粒子偵測器研製	92.08.01 - 93.07.31	NSC92-2112-M-001-037
余海禮	非平衡系統研究	92.08.01 - 93.07.31	NSC92-2112-M-001-038
蘇維彬	碳六十分子在銀薄膜中的電荷轉移之研究	92.08.01 - 93.07.31	NSC92-2112-M-001-040
葉崇傑	超導之介觀現象及低溫原子陷阱中超流體(1/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-041
胡宇光	發展超高速 X 光顯微照相術以研究材料與生物中之動態行為	92.08.01 - 93.07.31	NSC92-2112-M-001-042

主持人	計 劃 名 稱	執 行 期 間	計 劃 編 號
吳茂昆	高溫度電阻係數氧化物薄膜之製程及應用研究(1/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-043
李定國	變分法探討高溫超導體之模型(1/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-044
陳洋元	奈米樣品之磁微結構與高解析交直流共軛比熱量測技術開發(2/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-045
劉 鏞	磁性邏輯運算元件設計與應用	92.08.01 - 93.07.31	NSC92-2112-M-001-046
陳啟東	奈米電子元件中的散亂電子雜訊(2/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-047
張嘉升	奈米系統中的區限效應對其相變的影響(3/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-048
任盛源	鐵鎳合金多層膜之機械性, 磁性, 與電性研究(2/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-049
黃英碩	表面上動態過程與奈米結構性質之研究(3/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-050
謝雲生	矽酸鎳單晶生長與物理性質研究(2/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-051
魏金明	金屬薄膜的量子井態(2/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-052
李尚凡	超導/鐵磁多層薄膜的邊際效應與電流垂直平面電阻的量測(3/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-053
王子敬	微中子及天文粒子物理與其相關領域的研究	92.08.01 - 93.07.31	NSC92-2112-M-001-057
張志義	強子之結構	92.08.01 - 93.07.31	NSC92-2112-M-001-058
章文箴	在Spring-8研究光致向量介子產生中之核物質效應(IV)	92.08.01 - 93.07.31	NSC92-2112-M-001-061

主持人	計 劃 名 稱	執 行 期 間	計 劃 編 號
胡進錕	統計物理在跨領域之應用(3/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-063
曾詣涵	超核系統之研究(2/3)	92.08.01 - 93.07.31	NSC92-2112-M-001-064
鄧炳坤	ATLAS實驗偵測器研發	92.08.01 - 93.07.31	NSC92-2119-M-001-002
陳啟東	奈米生物電子元件-生物分子的檢測(1/3)	92.08.01 - 93.07.31	NSC92-2120-M-001-001
鄭天佐	在原子尺度下觀測及操控單一奈米精品與位置和結構有關的性質-子計畫一(1/3)	92.08.01 - 93.07.31	NSC92-2120-M-001-003
姚永德	奈米科學尖端研究設施之建構(1/3)	92.08.01 - 93.07.31	NSC92-2120-M-001-007
黃榮鑑	含自由液面的三維複雜流場之數值研究(2/3)	92.08.01 - 93.07.31	NSC92-2611-E-001-001
黃榮鑑	方形射流與橫向流交會之三維流場構造研究(1/3)	92.08.01 - 93.07.31	NSC92-2611-E-001-002
李世昌	以精密質譜儀探測宇宙中之反物質及暗物質(III)	92.08.01 - 93.07.31	NSC92-2112-M-001-059
李世昌	參與ATLAS實驗搜尋新物理現象(II)	92.08.01 - 93.07.31	NSC92-2112-M-001-060
梁鈞泰	裂隙面之生長機制研究(1/2)	92.08.01 - 93.07.31	NSC92-2112-M-001-067
侯書雲	ATLAS實驗模擬數據處理及計算網格建構	92.10.01 - 93.10.31	NSC92-2119-M-001-021
姚永德	圖案化奈米結構之製作及物性研究(2/3)	92.12.01 - 93.12.31	NSC92-2120-M-001-008
鄭天佑	近代生物物理:布朗馬達與生物能量轉換(1/2)	92.10.01 - 93.12.31	NSC92-2112-M-001-069

主持人	計 劃 名 稱	執 行 期 間	計 劃 編 號
李尚凡	92年度大專學生參與專題計畫-磁性薄膜之製作與物性 研究	92.07.01 - 93.02.28	92-2815-C-001-010-M
胡進錕	第一屆92年度高級中學基礎科學教學人才培育計畫	92.03.01 - 93.02.28	中研01-物理所
張嘉升	奈米碳管探針應用研究	92.03.01 - 93.11.30	
陳啟東	奈米孔洞快速定序DNA分子:以奈米粒子標幟放大訊號	92.03.01 - 92.12.31	
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曾詣涵	超核系統之研究(3/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-011
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李湘楠	B物理中的量子色動力學(2/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-014
杜其永	顆粒氣體的實驗研究(2/2)	93.08.01 - 94.07.31	NSC93-2112-M-001-015
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胡進錕	臨界現象與生物聚合物研究-非線性與相變模型研究(1/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-027
陳志強	單分子DNA 流力特性之實驗研究(1/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-029
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余岳仲	同位素效應對於離子入射於物質內之阻擋本領之影響研究	93.08.01 - 94.07.31	NSC93-2112-M-001-050
蔡俊謙	粒子現象學味物理之研究(1/2)	93.08.01 - 94.07.31	NSC93-2112-M-001-053
黃榮鑑	含自由液面的三維複雜流場之數值研究(3/3)	93.08.01 - 94.07.31	NSC93-2611-E-001-001
黃榮鑑	方形射流與橫向流交會之三維流場構造研究(2/3)	93.08.01 - 94.07.31	NSC93-2611-E-001-002
任盛源	鐵鎳合金多層膜之機械性，磁性，與電性研究(3/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-005
陳啟東	奈米電子元件中的散亂電子雜訊(3/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-006
吳茂昆	高溫度電阻係數氧化物薄膜之製程及應用研究(2/2)	93.08.01 - 94.07.31	NSC93-2112-M-001-017
陳洋元	奈米樣品之磁微結構與高解析交直流共軛比熱量測技術開發(3/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-022
王子敬	低能區微中子物理與聲致發光的研究	93.08.01 - 94.07.31	NSC93-2112-M-001-030

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侯書雲	CDF實驗物理研究(總計畫)	93.08.01 - 94.07.31	NSC93-2112-M-001-033
鄧炳坤	CDF實驗物理研究(子計畫一):-CDF實驗粒子偵測器研製	93.08.01 - 94.07.31	NSC93-2112-M-001-034
謝雲生	摻雜不同Nd離子之釩酸釷與釩酸釷系列晶體生長應用與物理性質研究(1/3)	93.08.01 - 94.07.31	NSC93-2112-M-001-035
李世炳	網絡的理論與數值模擬研究	93.08.01 - 94.07.31	NSC93-2112-M-001-040
何侗民	矽與鍍中鈣, 鎂, 鋰, 氧相關 雜質之特性研究(1/2)	93.08.01 - 94.07.31	NSC93-2112-M-001-041
吳茂昆	新穎過渡金屬硫屬化合物之物性研究與應用-子計畫一:離子導電度對新穎過渡金屬氧化物金屬絕緣體轉變之影	93.08.01 - 94.07.31	NSC93-2112-M-001-044
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蘇維彬	二維銀島結構中量子態的微擾效應之研究(1/2)	93.08.01 - 94.07.31	NSC93-2112-M-001-049
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李世昌	參與ATLAS實驗搜尋新物理 現象	93.08.01 - 94.07.31	NSC93-2119-M-001-004

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陳啟東	奈米生物電子元件-生物分子的檢測(2/3)	93.08.01 - 94.07.31	NSC93-2120-M-001-005
張嘉升	在原子尺度下觀測及操控單一奈米精品與位置和結構有關的性質-子計畫一(2/3)	93.08.01 - 94.07.31	NSC93-2120-M-001-007
姚永德	核心設施:奈米科學尖端研究設施之建構(2/3)	93.08.01 - 94.07.31	NSC93-2120-M-001-011
胡宇光	利用高相干性光源非破壞性分析及成像奈米及生物結構(1/3)	93.08.01 - 94.07.31	NSC93-2120-M-001-013
李世炳	高中科學資優學生培育計畫--踏向科學的第一步(1/2)	93.08.01 - 94.07.31	NSC93-2514-S-001-001
林誠謙	LCG/EGEE全球網格維運與跨領域運用之發展	93.09.01 - 94.08.31	NSC93-3111-P-001-001-Y19
陳洋元	研發大規模以液氮撲滅紅火蟻之技術與設備	93.11.01 - 94.10.31	NSC93-2621-B-001-010
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姚永德	93年度大專學生參與專題計畫-鍍(100)面與銅階式表面之結構析	93.07.01 - 94.02.28	93-2815-C-001-002-M
胡進錕	93年度高級中學基礎科學資優人才培育計畫	93.03.01 - 94.02.28	中研院1-物理所
張嘉升	奈米探針應用與電鏡分析	93.03.01 - 93.11.30	
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黃英碩 張嘉升	磁力顯微術與靜電力顯微術(II)	93.10.01 - 95.09.30	

IV

Publication List of 2004

Chang, W. F. (張維甫)

1. W.-F.-Chang and J.-N.-Ng, “Charged lepton electric dipole moments from TeV scale right-handed neutrinos” arXiv:hep-ph/0411201.
2. W.-F.-Chang and J.-N.-Ng, “Phenomenology of a 5D orbifold SU(3)W unification model” Phys. Rev. D69, 056005 (2004)

Chang, C. S. (張嘉升)

1. M.H. Hsu, W.S. Hu, J.J. Lin, Y.J. Hsu, D.H. Wei, C.W. Yang, C.S. Chang, and Y.T. Tao, “H₂S-Induced Reorganization of Mixed Monolayer of Carboxylic Derivatives on Silver Surface” Langmuir 20, 3641 (2004).
2. H.Y. Lin, Y.P. Chiu, C.S. Chang, Y.W. Chen, and Tien T. Tsong, “Growth of Nanopucks on Pb Quantum Islands” Jpn. J. Appl. Phys. 43, 4588 (2004).
3. Y.C. Chang, C.S. Chang, D.C. Wang, M.H. Lee, T.F. Wang, M.Y. Wu, T.Y. Fu, and Tien T. Tsong, “Nanoscale Imaging of Biomolecules by Controlled Carbon Nanotube Probes” Jpn. J. Appl. Phys. 43, 4517 (2004).
4. W. B. Su, H. Y. Lin, Y. P. Chiu, H. T. Shih, T. Y. Fu, Y. W. Chen, C. S. Chang, and Tien T. Tsong, “Correlation between Morphological Transition and Preferred Thickness of Pb and Ag Islands on Si(111)7x7” to appear in Phys. Rev. B.

Chang, W. C. (章文箴)

1. S.S. Adler et al. (PHENIX Collaboration), “Double Helicity Asymmetry in Inclusive Mid-Rapidity neutral pion Production for Polarized p+p Collisions at $\sqrt{s}=200$ GeV” Phys. Rev. Lett. 93, 202002 (2004)
2. S.S. Adler et al. (PHENIX Collaboration), “Bose-Einstein Correlations of Charged Pion Pairs in Au+Au Collisions at $\sqrt{s_{NN}}=200$ GeV” Phys. Rev. Lett. 93, 152302 (2004)
3. S.S. Adler et al. (PHENIX Collaboration), “Measurement of Non-Random Event-by-Event Average Transverse Momentum Fluctuations in $\sqrt{s_{NN}}=200$ GeV Au+Au Collisions” Phys. Rev. Lett. 93, 092301 (2004)
4. B.B. Back *et al.* (E917 Collaboration), “PRODUCTION OF PHI MESONS IN AU+AU COLLISIONS AT 11.7-A-GEV/C”, Phys. Rev. C **69**, 054901 (2004).
5. S.S. Adler et al. (PHENIX Collaboration), “High-pt Charged Hadron Suppression in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV” Phys. Rev. C 69, 034910 (2004)
6. S.S. Adler et al. (PHENIX Collaboration), “Identified Charged Particle Spectra and Yields in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV” Phys. Rev. C 69, 034909 (2004)

7. K. Adcox et al. (PHENIX Collaboration), "Single Identified Hadron Spectra from $\sqrt{s_{NN}} = 130$ GeV Au+Au Collisions", *Phys. Rev. C* 69, 024904 (2004),
8. S.S. Adler et al. (PHENIX Collaboration), "J/psi production from proton-proton collisions at $\sqrt{s} = 200$ GeV" *Phys. Rev. Lett.* 92, 051802 (2004)
9. S.S. Adler et al. (PHENIX Collaboration), "J/Psi Production in Au-Au collisions at $\sqrt{s}=200$ GeV at the Relativistic Heavy Ion Collider" *Phys. Rev. C* 69, 014901 (2004).
10. K. N. Barish *et al.* (PHENIX Collaboration), "TEC/TRD for the PHENIX experiment" *Nucl.Instrum.Meth.A*522:56-61 (2004).

Chan, C. K. (陳志強)

1. L. C. Jia, M. Sano, Pik-Yin Lai, C. K. Chen, "Connectivities and Synchronous Firing in Cortical Neuronal Networks", *Phys. Rev. Lett.* **93**, 088101 (2004)

Chen, Chii-Dong(陳啟東)

1. Y. F. Hsiou, Y. J. Yang, L. Stobinski, Watson Kuo, C. D. Chen "Controlled Placement and Electrical Contact Properties of Individual Multi-walled Carbon Nanotubes on Patterned Silicon Wafers", Feb. 9, 2004, *Applied Physics Letters*.

Chen, Shih-Yun (陳詩芸)

1. S. Y. Chen, P. C. Hsieh, I. G. Chen, M. K. Wu, "Effect of Nano-sized $\text{Sm}_2\text{BaCuO}_5$ Particles Addition on the Pinning Mechanism of Sm-Ba-Cu-O Materials", *J. Materials Research* Vol. 19, 843 (2004)
2. S. Y. Chen, I. G. Chen, P. C. Hsieh, and M. K. Wu, "Effect of Nano-scale Additions on the Enhancement of Superconductivity in the Y-Ba-Cu-O materials", *Journal of Electroceramics*, in press (2004)
3. P. C. Hsieh, S. Y. Chen, I. G. Chen, and M. K. Wu, "Flux Pinning at High Magnetic Field in Melt Processed $\text{SmBa}_2\text{Cu}_3\text{O}_7$ with nanocrystalline $\text{Sm}_{211}/\text{Nd}_{422}$ additives", *Superconducting Science and Technology*, in press (2004)
4. S. Y. Chen, Y. C. Liao, I. G. Chen, and M. K. Wu, "Effect of Mixing Nano-scale $\text{RE}_2\text{BaCuO}_5$ in Sm-Ba-Cu-O Materials", *J. Materials Research*, in press (2004)
5. S. Y. Chen, P. C. Hsieh, I. G. Chen, and M. K. Wu, "Effect of Nano-scale Additions on the Superconductivity and Pinning Mechanism in the Sm-Ba-Cu-O Materials", *Chinese Journal of Physics*, in press (2004)

6. S. Y. Chen, I. G. Chen, and M. K. Wu, "Effect of the Particle Size of Nano-scale Additions on the Formation of Compositional Fluctuations in Sm-Ba-Cu-O Materials", IEEE Transaction on Applied Superconductivity, in press (2004)
7. S. Y. Chen, I. G. Chen, and M. K. Wu, "A Semi-quantitative Method to Analyze the Complex Pinning Mechanisms in Single-Grained High-Tc Superconductors", IEEE Transaction on Applied Superconductivity, in press (2004)
8. C. C. Wang, S. Y. Chen, P. A. Lai, I. G. Chen, and M. K. Wu, "Study of the Heterogeneous Nucleation of 211-Particle by the Addition of CeO₂ Precursor with Different Sizes", IEEE Transaction on Applied Superconductivity, in press (2004)

Chen, Y. Y. (陳洋元)

1. T.W. Tseng, W.H. Lee and Y.Y. Chen (2004) " Antiferromagnetic spin wave in Ce₂CuGe₆" Japanese Journal of Applied Physics, 43, L66-L69,
2. S. Bhattacharya, S. Pal, R.K. Mukherjee, B.K. Chaudhuri, S. Neeleshwar, Y.Y. Chen, S. Mollah, H.D. Yang (2004) " Development of pulsed magnetic field and study of magnetotransport properties of K-doped La_{1-x}Ca_{x-y}K_yMnO₃" Mag. Mag. Mat. 269, 359-371
3. C.R. Wang, Y.Y. Chen, Y.D. Yao, Y.S. Lin, M.N. Ou, S.M.A. Taher, H.H. Hamdeh, X. Zhang, J.C. Ho and John B. Gruber (2004) "Magnetic and Calorimetric Studies of an Antiferromagnetic Transition in Erbium Sesquisulfide (Er₂S₃)" J. Mag. Mag. Mat. 269, 419-422
4. Y.T. Fan, W.H. Lee and Y.Y. Chen (2004) " Antiferromagnetic spin wave in Ce₂PdGe₆" Phys. Rev. B, 69, 132401
5. H.H. Cho, W.H. Lee and Y.Y. Chen (2004) " Antiferromagnetism and Kondo behavior in Ce(Pt_{1-x}Pd_x)Ga" Solid State Comm. 130 821-825
6. S.M. Rao, M. K. Wu, J. K. Srivastava, B. H. Mok, C. Y. Lu, Y.C. Liao, Y.Y. Hsu, Y.S. Hsieu, Y.Y. Chen, S. Neeleshwar, S. Tsai, J.C. Ho and H.-L. Liu (2004) " Magnetic and superconducting behaviors of doped and undoped double perovskite Ba₂PrRuO₆" Physics Letters A 324, 71-81
7. A. K. Meikap, Y.Y. Chen, and J.J. Lin (2004) "Anomalous temperature and disorder dependences of electron-phonon scattering rate in impure V_{1-x}Al_x alloys" (2004) Phys. Rev. B, 69, 212202.
8. S. Neeleshwar, Y.Y. Chen, C.R. Wang, , M.N. Ou and P.H. Huang (2004) "Superconductivity in aluminum nanoparticles " Physica C. 408-410, 209.
9. Y. Y. Chen, S.-J. Jang, C. R. Wang, H. D. Yang, "Superconductivity in CeCo₂ nanoparticles " (2004) Physica B (in press)
10. S.W. Han, C.H. Booth, E.D. Bauer, P.H. Huang, Y.Y. Chen, J.M. Lawrence

“Disorder-induced Kondo behavior in nanostructured CeAl₂” J. Mag. Mag. Mat 272-276 e101-102, (2004)

11. G.Y. Cuo, Y.K. Wang, Y.Y. Chen, “ab initio studies of the electronic structures and magnetic [properties of bulk and nano-particle CeCo₂” J. Mag. Mag. Mat 272-276 e1193-1194, (2004)

Cheng, Chi-Ho (鄭智豪)

1. Chi-Ho Cheng and P.Y.Lai, "Polyelectrolyte Adsorption on Charged Substrate", Proceedings of the 3rd Symposium on Slow Dynamics in Complex Systems; AIP Conference Proceedings 708, 229 (2004).
2. Chi-Ho Cheng and P.Y.Lai, "Adsorption Transition of a Polyelectrolyte on a High-dielectric Charged Substrate", Physical Review E 70, 061805 (2004).

Cheng, Hai-Yang (鄭海揚)

1. H.Y. Cheng, C.K. Chua and C.W. Hwang, “Covariant Light-Front Approach for s-wave and p-wave Mesons: Its Application to Decay Constants and Form Factors" Phys. Rev. **D69**, 074025 (2004).
2. H.Y. Cheng and C.K. Chua, “Covariant Light-Front Approach for $B \rightarrow K^* \gamma, K_1 \gamma, K_2^* \gamma$ Decays" Phys. Rev. **D69**, 094007 (2004).
3. H.Y. Cheng, C.K. Chua and C.W. Hwang, “Light-Front Approach for Heavy Pentaquark Transitions" Phys. Rev. **D70**, 034007 (2004).

Chern, R. L. (陳瑞琳)

1. “Numerical Study of Three-Dimensional Photonic Crystals with Large Band Gaps” R. L. Chern, C. Chung Chang, Chien C. Chang, and R. R. Hwang, Journal of the Physical Society of Japan, 73, 727 (2004)
2. “Two classes of two-dimensional photonic crystals with simultaneous band gaps” R. L. Chern, C. Chung Chang, Chien C. Chang, and R. R. Hwang, Japanese Journal of Applied Physics, 43, 3484 (2004)

Chou, Chung-Hsien (周忠憲)

1. "Decaying superheavy dark matter and subgalactic structure of the universe", Chung-Hsien Chou and Kin-Wang Ng, Phys. Lett. B 594, 1 (2004).
2. "Model of CP violation from extra dimension", Darwin Chang, Chian-Shu Chen, Chung-Hsien Chou and Hisaki Hatanaka, Phys. Rev. D 70, 096010 (2004).
3. "Decaying superheavy dark matter and the cusp halo problem.", Chung-Hsien Chou and Kin-Wang Ng, Mod. Phys. Lett. A19, 1227-1230, (2004).

Hou, S. U(侯書雲)

1. "Spectra of prompt electrons from decays of B^+ and B^0 mesons and ratio of inclusive semielectronic branching fractions", Belle Collab., T. Okabe et al., arXiv:hep-ex/0411066
2. "Observation of $B^+ \rightarrow K^+ \eta \gamma$ ", Belle Collab., S. Nishida et al., arXiv:hep-ex/0411065
3. "Observation of the $D1(2420) \rightarrow D\pi^+ \pi^-$ decays", Belle Collab., K. Abe et al., arXiv:hep-ex/0410091
4. "Measurement of masses and branching ratios of Ξ_c^+ and Ξ_c^0 baryons", Belle Collab., T. Lesiak et al., arXiv:hep-ex/0409065
5. "Observation of $B^0 \rightarrow D^{*0}(5\pi)^+$, $B^+ \rightarrow D^{*0}(4\pi)^{++}$ and $B^+ \rightarrow D^{*0}(5\pi)^{++}$ ", Belle Collab., G. Majumder et al., arXiv:hep-ex/0409008
6. "Study of time-dependent CP violation in $B^0 \rightarrow J/\psi \pi^0$ decays", Belle Collab., S. U. Kataoka et al., arXiv:hep-ex/0408105
7. "Evidence for direct CP violation in $B^0 \rightarrow K^+ \pi^-$ decays", Belle Collab., Y. Chao et al., Phys. Rev. Lett., 93, 191802(2004)
8. "Search for CP violation in the decay $B^0 \rightarrow D^{*+} D^+$ ", Belle Collab., T. Aushev et al., Phys. Rev. Lett. 93, 201802(2004)
9. "Study of $B^0 \rightarrow \rho^+ \pi^-$ time-dependent CP violation at Belle", Belle Collab., C. C. Wong et al., arXiv:hep-ex/0408003
10. "Measurement of exclusive $\rho^0 \rho^0$ production in mid-virtuality two-photon interactions at LEP L3 Collab.", P. Achard et al., Phys. Lett. B604,48 (2004)
11. "Inclusive jet production in two-photon collisions at LEP", L3 Collab., P. Achard et al., Phys. Lett. B 602, 157(2004)
12. "Measurement of the cross section of W-boson pair production at LEP", L3 Collab., P. Achard et al., Phys. Lett. B600,22 (2004)
13. "Measurement of exclusive $\rho^+ \rho^-$ production in high Q^2 two-photon collisions at LEP", L3 Collab., P. Achard et al., Phys. Lett. B 597, 26(2004)
14. "Search for branons at LEP", L3 Collab., P. Achard et al., Phys. Lett. B 597, 145(2004)
15. "Study of the $e^+ e^- \rightarrow Z\gamma$ process at LEP and limits on triple neutral-gauge-boson couplings", L3 Collab., P. Achard et al. Phys. Lett. B 597,119(2004)
16. "Measurement of the atmospheric muon spectrum from 20 GeV to 3000 GeV", L3 Collab., P. Achard et al. Phys. Lett. B 598,15(2004)
17. "Studies of hadronic event structure in $e^+ e^-$ annihilation from 30GeV to 209 GeV with the L3 detector", L3 Collab., P. Achard et al., Phys. Rept. 399,71(2004)
18. "Search for anomalous couplings in the Higgs sector at LEP" L3 Collab.,

- P.~Achard et al., Phys. Lett. B 589,89(2004)
19. “Muon pair and tau pair production in two-photon collisions at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. 585, 53(2004)
 20. “Measurement of triple gauge boson couplings of the W boson at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 586, 151(2004)
 21. “Inclusive Lambda production in two-photon collisions at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 586, 140(2004)
 22. “Flavour independent search for neutral Higgs bosons at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 583, 14(2004)
 23. “Single- and multi-photon events with missing energy in $e^+ e^-$ collisions at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 587,16 (2004)
 24. “Measurement of the Z-boson mass using $e^+ e^-$ to $Z\gamma$ events at centre-of-mass energies above the Z pole”, L3 Collab., P.~Achard et al., Phys. Lett. B 585, 42(2004)
 25. “Search for colour singlet and colour reconnection effects in hadronic Z decays at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 581, 19 (2004)
 26. “Search for scalar leptons and scalar quarks at LEP”, L3 Collab., P.~Achard et al., Phys. Lett. B 580,37(2004)
 27. “Measurement of the W boson polarization in top decay at CDF at $\sqrt{s}=1.8$ TeV”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0411070.
 28. “Measurement of the forward-backward charge asymmetry of electron positron pairs in $p\bar{p}$ collisions at $\sqrt{s}=1.96$ TeV”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0411059.
 29. “Measurement of charged particle multiplicities in gluon and quark jets in $p\bar{p}$ collisions at $\sqrt{s}=1.8$ TeV”, CDF Collab., D.~Acosta et al., FERMILAB-PUB-04-113-E
 30. “Search for scalar leptoquark pairs decaying to $\bar{\nu}\nu q\bar{q}$ in $p\bar{p}$ collisions at $\sqrt{s}=1.96$ TeV”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410076.
 31. “Search for electroweak single top quark production in $p\bar{p}$ collisions at $\sqrt{s}=1.96$ TeV”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410058.
 32. “Search for anomalous production of diphoton events with missing transverse energy at CDF and limits on gauge-mediated supersymmetry-breaking models”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410053.
 33. “Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at \sqrt{s}

- =1.96 TeV using lepton +jets events with secondary vertex b-tagging”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410041.
34. “Comparison of three-jet events in $p\bar{p}$ collisions at $\sqrt{s}=1.8\text{TeV}$ to predictions from a next-to-leading order QCD calculation”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410018.
 35. “Measurement of partial widths and search for direct CP violation in D_0 meson decays to K^-K^+ and $\pi^-\pi^+$ ”, CDF Collab., D.~Acosta et al., FERMILAB-PUB-04-148-E
 36. “Search for excited and exotic electrons in the $e\gamma$ decay channel in $p\bar{p}$ collisions at $\sqrt{s}=1.96\text{ TeV}$ ”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0410013.
 37. “Measurement of $W\gamma$ and $Z\gamma$ production in $p\bar{p}$ collisions at $\sqrt{s}=1.96\text{ TeV}$ ”, CDF II Collab., D.~Acosta et al., arXiv:hep-ex/0410008.
 38. “Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s}=1.96\text{TeV}$ using kinematic fitting of b-tagged lepton + jet events”, CDF II Collab., D.~Acosta et al., arXiv:hep-ex/0409029.
 39. “First measurements of inclusive W and Z cross sections from Run II of the Tevatron collider”, CDF II Collab., D.~Acosta et al., arXiv:hep-ex/0406078.
 40. “Search for doubly-charged Higgs bosons decaying to dileptons in pp collisions at $\sqrt{s}=1.96\text{TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93, 221802(2004)
 41. “Inclusive search for anomalous production of high- p_T like-sign lepton pairs in $p\bar{p}$ collisions at $\sqrt{s}=1.8\text{TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93, 061802(2004)
 42. “Measurement of the $t\bar{t}$ production cross section in $p\bar{p}$ collisions at $\sqrt{s}=1.96\text{TeV}$ using dilepton events”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93, 142001(2004)
 43. “Direct photon cross section with conversions at CDF”, CDF Collab., D.~Acosta et al., arXiv:hep-ex/0404022
 44. “The underlying event in hard interactions at the Tevatron $p\bar{p}$ collider”, CDF Collab., D.~Acosta et al., Phys. Rev. D 70, 072002(2004)

45. “Optimized search for single top quark production at the Fermilab Tevatron”, CDF Collab., D.~Acosta et al., Phys. Rev. D 69,052003 (2004)
46. “Search for $B_s^0 \rightarrow u^+ u^-$ and $B_d^0 \rightarrow u^+ u^-$ decays in $p\bar{p}$ collisions at $\sqrt{s} = 1.96\text{TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93,032001(2004)
47. “Measurement of the B_s^0 lifetime in the exclusive decay channel $B_s^0 \rightarrow J/\psi\phi$ ”, D0 Collab., V.~M.~Abazov et al., arXiv:hep-ex/0409043
48. “Measurement of dijet azimuthal decorrelations at central rapidities in $p\bar{p}$ collisions at $\sqrt{s} = 1.96\text{TeV}$ ”, D0 Collab., V.~M.~Abazov et al., arXiv:hep-ex/0409040
49. “Search for supersymmetry with gauge-mediated breaking in diphoton events at D0”, D0 Collab., V.~M.~Abazov et al., arXiv:hep-ex/0408146
50. “Observation and properties of the X(3872) decaying to $J/\psi\pi^+\pi^-$ in $p\bar{p}$ collisions at $\sqrt{s} = 1.96\text{TeV}$ ”, D0 Collab., V.~M.~Abazov et al., Phys. Rev. Lett. 93, 162002(2004)
51. “Search for doubly-charged Higgs boson pair production in the decay to $\mu^+\mu^+\mu^-\mu^-$ in $p\bar{p}$ collisions at $\sqrt{s} = 1.96\text{-TeV}$ ”, D0 Collab., V.~M.~Abazov et al., Phys. Rev. Lett. 93, 141801 (2004)
52. “Observation of the narrow state $X(3872) \rightarrow J/\psi\pi^+\pi^-$ in $p\bar{p}$ collisions at $\sqrt{s} = 1.96\text{ TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93, 072001(2004)
53. “Heavy flavor properties of jets produced in $p\bar{p}$ interactions at $\sqrt{s} = 1.8\text{ TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. D 69, 072004(2004)
54. “Measurement of the polar-angle distribution of leptons from W boson decay as a function of the W transverse momentum in $p\bar{p}$ collisions at $\sqrt{s} = 1.8\text{-TeV}$ ”, CDF Collab., D.~Acosta et al., Phys. Rev. D 70, 032004(2004)
55. “Combination of CDF and D0 results on W boson mass and width”, CDF and D0 Collab., V.~M.~Abazov et al., Phys. Rev. D 70, 092008(2004)
56. “Inclusive double pomeron exchange at the Fermilab Tevatron $p\bar{p}$ collider”, CDF Collab., D.~Acosta et al., Phys. Rev. Lett. 93,141601 (2004)
57. “Measurement of the average time-integrated mixing probability of b-flavored hadrons produced at the Tevatron”, CDF Collab., ~Acosta et al., Phys. Rev. D

- 69,012002(2004)
58. “Search for pair production of scalar top quarks in R-parity violating decay modes in $p\bar{p}$ collisions at $\sqrt{s}=1.8$ TeV”, CDF Collab., ~Acosta et al., Phys. Rev. Lett. 92,051803(2004)

Hu, Chin-Kun (胡進錕)

1. H. Watanabe, S. Yukawa, N. Ito, and C.-K. Hu. “Superscaling of percolation on rectangular domains”, Phys. Rev. Lett 93, 190601 (2004).
2. D. B. Saakian and C.-K. Hu. “Eigen model as a quantum spin chain: exact dynamics”, Phys. Rev. E 69, 021319 (2004).
3. D. B. Saakian and C.-K. Hu. Solvable biological evolution model with parallel mutation-selection scheme”, Phys. Rev. E 69, 046121 (2004).
4. A. E. Allahverdyan, Zh.S. Gevorgian, C.-K. Hu, and M.-C. Wu. “Unzipping of DNA with correlated base sequence”, Phys. Rev. E 69, 061908 (2004).
5. W.-J. Ma, C.-K. Hu, and R. E. Amritkar. “Stochastic dynamic model for stock-stock correlations”, Phys. Rev. E. 70, 026101 (2004).
6. D. B. Saakian, C.-K. Hu and H. Khachatryan. “Solvable biological evolution models with general fitness functions and multiple mutations in parallel mutation-selection scheme”, Phys. Rev. E 70, 041908 (2004).
7. C.-K. Hu, Z.-C. Ou-Yang, B. Hu, and B.-H. Wang ed. “Progress in Statistical and Nonlinear Physics: Proceedings of the First Cross Taiwan-strait Conference on Statistical Physics”, International Journal of Modern Physics B 18, 2361-2770 (2004).
8. S. Hayryan, C.-K. Hu, J. Skvrivanek, E. Hayrjan, I. Pokorny. A new analytical method for computing solvent accessible surface area of macromolecules and its gradients, J. Comp.

Hwang, I. S. (黃英碩)

1. I.-S. Hwang, S.-H. Chang, C.-K. Fang, L.-J. Chen, T. T. Tsong, “Observation of Finite-Size Effects on a Structural Phase Transition of 2D Nanoislands”, Phys. Rev. Lett. **93**, 106101 (2004).
2. I.-S. Hwang, S.-H. Chang, C.-K. Fang, L.-J. Chen, T. T. Tsong, ”Probing Dynamics of a Phase Transition of Two-Dimensional Nano-Domains with STM Imaging and Manipulation”, Surface Science Letters **572**, L331 (2004).
3. I.-S. Hwang, S.-H. Chang, C.-K. Fang, L.-J. Chen, T. T. Tsong, “Hydrogen-Adsorption Induced Atomic Rearrangement of a Pb Monolayer on

Si(111)”, to appear in Phys. Rev. Lett..

4. H.-S. Kuo, I.-S. Hwang, T.-Y. Fu, J.-Y. Wu, C.-C. Chang, and T.T. Tsong, “Preparation and Characterization of Single-Atom Tips”, NANO Letters 4(12), 2379 (2004).
5. S.-K. Hung, I.-S. Hwang and L.-C. Fu., “Novel Three-Dimensional Beam Tracking System for Stationary-Sample Type Atomic Force Microscopy”, MTC 2004 – Instrumentation and Measurement Technology Conference.
6. E. T. Hu, K. Y. Huang, I. S. Hwang, “SMM Actuator for Nano-Scale Positioning”, submitted to International Symposium on OpticsEast 2004.

Hwu, Yu-Kuan (胡宇光)

1. C. C. Kim, S. K. Seol, J. K. Kim, J.-L. Lee, **Y. Hwu**, P. Ruterana, G. Margaritondo, and J. H. Je: “Metal/GaN reaction chemistry and their electrical properties”, Phys. Stat. Sol. (b) **241**, 2771–2774 (2004)
2. R. Meuli, **Y. Hwu**, J. H. Je and G. Margaritondo: “Synchrotron Radiation in Radiology - Part II: Radiology Techniques Based on Synchrotron Sources”, European Journal of Radiology 14:1550-1560 (2004)
3. S. Baik, H.S. Kim, M.H. Jeong, and C.S. Lee, J. H. Je, **Y. Hwu** G. Margaritondo: “The ICPCIR (International Consortium on Phase Contrast Imaging and Radiology) Beamline at the Pohang Light Source”, Review of Scientific Instrument **75**, 4355 (2004)
4. **Y. Hwu**, W. L. Tsai, H. M. Chang, H. I. Yeh, P.C. Hsu, Y. C. Yang, Y. T. Su, H.L.Tsai, G.M. Chow, P. C. Ho, S.C. Li, H. O. Moser, P. Yang, S. K. Seol , C. C. Kim, J. H. Je, E. Stefanekova, A. Groso, G. Margaritondo: “Imaging Cells in Tissues with Refractive Index Radiology”, Biophysical Journal 87, 4180-4187(2004)
5. S. K. Seol, J. M. Yi, x. Jin, C. C. Kim, J. H. Je, W. L. Tsai, P. C. Hsu, **Y. Hwu**, C. H. Chen, L. W. Chang and G. Margaritondo, “Coherent Microradiology observes a Critical Cathode-Anode Distance Effect in Localized Electrochemical Deposition (LECD)”, Electrochemical and Solid-State Letter 7(9) C95-C97 (2004)
6. Guilin Zhang, Ziyu Wu, Aiguo Li, Yinsong Wang, Jing Zhang, M. I. Abbas, R. Hu, Xinb Ni, Yongpeng Tong, **Yeukuang Hwu**: “XANES investigation of the local structure of Co nanoclusters embedded in Ag”, Phys. Rev. B **69** 115405 (2004).
7. **Y. Hwu**, W. L. Tsai, J. H. Je, S. K. Seol, Bora Kim, A. Groso, G. Margaritondo, Kyu-Ho Lee and Je-Kyung Seong: “Synchrotron microangiography with no contrast agent”, Phys. Med. Biol. **49** 501-508 (2004).

8. P. H. Borse, J. M. Yi, and J. H. Je, W. L. Tsai and **Y. Hwu**: "*pH* dependence of synchrotron x-ray induced electroless nickel deposition", J. Appl. Phys. **95**, 1166-70 (2004)

Isoshima T. (磯島知也)

1. T. Isoshima and M. M. Salomaa, "Quantum Numbers for Excitations of Bose-Einstein Condensates in 1D Optical Lattices", J. Phys. Soc. Jpn. **73**, 3083 (2004).
2. T. Isoshima, J. Huhtamaki, and M. M. Salomaa, "Precessional motion of a vortex in a finite-temperature Bose-Einstein condensate", Phys. Rev. A **69**, 063601 (2004).
3. T. Mizushima, Y. Kawaguchi, K. Machida, T. Ohmi, T. Isoshima, and M. M. Salomaa, "Collective oscillations of vortex lattices in rotating Bose-Einstein condensates", Phys. Rev. Lett. **92**, 060407 (2004)

Jen, S. U. (任盛源)

1. S. U. Jen, T. C. Wu, C. C. Lin, and K. H. Chang, "Anisotropic magnetoresistance and magnetostriction of [Fe₁₅Ni₈₅/Fe₂₅Ni₇₅] and [Co₃₅Ni₆₅/Fe₂₅Ni₇₅] multilayers", Solid State Commun. **132**, 259(2004). (SCI)
2. S. U. Jen, C. H. Shieh, and H. P. Chiang, "Perpendicular anisotropy and magneto-optical Kerr effect of (Ni/Pd) multilayers", J. Phys. Chem. Solids **65**, 1035(2004). (SCI)
3. S. U. Jen, and J. Y. Lee, "Method of easy-axis determination of uniaxial magnetic films by vibrating sample magnetometer", J. Magn. Magn. Mater. **271,237**(2004).(SCI)
4. J. L. Tsai, K. T. Huang, W. C. Cheng, M. D. Lee, T. S. Chin, S. U. Jen, S. F. Lee and Y. D. Yao, "Magnetic properties of patterned Fe₃O₄ films" J. Magn. Magn. Mater. **272-276**, 1664(2004).
5. H.-P. Chiang, H.T. Yeh, --- S.U. Jen, and P.T. Leung, "Surface plasmon resonance monitoring of temperature via phase measurement". Optics Commun. **241**, 409(2004).

Klik, Ivo (柯松仁)

1. I. Klik and Y. D. Yao, Magnetization reversal by a field pulse, J. Magn. Magn. Mat. **282**, 131 (2004).
2. I. Klik and Y. D. Yao, Resonant exit time in stochastic and deterministic systems, revised manuscript submitted to Phys. Rev. E
3. I. Klik and Y. D. Yao, Switching field distribution of nanoparticles, to appear in

J. Magn. Magn. Mat.

Kuo, Hong-Shi (郭鴻曦)

1. Hong-Shi Kuo, Ing-Shouh Hwang, Tsu-Yi Fu, Jun-Yi Wu, Che-Cheng Chang, Tien T. Tsong, "Preparation and Characterization of Single-Atom Tips", Nano Letters, Vol. 4, No. 12, p. 2379 (2004). (SCI)

Kwan, M. K (關文儉)

1. Hsu, C. T., Kwan, M. K. & Hwang, R. R. 2004, Flows near the base a wall-mounted circular cylinder at a low Reynolds number and two extreme aspect ratios (Submitted to Journal of Fluid Mechanics).
2. Kwan, M. K., Hwang, R. R., Hsu, C. T. & Chang, C. C. 2004, Resonance in flow-induced cable vibration (Accepted by Transactions of the Aeronautical and Astronautical Society of the Republic of China).
3. Kwan, M. K., Hsu, C. T. & Hwang, R. R. 2004, Effects of core-region vortices on near-wall vortices generated by steady incoming flows past a wall-mounted long circular cylinder, 4th International Symposium on Environmental Hydraulics and 14th Congress of Asia and Pacific Division, International Association of Hydraulic Engineering and Research, Hong Kong, Paper No. 385.
4. Kwan, M. K., Hsu, C. T., Hwang, R. R. & Chang, C. C. 2004, Resonance in flow-induced cable vibration, The 11th National Computational Fluid Dynamics Conference, Tai-Tung, Taiwan, Paper No. CFD11-0510.

Lee, S. C. (李世昌)

1. M.L. Chu, S.-C. Lee, D.S. Su, P.K. Teng, M. Goodrick, N. Kundu, A.R. Weidberg, M. French, C.P. Macwaters, J. Matheson, The Off-Detector Opto-electronics for the Optical Links of The ATLAS SemiConductor Tracker and Pixel Detector, NIM, A530, 293 (2004). [PDF File](#)

Lee, S. F. (李尚凡)

1. W.-K. Chang, R.-K. Chiang, Y.-C. Jiang, S.-L. Wang, S. F. Lee, and K.-H. Lii. 2004. "Metamagnetism in Cobalt Phosphates with Pillared Layer Structures: $[\text{Co}_3(\text{pyz})(\text{HPO}_4)_2\text{F}_2]$ and $[\text{Co}_3(4,4'\text{-bpy})(\text{HPO}_4)_2\text{F}_2]\cdot x\text{H}_2\text{O}$ ". Inorg. Chem. 43, 2564-2568.
2. S. F. Lee, C. R. Chang, J. S. Yang, K. H. Lii, M. D. Lee, and Y. D. Yao. 2004. "Experimental and simulation of magnetic hysteresis loops of $[\text{Co}_3(\text{pyz})(\text{HPO}_4)_2\text{F}_2]$ compound". J. Appl. Phys. 95, 7073-7075.

3. Yung Liou, Dong-Cheng Chen, Chwen Yu, J. S. Chen, Shang-Fan Lee, Y. D. Yao, C. C. Tzeng, T. Y. Chen, K. W. Cheng, and Ron Ma. 2004. "Magnetic switching and reversal process in a tip ring structure". *J. Appl. Phys.* 95, 6723-6725.
4. S. Y. Yang, W. L. Kuang, Y. Liou, W. S. Tse, S. F. Lee and Y. D. Yao. 2004. "Growth and characterization of La_{0.7}Sr_{0.3}MnO₃ films on various substrates". *J. Magn. Magn. Mat.* 268, 326-331
5. J. L. Tsai, J. H. Hsieh, T. Y. Chen, E. W. Huang, C. Yu, G. H. Huang, S. F. Lee and Y. D. Yao. 2004. "Magnetization reversal process of patterned Ni₈₀Fe₂₀ zigzag wires". *J. Magn. Magn. Mat.* 272-276, E1309-E1310
6. Y. D. Yao, E. W. Huang, S. F. Lee, C. Yu, M. S. Wong and Y. R. Ma. 2004. "Magnetic studies in octagon-patterned permalloy submicro-wires". *J. Magn. Magn. Mat.* 272-276, 1686-1687.
7. J. L. Tsai, K. T. Huang, W. C. Cheng, M. D. Lee, T. S. Chin, S. U. Jen, S. F. Lee and Y. D. Yao. 2004. "Magnetic properties of patterned Fe₃O₄ films". *J. Magn. Magn. Mat.* 272-276, 1664-1665.
8. C. S. Tsai, J. Y. Li, M. J. Chen, C. C. Yu, Y. Liou, D. S. Hung, Y. D. Yao, and S. F. Lee. 2004. "Microwave FMR studies on ultrathin Fe/GaAs layer structures". *J. Magn. Magn. Mat.* 282, 57-60.
9. J.L. Tsai, S.F. Lee, Y. Liou, Y.D. Yao, T.Y. Chen, and K.W. Cheng. "Current Driven Domain Wall Motion in Magnetic U-pattern". Accepted in *J. Appl. Phys.*
10. S. Y. Huang, S. F. Lee, J. C. Huang, G. H. Hwang, and Y. D. Yao. "Perpendicular interface resistance in Co/Nb(x)Ti(1-x) multilayers for normal and superconducting NbTi alloy with x=0.4, 0.6". Accepted in *J. Appl. Phys.*
11. Y. C. Chen, Y. D. Yao, S. F. Lee, Y. Liou, J. L. Tsai, and Y. A. Lin. "Current-assisted magnetization switching in submicron permalloy S-patterned wires with narrow junctions". Accepted in *J. Appl. Phys.*
12. Y. C. Chen, Y. D. Yao, S. F. Lee, Y. Liou, J. L. Tsai, and Y. A. Lin. "Quantitative analysis of magnetization reversal in submicron S-patterned structures with narrow constrictions by magnetic force microscopy". Accepted in *Appl. Phys. Lett.*

Lee, T. K. (李定國)

1. "Absence of coexistence of superconductivity and antiferromagnetism of hole-doped two-dimensional extended t-J model", *Phys. Rev. B* 70, 220502(R) (2004), (C.T. Shih, Y.C. Chen, C. P. Chou and T.K. Lee).
2. "Spin dynamics in the antiferromagnetic phase for electron-doped cuprates", to appear in *Phys. Rev. B.*, (Qingshan Yuan, T.K. Lee and C.S. Ting).
3. "Enhancement of pairing correlation by t' in the two-dimensional extended t-J

- model”, *Phys. Rev. Lett.* 92, 227002 (2004), (C.T. Shih, T.K. Lee, R. Eder, C.Y. Mou and Y.C. Chen).
4. “Fermi surface evolution in the antiferromagnetic state for the electron-doped $t-t'-t''$ -J model”, *Phys. Rev.* B69, 214523 (2004), (Qingshan Yuan, Yan Chen, T.K. Lee and C.S. Ting).
 5. “Orbital polarization, surface enhancement and quantum confinement in nano-cluster magnetism”, *Phys. Rev.* B69, 174414 (2004). (X.G. Wan, L. Zhou, J.M. Dong, T.K. Lee and D.S. Wang).

Lee, Wolung (李沃龍)

1. “Correlated hybrid fluctuations from inflation with thermal dissipation”, *Wolung Lee* and Li-Zhi Fang, *Phys. Rev. D* 69, 023514 (2004).
2. “Limit on the time variation of the fine structure constant driven by quintessence”, *Wolung Lee*, Kin-Wang Ng and Da-Shin Lee, *Mod. Phys. Lett. A* 19, 1089 (2004).
3. “Off-equilibrium dynamics of primordial perturbations in the inflationary universe: the O(N) model”, *Wolung Lee*, Yeo-Yie Charng, Da-Shin Lee, and Li-Zhi Fang, astro-ph/0401269, *Phys. Rev. D* 69, 123522(2004).

Conference paper

1. “Correlated perturbations from thermal dissipative inflation”, *Wolung Lee*, to be published in *J. Korea Phys. Soc.* (2004).
2. “Running spectral index and mode-mode correlation of inflationary perturbations from off-equilibrium effects”, Da-Shin Lee, Li-Zhi Fang, *Wolung Lee*, and Yeo-Yie Charng, to be published in *J. Korea Phys. Soc.* (2004).

Li, Hsiang-nan (李湘楠)

1. Y.Y. Keum, T. Kurimoto, H.N. Li, C.D. Lu, and A.I. Sanda, “Nonfactorizable contributions to $B \rightarrow D^{(*)} M$ decays”, *Phys. Rev. D* 69 (2004) 094018.
2. C.H. Chen and H.N. Li, “Search of D^{*}_{sJ} mesons in B meson decays”, *Phys. Rev. D* 69 (2004) 054002.
3. Y.Y. Charng and H.N. Li, “Weak phases from topological-amplitude parametrization”, *Phys. Lett.* B594 (2004)185-195.
4. H.N. Li and H.S. Liao, “ B meson wave function in k_T factorization”, *Phys. Rev. D* 70 (2004) 074030.
5. C.H. Chen and H.N. Li, “Vector-pseudoscalar two-meson distribution amplitudes in three-body B meson decays”, *Phys. Rev. D* 70 (2004) 054006.
6. R.C. Hsieh and H.N. Li “Transition to perturbative QCD in two-photon collisions”, *Phys. Rev. D* 70 (2004) 056002.

Conference Papers

1. H.N. Li, “ k_T factorization of exclusive B decays”, Proceedings of the XXXVIIIth Rencontres de Moriond session on QCD And High Energy Hadronic Interactions (Les Arcs 1800, France, 03/22-29/2003), (2004) 175-178.
2. Y.Y. Charng and H.N. Li, “extracting the weak phases ϕ_2 and ϕ_3 from the amplitude parametrization”, Proceedings of the Second International Conference on Flavor Physics (KIAS, Seoul, Korea, 10/06-11/2003), JKPS 45 (2004)S238-S244.
3. H.N. Li, “QCD theories of exclusive B decays”, Proceedings of the Second International Conference on Flavor Physics (KIAS, Seoul, Korea, 10/06-11/2003), JKPS 45 (2004) S397-S403.
4. H.N. Li, “NLO corrections to exclusive B decays in k_T factorization”, Proceedings of the 9th Accelerator and Particle Physics Institute (Iwate, Japan, 02/16-20/2004), (2004) 19-29.
5. H.N. Li, “ k_T factorization of exclusive B meson decays”, Proceedings of the 32nd International Conference on High Energy Physics (Beijing, China, 08/16-22/2004), hep-ph/0408232.

Li, S. P. (李世炳)

1. “Losing harmonic stability of arterial pulse in terminally ill patients”, with Y.C. Kuo et.al., Blood Pressure Monitoring 9 (2004) 255.
2. “Rising harmonic variation of arterial pulse during the dying process”, with Y.C. Kuo et.al., American Journal of Chinese Medicine (2004), accepted for publication in American Journal of Chinese Medicine.
3. S.C. Wang, J.J. Tseng, C.Y. Yu and S.P. Li, “A Parsimonious Reconstruction of Gene Regulatory Networks from Noisy Time-Series Gene Expression Data”, in revision for publication in BMC Bioinformatics, 2004.
4. S.P. Li et.al., “A web-based Political Exchange for Election Outcome Predictions”, will be published in LNCS, 2004.
5. J.J. Tseng, S.C. Wang and S.P. Li, “Reconstructing Gene Regulatory Networks from Time-Series Microarray Data”, to appear in Physica A, 2004.
6. S.P. Li and S.C. Wang, "Learning Bayesian Networks by Lamarckian Genetic Algorithm and its Application to Yeast Cell-Cycle Gene Network Reconstruction from Time-Series Microarray Data", LNCS 3141(2004)49.

Lin, C. C. (林誠謙)

1. Simon C. Lin ...et al. 2004 “A Step Towards a Computing Grid for the LHC Experiments: ATLAS Data Challenge 1, the ATLAS DC1 Task Force.” (To be published in Nucl, Instr. and Meth. in Phys.)

Conference paper

1. Simon C. Lin 2004, "Constructing Next-Generation Research Infrastructure Based on World-Wide-Grid", ICCP6 2004, 23-28 May, 2004. Beijing, China
2. Simon C. Lin 2004, "Challenges of e-Science Development in Asia" International Symposium on Grid Computing 2004 (ISGC 2004), 26-29 July, 2004. Taipei Taiwan: Academia Sinica.
3. Simon C. Lin 2004, "World Wide Grid and e-Science in Chinese Taipei" , APEC TEL 30, 19-24 September 2004. Singapore.
4. J.T. Moscicki, H.C.Lee, S.Guatelli, S.C. Lin, M.G.Pia "Biomedical Applications on the GRID" Efficient Management of Parallel Jobs, NSS IEEE 2003, Rome, Italy, October 2004

Lin, Shih-Yuin(林世昀)

1. Shih-Yuin Lin, "Radiation by Wave Packets", J. Korean Phys. Soc. 45 (2004) S41-S45.

Liou, Y. (劉鏞)

1. T.-H. Chen, Y. Liou, T. J. Wu and J. Y. Chen, "Enhancement of organic light-emitting device performances with Hf-doped indium tin oxide anodes", Appl. Phys. Lett. 85, 2092-2094 (2004).
2. Y. Liou, D.-C. Chen, C. Yu, J. S. Chen, S.-F. Lee, Y. D. Yao, C. C. Tzeng, T. Y. Chen, K. W. Cheng and R. Ma, "Magnetic switching and reversal process in a tip ring structure", J. Appl. Phys. 95, 6723-6725 (2004).
3. S. C. Chou, C. C. Yu, Y. Liou, Y. D. Yao, D. H. Wei, T. S. Chin and M. F. Tai, "Annealing effect on the Fe/Pt multilayers grown on Al₂O₃ (0001) substrates", J. Appl. Phys. 95, 7276-7278 (2004).
4. M. S. Wong, K.-W. Cheng, C.-H. Shee, Y.-R. Ma, Y. Liou and Y. D. Yao, "Size effect of nanosized thin-film iron dot on growth of multiwall carbon nanotubes", J. Appl. Phys. 95, 7219-7221 (2004).
5. S. Y. Yang, W. L. Kuang, Y. Liou, W. S. Tse, S. F. Lee and Y. D. Yao, "Growth and characterization of La_{0.7}Sr_{0.3}MnO₃", J. Mag. Mater. 268, 326-331 (2004).
6. Y.-R. Ma, Y. Liou, and Y. D. Yao, "Pushing nanoparticles of LaSrMnO", J. Mag. Mater. 282, 342-345 (2004).
7. C. S. Tsai, J. Y. Li, M. J. Chen, C. C. Yu, Y. Liou, D. S. Hung, Y. D. Yao and S. F. Lee, "Microwave FMR studies on ultrathin Fe/GaAs layer structures", J. Mag. Mater. 282, 57 (2004).

8. Y.-R. Ma, K.-W. Cheng, C.-H. Shee, C.-C. Tsai, C.-L. Cheng, H.-L. Lin, M. S. Wong, Y. Liou and Y. D. Yao, "Effect of field power on growth of multiwall carbon nanotubes", *J. Mag. Mag. Mater.* 282, 61-64 (2004).
9. H. H. Lin, S. L. Cheng, L. J. Chen, W. C. Chen, Y. Liou and H. C. Chien, "Randomization of heavily damaged regions in annealed low energy Ge⁺-implanted (001)Si", *Ultramicroscopy* 98, 265-269 (2004).

Ma, Wen-Jong(馬文忠)

1. Wen-Jong Ma, Chin-Kun Hu, and Ravindra E. Amritkar "Stochastic dynamical model for stock-stock correlations", *Phys. Rev. E* 70 (2004) 26101.
2. Ming-Chya Wu, Chin-Kun Hu, and Wen-Jong Ma, "New geometric factor for the characterization of protein molecules", preprint (2004).

Neeleshwar, S. (尼斯瓦)

1. "Development of pulsed magnetic field and study of magneto transport properties of K-doped La_{1-x}Ca_{x-y}K_yMnO₃ CMR materials." Sayani Bhattacharya, Sudipeta Pal, R. K. Mukherjee, B.K.Chaudhuri, S.Neeleshwar, Y. Y. Chen, S.Mollah and H.D.Yang. *Journal of Magnetism and Magnetic Materials* 269 (2004) 359–371
2. "Magnetic and Superconducting behavior of doped and undoped double perovskite Ba₂PrRuO₆", S.M.Rao, M.K. Wu, J.K.Srivastava, B.H.Mok, C.Y.Lu, Y.C.Liao, Y.Yhsu, Y.S.Hsiue, Y.Y.Chen S.Neeleshwar, S.Tsai, J. C. Hoand H.L.Liu. *Phys Letters A* 324 (2004) 71-81.
3. "Superconductivity in Al nano particle." S.Neeleshwar, Y. Y. Chen, C.R.Wang, M. N. Ou and P.H. Hung, *Physica C* 408-410 (2004) 209-210.
4. "A novel route of phase formation of cobalt oxyhydrates using KmnO₄ as an oxidizing agent.", C.-J. Liu, C.-Y. Liao,, L.-C. Huang, C.-H. Su, S. Neeleshwar, Y.-Y. Chen and C.-J.C.Liu, *Physica C* 416 (2004) 43.

Ng, K. W. (吳建宏)

1. "The Sky Polarization Observatory (SPORt)", S. Cortiglioni et al., *New Astron.* 9, 297 (2004).
2. "E/B separation in CMB interferometry," C.-G. Park and K.-W. Ng, *Astrophys. J.* 609, 15 (2004).
3. "Decaying superheavy dark matter and subgalactic structure of the Universe", C.-H. Chou and K.-W. Ng, *Phys. Lett. B* 594, 1 (2004).
4. "Bound on the time variation of the fine structure constant driven by quintessence", D.-S. Lee, W.-L. Lee, and K.-W. Ng, *Int. J. Mod. Phys. D* (in press).

5. “Decaying superheavy dark matter and subgalactic cosmic structures”, K.-W. Ng, Proc. of the Eighth International Workshop on Topics in Astroparticle and Underground Physics, Seattle, USA, Sep., 2003.

Odagiri, K. (小田切宏輔)

1. K.~Odagiri, “The underlying event and fragmentation,” JHEP, 0408 (2004) 019 [arXiv:hep-ph/0407008].

Qing Di (卿笛)

1. Xiang-Song Chen, Di Qing, Wei-Min Sun, Hong-Shi Zong, Fan Wang, "SPIN ORBITAL STRUCTURE OF THE NUCLEON MAGNETIC MOMENT", Phys.Rev.C69:045201,2004
2. Jia-lun Ping, Di Qing, Fan Wang, T. Goldman, "UNDERSTANDING PENTA QUARK WITH VARIOUS QUARK MODELS", Phys.Lett.B602:197-204,2004

Ren, Zhong-Liang (任忠良)

1. “A study of cosmic ray secondaries induced by the Mir space station using AMS-01”, AMS Collaboration, Hep-ex/0406065, 2004, Submitted to NIM B.
2. “AMS on ISS: Construction of a particle physics detector on the International Space Station”, AMS Collaboration, Submitted to NIM B.
3. “A step towards a computing Grid for the LHC experiments: Atlas Data Challenge 1”, R. Sturrock et al. (ATLAS Collaboration), CERN-PH-EP-2004-28, Submitted to NIM A.
4. “A measurement of Λ polarization in inclusive production by Σ^- of 340 GeV/c in C and Cu targets”, WA89 Collaboration, Eur. Phys. J. C 32, 221-228(2004).
5. “A measurement of Ξ^- polarization in inclusive production by Σ^- of 340 GeV/c in C and Cu targets”, WA89 Collaboration, Eur. Phys. J. C 36, 315-321(2004).
6. “Search for the exotic $\Xi^{--}(1860)$ resonance in 340 GeV/c Σ^- - nucleus interactions”, WA89 Collaboration, Physical Review, C70, 022201(R)(2004).

Rao, S. M. D. (史牧笛)

1. “Influence of B_2O_3 on the growth and morphology of $Ba_2YRu_{1-x}Cu_xO_6$ single crystals grown from high temperature solutions”, S. M. Rao, M. K. Wu, T. R. Chen, Y. H. Liu, and Y. C. Liao presented at the Physical Society of ROC Annual Meeting, Hsinchu, Feb, 2004.
2. “Growth of large single crystals of $Ba_2PrRu_{1-x}Cu_xO_6$ from high temperature solutions and investigation of their physical properties”, B. H. Mok, T. W. Chou, S. M. Rao, M. K. Wu, and Y. C. Liao presented at the Physical Society of

ROC Annual Meeting, Hsinchu, Feb, 2004.

3. "Growth morphology and magnetic properties of the new double-perovskite $\text{Sr}_2\text{YRu}_{1-x}\text{Cu}_x\text{O}_6$ single crystals prepared from high temperature solutions", B. H. Mok, M. K. Wu, T. W. Chou, S. M. Rao, and Y. C. Liao presented at the Physical Society of ROC Annual Meeting, Hsinchu, Feb, 2004.
4. "On the growth of large single crystals of the double perovskite $\text{A}(\text{Ba},\text{Sr})\text{R}(\text{Y},\text{Pr})\text{Ru}_{1-x}\text{Cu}_x\text{O}_6$ from high temperature solutions", S. M. Rao, T. R. Chen, B. H. Mok, T. R. Chou, Y. S. Liu, H. L. Liu, Y. C. Liao and M. K. Wu presented at the Taiwan International Conference on Superconductivity, Penghu (Taiwan) July 2004.
5. "Growth of $\text{Ba}_2\text{Re}(\text{Y},\text{Pr})\text{Ru}_{1-x}\text{Cu}_x\text{O}_6$ single crystals in a high temperature solution drop using an infrared imaging system", S. M. D. Rao, B. H. Lin, C. Y. Lu, N. Sutanto, Y. C. Liao, and M. K. Wu *Cryst. Res. Technol.* 39, (2004) 501.
6. "Magnetic and superconducting behaviours of doped and undoped double perovskite $\text{Ba}_2\text{PrRuO}_6$ ", S.M. Rao, M.K. Wu, J.K. Srivastava, B.H. Mok, C.Y. Lu, Y.C. Liao, Y.Y. Hsu, Y.S. Hsiue, Y.Y. Chen, S. Neeleshwar, S. Tsai, J.C. Ho, H.- L. Liu *Physics Letters A* 324 (2004) 71.
7. "Influence of Cu doping on the magnetic and superconducting properties of single crystals of $\text{Ba}_2\text{PrRu}_{1-x}\text{Cu}_x\text{O}_6$ grown from high temperature solutions", S. M. D. Rao, M. K. Wu, B. H. Mok, C. Y. Lu, Y. C. Liao, Y. Y. Hsu and Y. S. Shiue, *Mat. Res. Soc. Proc. Vol. EXS-3* (2004) EE8.2.1
8. "Growth of large single crystals of the double perovskite $\text{A}(\text{Ba},\text{Sr})\text{R}(\text{Y},\text{Pr})\text{Ru}_{1-x}\text{Cu}_x\text{O}_6$ from high temperature solutions", S. M. Rao, T. R. Chen, B. H. Mok, T. R. Chou, Y. S. Liu, H. L. Liu, Y. C. Liao and M. K. Wu to appear in *Chinese J. Phys.* (2004).

Shiau, Bao-Shi (蕭葆義)

1. Bao-Shi Shiau, and Ben-Jue Tsai, (2004), "Observation on the Vertical Upward Discharge of Dense Liquid into the Stagnant Stratified Ambient Water," Proceedings of the 4th International Symposium on Environmental Hydraulics and 14th Congress of IAHR-APD, Hong Kong, China
2. 蕭葆義, 蔡秉直, (2004), 海水淡化廠滷水廢液於海域水體中以潛沒垂直方式排放之擴散特性實驗探討, 第二十六屆海洋工程研討會論文集, 第 581-587 頁, 台北, 台灣
3. 蕭葆義, 陳銀進, (2004), 海岸工業區之儲氣槽重質氣體連續溢漏在不同粗糙地面之濃度擴散實驗分析, 第二十六屆海洋工程研討會論文集, 第 589-594 頁, 台北, 台灣
4. Bao-Shi Shiau, and Chen-Lin Yang, (2004),"Field Monitoring on the Physical

and Optical Characteristics of the Pa-Li Sewage Ocean Outfall at the Northwest of Taiwan,” Proceedings of the 3rd International Conference on Marine Waste Water Discharges and Marine Environment, Catania, Italy

5. Bao-Shi Shiau, Yuan-Bin Chen, and W.-N Chun, (2004), “Wind Tunnel Test on the Surface Pressure and Pressure Spectra of a Square Prismatic Building in the Turbulent Boundary Layer,” Proceedings of the 5th International Colloquium on Bluff Body Aerodynamics and Applications, pp.465-468, Ottawa, Canada

Singh, Brajendra K. (辛格)

1. Brajendra K. Singh, J. Chattopadhyay and Somdatta Sinha, “The role of virus infection in a simple phytoplankton zooplankton system”, J. Theor. Biol. 231, 153 (2004). 　
2. Brajendra K. Singh, J. Subba Rao, R. Ramaswamy and Somdatta Sinha, “The role of heterogeneity on the spatiotemporal dynamics of host-parasite metapopulation”, Ecol. Modelling, 180, 435 (2004).

Tsai, Wen-Li (蔡文立)

1. P. H. Borse, I. M. Yi, J. H. Je, W. L. Tsai and Y. Hwu, pH Dependence of Synchrotron X-ray Induced Electroless Nickel Deposition, J. Appl. Phys., Vol.95 (3), pp. 1166-1170 (2004).
2. Y. Hwu, W. L. Tsai, J. H. Je, S. K. Seol, B. Kim, A. Groso, G. Margaritondo, K. H. Lee and J. K. Seong, Synchrotron Microangiography With No Contrast Agent, Phys. Med. Biol. 49, pp. 501-508 (2004).

Teng, Ping-Kun (鄧炳坤)

1. The CDF Collaboration, *Search for Kaluza-Klein Graviton Emission in $p\bar{p}$ Collisions at $\sqrt{S} = 1.8$ TeV using the Missing Energy Signature*, Phys. Rev. Lett. 92, 121802 (2004).
2. The CDF Collaboration, *Search for Pair Production of Scalar Top Quarks in R-parity Violating Decay Modes in $p\bar{p}$ Collisions at $\sqrt{S} = 1.8$ TeV*, Phys. Rev. Lett. 92, 051803 (2004).
3. The CDF Collaboration, *Inclusive Search for Anomalous Production of High-p(t) Like-Sign Lepton Pairs in $p\bar{p}$ Collisions at $\sqrt{S} = 1.8$ TeV*, Phys. Rev. Lett. 93, 061802 (2004).
4. The CDF Collaboration, *Observation of the Narrow State $X(3872) \rightarrow J/\psi\pi^+\pi^-$ in $p\bar{p}$ Collisions at $\sqrt{S} = 1.96$ TeV*, Phys. Rev. Lett. 93, 072001 (2004).
5. The CDF Collaboration, *Inclusive Double-Pomeron Exchange at the Fermilab Tevatron $p\bar{p}$ Collider*, Phys. Rev. Lett. 93, 141601 (2004).

6. The CDF Collaboration, *Measurement of the Average Time-Integrated Mixing Probability of b-Flavored Hadrons Produced at the Tevatron*, Phys. Rev. D69, 012002 (2004).
7. The CDF Collaboration, *Heavy Flavor Properties of Jets Produced in $p\bar{p}$ Interactions at $\sqrt{S} = 1.8$ TeV*, Phys. Rev. D69, 072004 (2004).
8. M.L. Chu, S.-C. Lee, D.S. Su, P.K. Teng, M. Goodrick, N. Kundu, A.R. Weidberg, M. French, C.P. Macwaters, J. Matheson, *The Off-Detector Opto-electronics for the Optical Links of The ATLAS SemiConductor Tracker and Pixel Detector*, NIM A530 (2004) 293.

To, Kiwing (杜其永)

1. Kiwing To, Dynamics of granular chain, AIP Conference Proceedings Vol 708(1) pp. 247-248, 2004.

Tseng, C. Y (曾忠一)

鍾明珠, 曾忠一, 2004: 利用 AVHRR 和 OCI 資料求取大氣中的氣溶膠參數. 氣象預報與分析, 第 179 期, 11-20.

Tsong, T. Y. (鄭天佑)

1. Chang, C. H. and Tsong, T. Y. (2004). Stochastic Resonance in an Ion Pump under Complex Fluctuations. Phys. Rev. E. 69, 021914.
2. Rozenbaum, V. M., Yang, D. A., Lin, S. H. and Tsong, T. Y. (2004). Catalytic Wheel as a Brownian Motor. J. Phys. Chem. B 15880-15889.
3. Su, Z. D., Wu, J. M., Tsong, T. Y. and Chen, H. M. (2004). Modular Assembly Revealed by Tryptophan and Other Optical Probes in Staphylococcal Nuclease Folding. J. Chin. Chem. Soc. Taipei 51, 1099-1106. Special Issue commemorating the 67th Birthday and his retirement from professional life of Sunney I. Chan.

Tzeng, Yi-Harn (曾詣涵)

1. Lie-Wen Chen, Che-Ming Ko, Yiharn Tzeng, Cascade Production in Heavy-ion Collisions at SIS Energies, Phys. Lett. B584, 269-275 (2004)
2. Shwu-Yun Tsay Tzeng, Yiharn Tzeng, Two-level Model and magnetic Field Effects on the Hysteresis in n - GaAs, Phys. Rev. B70, 085208 (2004).

Wei, Ching-Ming (魏金明)

1. H. H. Chang, M. Y. Lai, J. H. Wei, C. M. Wei, and Y. L. Wang, Phys. Rev. Lett. 92, 066103 (2004): "Structure Determination of Surface Magic Clusters"
2. Xinyuan Zhao, C.M. Wei, L. Yang, and M. Y. Chou, Phys. Rev. Lett. 92, 236805 (2004): "Quantum confinement and electronic properties of silicon nanowires"

3. M.H. Upton, C.M. Wei, M.Y. Chou, T. Miller, T.-C. Chiang, Phys. Rev. Lett., 93, 026802 (2004): “Thermal stability and electronic structure of Pb films on Si(111)”

Wu, Maw-Kuen(吳茂昆)

1. Y.C. Liao, M.K. Wu, C.C. Chi, “Substrate strain effect of $\text{EuBa}_2\text{Cu}_3\text{O}_{7-\delta}$ film: interplay between dislocations, precipitates and superconductivity”, Physica C-Superconductivity and its Applications, 416, 95, 2004.
2. N.G. Parkinson, P.D. Hatton, J.A.K Howard, C. Ritter C, R.M. Ibberson, M.K. Wu, “Variable temperature neutron powder diffraction study to determine the magnetic interactions in $\text{Sr}_2\text{LnRuO}_6$ (Ln = Ho and Tb)”, Journal of Physics-Condensed Matter, 16, 7611, 2004.
3. Y.C. Liao, C.H. Du, F. Xu, M.J. Wang, C. Wu, Y.Y. Hsu, M. K. Wu, “Exotic properties of spinel oxide superconductor $\text{Li}_{1-x}\text{Ti}_2\text{O}_4$ ”, Physica C-Superconductivity and its Applications, 408, 369, 2004.
4. C.P. Sun, J.Y. Lin, S. Mollah, P.L. Ho, H.D. Yang, F.C. Hsu, Y.C. Liao, M. K. Wu “Magnetic field dependence of low-temperature specific heat of the spinel oxide superconductor LiTi_2O_4 ”, Physical Review B70, 054519, 2004.
5. S.Y. Chen, P.C. Hsieh, I.G. Chen, M.K. Wu “Effect of nano-sized $\text{Sm}_2\text{BaCuO}_5$ particles addition on the pinning mechanism of Sm-Ba-Cu-O materials”, Journal of Materials Research, 19, 843, 2004.
6. S.M. Rao, B.H. Lin, C.Y. Lu, N. Sutanto, Y.C. Liao, M.K. Wu, “Growth of $\text{Ba}_2\text{Re}(\text{Y},\text{Pr})\text{Ru}_{1-x}\text{Cu}_x\text{O}$ single crystals in a high temperature solution drop using an infrared imaging system”, Crystal Research and Technology, 39, 501, 2004.
7. S.M. Rao, M.K. Wu, J.K. Srivastava, B.H. Mok, C.Y. Lu, Y.C. Liao YC, Y.Y. Hsu, Y.S. Hsiue, Y.Y. Chen, S. Neeleshwar, S. Tsai, J.C. Ho, H.L. Liu, “Magnetic and superconducting behaviours of doped and undoped double perovskite $\text{Ba}_2\text{PrRuO}_6$ ”, Physics Letters A324, 71, 2004.
8. S.Y. Chen, I.G. Chen, M.K. Wu, “Pinning mechanism of the high critical current density Sm-Ba-Cu-O superconductors with Sm210/Pd/Pt/CeO₂ addition”, IEEE Transactions on Applied Superconductivity, 13, 3087, 2003.
9. S.Y. Chen, I.G. Chen, C.P. Liu, P.C. Hsieh, M.K. Wu, “The relationship between nano-scale Sm211/Sm123 interfaces and superconductivity of Sm-Ba-Cu-O materials”, IEEE Transactions on Applied Superconductivity, 13, 3180, 2003.
10. H.L. Liu, C.C. Chen, F.Z. Chien, M.K. Wu, “Inelastic light scattering studies of superconducting Ru-based double perovskites”, Physica C-Superconductivity and its Applications, 388, 319, 2003.
11. N.G. Parkinson, P.D. Hatton, J.A.K. Howard, C. Ritter, F.Z. Chien, M.K. Wu, “Crystal and magnetic structures of $\text{A}_2\text{YRu}_{1-x}\text{Cu}_x\text{O}_6$ with A = Sr, Ba and x=0.05 to 0.15”, Journal of Materials Chemistry, 13, 1468, 2003.

12. K.F. Chiu, F.C. Hsu, G.S. Chen, M.K. Wu, "Texture and microstructure development of RF sputter-deposited polycrystalline lithium transition metal oxide thin films", *Journal of the Electrochemical Society*, 150, A503, 2003.

Wu, Ming-Chya (吳明佳)

1. A.E. Allahverdyan, Zh. S. Gevorkian, C.-K. Hu and M.-C. Wu. "*Force-induced unzipping of DNA with long-range correlated sequence.*", *Phys. Rev. E* 69, 061908 (2004).
2. Jan Busa, Jozef Dzurina, Edik Hayryan, Shura Hayryan, C.-K. Hu, Jan Plavka, Imrich Pokorny, Jaroslav Skrivanek, and M.-C. Wu, "*ARVO: A Fortran package for computing solvent accessible surface area and volume of overlapping spheres via analytic equations.*", *Comp. Phys. Comm.* 165, 59 (2005).
3. M.-C. Wu, C.-K. Hu, and W.-J. Ma, "*New geometric factor for the characterization of protein molecules.*", submitted to *Proc. Natl. Acad. Sci. U.S.A.* (2004).
4. M.-C. Wu, C.-K. Hu, and C.-K. Peng, "*Study the cardiorespiratory synchronization by using the Hilbert-Huang signal analysis method.*", submitted to *IEEE Trans. Biomed. Eng.* (2004)

Yao, Y. D. (姚永德)

1. "Magnetic switching and reversal process in a tip ring structure", Y. Liou, D. C. Chen, C. Yu, J. S. Chen, S. F. Lee, Y. D. Yao, C. C. Tzeng, T. Y. Chen, K. W. Cheng, R. Ma, *J. Appl. Phys.* **95**, 6723 (2004).
2. "Growth and characterization of La_{0.7}Sr_{0.3}MnO₃ films on various substrates", S. Y. Yang, W. L. Kuang, Y. Liou, W. S. Tse, S. F. Lee, and Y. D. Yao, *J. Magn. Magn. Mater.*, **268**, 326 (2004).
3. "Experimental and simulation of magnetic hysteresis loops of [Co₃(pyz)X(HPO₄)₂F₂]", S. F. Lee, C. R. Chang, J. S. Yang, K. H. Lii, M. D. Lee, Y. D. Yao, *J. Appl. Phys.* **95**, 7073 (2004).
4. "Magnetic studies in octagon-patterned permalloy submicro-wires", Y. D. Yao, E. W. Huang, S. F. Lee, C. Yu, M. S. Wong, and Y. R. Ma, *J. Magn. Magn. Mater.*, **272**, 1686 (2004).
5. "Thickness dependence of the magnetic properties in ultrathin Co/Ce(111) films", J. S. Tsay, H. Y. Nieh, C. S. Yang, and Y. D. Yao, *J. Magn. Magn. Mater.*, **272**, E829 (2004).
6. "Exchange anisotropy in PtMn/Ni₈₀Fe₂₀ films on MgO(110)", D. H. Wei, C. C. Yu, H. M. Duh, Y. D. Yao, J. H. Chien, and T. S. Chin, *J. Magn. Magn. Mater.*, **272**, 370 (2004).
7. "Size effect of nanosized thin-film iron dot on growth of multiwall carbon nanotubes", M. S. Wong, K. W. Cheng, C. H. Shee, Y. R. Ma, J. C. Wu, Y. Liou, and Y. D. Yao, *J. Appl. Phys.*, **95**, 7291 (2004)
8. "Annealing effect on the Fe/Pt multilayers grown on Al₂O₃(0001) substrates", S. C. Chou, C. C. Yu, Y. Liou, Y. D. Yao, D. H. Wei, T. S. Chin, and M. F. Tai, *J. Appl. Phys.*, **95**, 7276 (2004).
9. "Bilayers thickness effect on the magnetic properties of [Fe/Pt]_n films", S. C. Chou, C. C. Yu, Y. Liou, and Y. D. Yao, *Phys. Stat. Sol. (a)* 201, 1755 (2004).
10. "Magnetic studies in octagon-patterned permalloy submicro-wires", Y. D. Yao, E.

- W. Huang, S. F. Lee, C. Yu, M. S. Wong, and Y. R. Ma, *J. Magn. Magn. Mater.* **272**, 1686 (2004)
11. "Magnetic and calorimetric studies of antiferromagnetic transitions in erbium sesquisulfide", C. R. Wang, Y. Y. Chen, Y. D. Yao, Y. S. Lin, M. N. Ou, S. M. A. Taher, H. H. Hamdeh, X. Zhang, J. C. Ho, and J. B. Gruber, *J. Magn. Magn. Mater.* **269**, 419 (2004).
 12. "Exchange anisotropy in PtMn/Ni₈₀Fe₂₀ films on MgO(110)", D. H. Wei, C. C. Yu, H. M. Duh, Y. D. Yao, J. H. Chien, and T. S. Chin, *J. Magn. Magn. Mater.* **272**, 370 (2004).
 13. "Effect of field power on growth of multiwall carbon nanotubes", Y. R. Ma, K. W. Cheng, C. H. Shee, C. C. Tsai, C. L. Cheng, H. L. Liu, M. S. Wong, Y. Liou, Y. D. Yao, *J. Magn. Magn. Mater.* **282**, 61 (2004).
 14. "Microwave FMR Studies on Ultrathin Fe/GaAs Layer Structures", C. S. Tsai, J. Y. Li, M. J. Chen, C. C. Yu, Y. Liou, D. S. Hung, Y. D. Yao, and S. F. Lee, *J. Magn. Magn. Mater.* **282**, 57 (2004).
 15. "Structure and magnetic properties of Co/Pt single- and bi-crystal multilayers", C. C. Yu, Y. C. Chu, F. L. Chang, D. H. Wei, S. C. Chou, Y. Liou, Y. D. Yao, W. C. Cheng, and T. S. Chin, *J. Magn. Magn. Mater.* **282**, 65 (2004).
 16. "Magnetic properties of ultrathin Co/Ag/Ge(111) films studied using surface magneto-optic Kerr effect technique", J.S. Tsay, H.Y. Nieh, Y.D. Yao, and T.S. Chin, *J. Magn. Magn. Mater.* **282**, 78 (2004).
 17. "Thickness dependence of the magnetic properties in ultrathin Co/Ge(111) films", J. S. Tsay, H. Y. Nieh, C. S. Yang, and Y. D. Yao, *J. Magn. Magn. Mater.* **272**, E829 (2004).
 18. "Effects of Orientation and Temperature on Magnetoresistance of Fe/Si Multilayers" C. H. Lai, W. C. Chen, and Y. D. Yao, *J. Magn. Magn. Mater.* **282**, 96 (2004).
 19. "Magnetic properties of ultrathin Co/Ni/Pt(111) films", C. W. Su, Y. D. Yao, and C. S. Shern, *J. Magn. Magn. Mater.* **282**, 84 (2004).
 20. "Magnetization reversal by a field pulse", I. Klik and Y. D. Yao, *J. Magn. Magn. Mater.* **282**, 131 (2004).
 21. "Giant magnetocurrent in silicon-base magnetic tunneling transistor" Y.W. Huang, C.K. Lo, Y.D. Yao, L.C. Hsieh, J.J. Ju, D. R. Huang, J. H. Huang, *J. Magn. Magn. Mater.* **282**, 279 (2004).
 22. "Magnetic properties of Co/Ag/Co films grown on Ag(100) nanometer-scale islands", D. H. Wei, C. C. Yu, S. C. Chou, Y. D. Yao, Y. Liou, and T. S. Chin, *Phys. Stat. Sol. (b)* **241**, 1752 (2004).
 23. "Quantitative study of magnetoresistance in patterned Ni₈₀Fe₂₀ wires", J. L. Tsai, J. H. Hsieh, T. Y. Chen, S. H. Liou, S. F. Lee, and Y. D. Yao, *Phys. Stat. Sol. (b)* **241**, 1581 (2004).
 24. "Magneto current in a bipolar spin transistor at room temperature", Y. W. Huang, C. K. Lo, Y. D. Yao, L. C. Hsieh, J. J. Ju, D. R. Huang, and J. H. Huang, *Appl. Phys. Lett.* **85**, 2959 (2004).
 25. "Ag buffer layer effect on magnetization reversal of epitaxial Co films", D. H. Wei, C. C. Yu, S. C. Chou, Y. D. Yao, Y. Liou, and T. S. Chin, *Phys. Stat. Sol. A* **201**, 3361 (2004).
 26. "Electronic structure and magnetic moments of 3d transition metal-doped ZnO", C. H. Chien, S. H. Chiou, G. Y. Guo, and Y. D. Yao, *J. Magn. Magn. Mater.* **282**, 275 (2004).
 27. "Magnetic phases of Co/Ge(111) studied using surface magneto-optic Kerr

- Effect”, J. S. Tsay, H. Y. Nieh, Y. D. Yao, Y. T. Chen, and W. C. Cheng, *Surface Sci.*, **566**, 226 (2004).
28. “Magnetic and calorimetric studies of antiferromagnetic transitions in erbium Sesquisulfide”, *J. Magn. Magn. Mater.* **269**, 419 (2004).
 29. “Magnetization reversal process of patterned Ni₈₀Fe₂₀ zigzag wires”, *J. Magn. Magn. Mater.*, **272**, E1309 (2004).
 30. “Magnetic properties of patterned Fe₃O₄ films”, J. L. Tsai, K. T. Huang, W. C. Cheng, M. D. Lee, T. S. Chin, S. U. Jen, S. F. Lee, and Y. D. Yao, *J. Magn. Magn. Mater.*, **272**, 1664 (2004).
 31. “Effects of Ag pinning layers on the magnetic properties of Fe/Pt multilayer films” D. H. Wei, S. C. Chou, T. S. Chin, C. C. Yu, Y. Liou, and Y. D. Yao, *J. Appl. Phys.* accepted (2004).
 32. “Effects of the process parameters on the microstructure and magnetic properties Of nanocrystalline FeTaCN films”, C. Y. Chou, P. C. Kuo, Y. D. Yao, S. C. Chen, C. T. Lie, and A. C. Sun, *J. Magn. Magn. Mater.* **272**, 1406 (2004).
 33. “Pushing nanoparticles of LaSrMnO” , Y. R. Ma, Y. Liou, and Y. D. Yao, *J. Magn. Magn. Mat.*, **282**, 342 (2004).
 34. “Magnetic properties of interfacial layers in Co/Ge(111) thin films”, J.S. Tsay, Y.T. Chen, W. C. Cheng, and Y.D. Yao, *J. Magn. Magn. Mater.* **282**, 81 (2004).
 35. “Current-assisted magnetization switching in submicron permalloy S-shape wires with narrow junctions”, Y. C. Chen, Y. D. Yao, S. F. Lee, Y. Liou, J. L. Tsai, and Y. A. Lin, *J. Appl. Phys.*, accepted (2004).
 36. “Magnetic force induced damping effect for magnetic bearing motor”, *J. Appl. Phys.* C. C. Wang, Y. D. Yao, P. C. Tung, R. B. Xiao, Y. H. Chang, *J. Appl. Phys.*, accepted (2004).
 37. “Study of annealing and exchange bias effects in PtMn based magnetic tunnel Junction system”, T. Y. Peng, Y. D. Yao, S. Y. Chen, Y. H. Wang, W. C. Chen, M. J. Gao, and D. D. Tang, *Phys. Stat. Sol. (c)* **1**, 3628 (2004)
 38. “Effects of an ultrathin MgO inserted layer on the magnetic properties of FePt films”, D. H. Wei, S. C. Chou, T. S. Chin, C. C. Yu, Y. Liou, and Y. D. Yao, *J. Appl. Phys.*, accepted (2004).
 39. “Spin-valve transistor”, Y.W. Huang, C.K. Lo, Y.D. Yao, L.C. Hsieh, J. H. Huang, *J. Appl. Phys.*, accepted (2004).
 40. “Effects of Ag buffer and Pt intermediate layers on magnetic properties of epitaxial Co/Pt multilayers”, D. H. Wei, S. C. Chou, C. C. Yu, Y. D. Yao, Y. Liou, and T. S. Chin, *IEEE Trans. Magn.*, accepted (2004).
 41. “Temperature dependence of magnetic properties in Ni-Mn-Ga shape memory alloys”, M. T. Lee, N. V. Nong, N. P. Thuy, Y. D. Yao, S. F. Lee, Y. Liou, Y. Y. Chen, C. R. Wang, *Phys. Stat. Soc. C*, accepted (2004).
 42. “Current driven domain wall motion in magnetic U-pattern”, J. L. Tsai, T. Chen, S. F. Lee, Y. Liou and Y. D. Yao, *J. Appl. Phys.*, accepted (2004).
 43. “Ultrasonic spray pyrolysis for synthesis of spherical zirconia particles”, Y. L. Song, S. C. Tsai, C. Y. Chen, T. K. Tseng, C. S. Tsai, J. W. Chen, and Y. D. Yao, *J. Am. Ceram. Soc.* **87**, 1864 (2004).
 44. “Microwave-induced combustion synthesis of Li_{0.5}Fe_{2.5-x}M_xO₄ (M=Al, Cr, Mn) powder and their characterization”, Y. P. Fu, S. Tsao, C. T. Hu, and Y. D. Yao, *J. Alloys & Compounds*, in press (2004)

Yip, S. K. (葉崇傑)

1. S. T. Wu and S. K. Yip, "AC Josephson effect in asymmetric superconducting point contact", Phys. Rev. B, 70, 104511 (2004)
2. S. K. Yip, "Transmission Probabilities and Current Correlations for a Y-shaped Diffusive Conductor", Phys. Rev. B accepted.

Yu, Chin-Chung (余進忠)

1. D. H. Wei, C. C. Yu, S. C. Chou, Y. D. Yao, Y. Liou, and T. S. Chin, "Ag buffer layer effect on magnetization reversal of epitaxial Co films", Phys. Stat. Sol. 201, pp. 3361-3365 (2004).
2. D. H. Wei, C. C. Yu, S. C. Chou, K. L. You, Y. D. Yao, Y. Liou, and T. S. Chin, "Magnetization reversal study of Co films on nano-sized pyramidal Ag islands", Transactions of the Materials Research Society of Japan 29, pp.1747-1750 (2004).
3. C. C. Yu, Y. C. Chu, F. L. Chang, D. H. Wei, S. C. Chou, Y. Liou, Y. D. Yao, W. C. Cheng, T. S. Chin, "Structure and magnetic properties of Co/Pt single- and bi-crystal multilayers", J. Magn. Magn. Mater. 282, pp. 65-68 (2004).
4. C. S. Tsai, J. Y. Li, M. J. Chen, C. C. Yu, Y. Liou, D. S. Hung, Y. D. Yao, and C. L. Chen, "Microwave FMR studies on ultrathin Fe/GaAs layer structures", J. Magn. Magn. Mater. 282, pp. 57-60 (2004).
5. S. C. Chou, C. C. Yu, Y. Liou, Y. D. Yao, *Bilayers thickness effect on the magnetic properties of [Fe/Pt]_n films*, Phys. Stat. Sol. (a) 201, pp.1755-1758 (2004).
6. D. H. Wei, C. C. Yu, S. C. Chou, Y. D. Yao, Y. Liou, and T. S. Chin, *Magnetic properties of Co/Ag/Co films grown on Ag(100) nanometer-scale islands*, Phys. Stat. Sol. (b) 241, pp.1752-1755 (2004).
7. D. H. Wei, C. C. Yu, H. M. Duh, Y. D. Yao, J. H. Chien, and T. S. Chin, *Exchange anisotropy in PtMn/Ni₈₀Fe₂₀ films on MgO(110)*, J. Magn. Magn. Mater. 272-276, p.370 (2004).
8. S. C. Chou, C. C. Yu, Y. Liou, Y. D. Yao, D. H. Wei, T. S. Chin, M. F. Tai, *Annealing effect on the Fe/Pt multilayers grown on Al₂O₃(0001) substrates*, J. Appl. Phys. 95, p.7276 (2004).

Yu, Yueh-Chung (余岳仲)

1. J.Y. Hsu, Y.C. Yu, J.H. Liang, K.M. Chen, and H. Niu, "Energy loss of He, Li, and B isotopes with MeV energies in Au", Nucl. Instr. and Meth in Phys. Research B 219/220 (2004) 251.
2. Y.C. Yu and K.M. Chen, "M X-ray production in Nd, Gd, Ho, Lu by 1-6 MeV lithium ions", Nucl. Instr. and Meth in Phys. Research B 219/220 (2004) 284.

Wong, M.J. (王明哲)

1. "OPTIMIZED SEARCH FOR SINGLE TOP QUARK PRODUCTION AT THE FERMILAB TEVATRON." By CDF Collaboration (D. Acosta ,...,**M.J. Wang** et al.).
Published in Phys.Rev.D69:052003,2004
2. "SEARCH FOR PAIR PRODUCTION OF SCALAR TOP QUARKS IN R PARITY VIOLATING DECAY MODES IN P ANTI-P COLLISIONS AT $S^{**}(1/2) = 1.8\text{-TEV}$." By CDF Collaboration (D. Acosta ,...,**M.J. Wang** et al.)
(551 authors listed) Published to Phys.Rev.Lett.92:051803, 2004

Wong, H. T. (王子敬)

1. " Near Threshold Pulse Shape Discrimination Techniques in Scintillating CsI(Tl) Crystals ", S.C. Wu et al., Nucl. Instrum. Methods A 523, 116 (2004)
2. " The TEXONO Research Program on Neutrino and Astroparticle Physics ", H.T. Wong, Mod. Phys. Lett. A 19, 1207 (2004).
3. " Neutrino Magnetic Moment Results at the Kuo-Sheng Nuclear Power Plant" ,H.B Li and H.T. Wong, Eur. Phys. J. C 33, s01, s800 (2004).
4. " Recent Results and Status of TEXONO Experiments ", V. Singh and H.T. Wong, J. High Energy Phys. 066A, 1103 (2004).
5. "Energy Reconstruction for Long Column CsI(Tl) Crystal Detector", D.Z.~Liu et al., High Energy Physics and Nuclear Physics , 186 (2004).
6. "Detection of WIMPs using Low Threshold HGe detector", Q.~Yue et al., High Energy Physics and Nuclear Physics 28, 877 (2004).
7. "The TEXONO Research Program on Neutrino and Astroparticle Physics", H.T.~Wong, Mod. Phys. Lett. A 19, 1207 (2004).
8. "White Paper Report on Using Nuclear Reactors to Search for a Value of θ_{13} ", K.~Anderson et al., Reactor Working Group, hep-ex/0402041 (2004).
9. "Taiwan Neutrino Experiment" (Chinese), H.T.~Wong, in {it Academia Sinica Important Research Achievement 2004}, pg. 26 (2004).

V

Academic Activities

Attendance in International Conference
 中研院物理所九十三年度出席國際會議表
 (2004年1月 ~ 2004年12月)

會議名稱	會議期間	舉辦地點	出席人員	經費來源
第九屆磁性與磁性材料暨國際磁性聯合會議	93.01.05-93.01.09	美國加州Anaheim	蘇炯武	國科會
第九屆磁性與磁性材料暨國際磁性聯合會議	93.01.05-93.01.09	美國加州Anaheim	蔡佳霖	國科會
第九屆磁性與磁性材料暨國際磁性聯合會議	93.01.05-93.01.09	美國加州Anaheim	余進忠	國科會
2004年美國物理學會三月年會	93.03.22-93.03.26	加拿大蒙特婁	徐永源	國科會
Bio-ADIT 2004	93.01.29-93.01.30	瑞士Lausanne	王孫崇	本所+自理
多夸克強子研討會	93.02.17-93.02.19	日本京都	江文泰	本所+自理
美國物理學年會	93.03.22-93.03.26	加拿大蒙特婁	鐘元良	本所+自理
ICSM2004 合成金屬國際會議	93.06.28-93.07.02	澳洲New South Wales	陳正龍	本所+自理
System Biology Dynamics: from Genes to Organsims	93.05.17-93.05.28	加拿大蒙特婁	辛格	本所+自理
2004微中子會議	93.06.12-93.06.20	法國巴黎	李浩斌	本所
91屆統計物理會議及2004複雜系統國際會議	93.05.16-93.05.21	美國紐澤西及波士頓	沙阿金	主題+自理
第二十二屆統計物理國際會議	93.07.04-93.07.09	印度邦加羅爾	吳明佳	本所+自理
第二十二屆統計物理國際會議	93.07.04-93.07.09	印度邦加羅爾	伊士麥林尼可	本所+自理
第二屆亞太物理研討會	93.06.21-93.06.24	中國香港	黃信銘周崇斌	國科會
第二次賽漢姆磁學會議	93.06.27-93.07.01	德國賽漢姆	周群淵	國科會
廈門出席「The 4th Workshop on Biology-Inspired Theoretical Problems」及上海出席「The Fourth Joint Meeting of Chinese Physicists Worldwide」	93.06.26-93.07.01	中國廈門及上海	王孫崇	本所
物理教育及新領域研究國際研討會	93.06.28-93.07.01	中國上海	陳遠帆	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
亞太區為中子及暗物質國際研討會	93.07.11-93.07.14	日本大阪	盛偉德	本所
第二屆亞太區物理研討會	93.06.21-93.06.24	香港	吳桂光	本所
「The 13th International Laser Physics Workshop LPHYS' 04」	93.07.12-93.07.16	義大利的港	歐甘仁	本所
第二次賽漢姆磁學會議	93.06.27-93.07.01	德國賽漢姆	李明道	國科會
2004國際生物力學研討會	93.08.23-93.08.26	美國夏威夷	詹明宜	本所
第三十二屆高能物理國際會議	93.08.16-93.08.22	中國北京	蔡俊謙	本所
德國聯合歐洲磁性會議	93.09.05-93.09.10	德國Dresden	柯松仁	主題
比利時第四屆國際無機材料研討會	93.09.19-93.09.21	Blegium Antwerp	柯松仁	主題
Meeting of The Division of Particles and fields of The American Physical society	93.08.27-93.08.31	美國加州Riverside	廖惠施	本所+自理
17th Marian Smoluchowski Symposium on Statistical Physics	93.09.04-93.09.09	波蘭Zakopane	鄭天佑	本所+國科會
2004美國物理學會場論與粒子物理研討會	93.08.27-93.08.31	美國加州Riverside	張有毅	本所+自理
歐洲磁學會議	93.09.05-93.09.10	德國德勒斯登	魏大華	主題
國際光學工程研討會	93.10.29-93.10.28	美國費城	胡恩德	本所
第四十九屆磁性與磁性材料會議	93.11.07-93.11.11	美國奧蘭多	劉乃勝	國科會
第五十一屆美國真空協會研討會及展示	93.11.14-93.11.20	美國洛杉磯	邱雅萍	本所
馬來西亞科學大會	93.10.06-93.10.08	馬來西亞	鄭天佐	會議主辦單位
亞太物理會理事會及物理學大會	93.10.22-93.10.31	越南河內	鄭天佐	本所
第四十九屆國際磁性會議	93.11.07-93.11.11	美國佛羅里達	余進忠	本所
第四十九屆國際磁性會議	93.11.07-93.11.11	美國佛羅里達	黃斯衍魏大華	主題
第四屆過渡金屬氧化物之新穎量子現象國際研討會	93.11.22-93.11.24	日本仙台	周崇斌黃信銘	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
SOKENDAI Okazaki演講：亞洲冬季學校	93.12.05-93.12.10	日本愛知縣岡崎市	吳明佳	本所
ISEH&IAHR-APD2004	93.12.14-93.12.19	中國香港	關文儉	本所
第九屆國際磁學聯合研討會	93.01.05-93.01.11	美國加州	姚永德	本所
2004磁性會議	92.12.31-93.01.09	美國洛杉磯	陳洋元	國科會
第九屆加速器與粒子物理研討會	93.02.16-93.02.20	日本盛岡	李湘楠	本所
美國生物物理學會年會	93.02.13-93.02.19	美國	李世炳	本所
赴韓出席電子自旋與工程會議	93.02.10-93.02.15	韓國浦項	陳啟東	國科會
2004Nano Materials for Defense Applications Symposium	93.02.17-93.02.26	美國夏威夷	陳啟東	國科會
Grid Deployment Board定期會議	93.02.06-93.02.13	瑞士日內瓦	林誠謙	本所
2004Nano Materials for Defense Applications Symposium	93.02.17-93.02.26	美國夏威夷	張嘉升	國科會
2004Nano Materials for Defense Applications Symposium	93.02.17-93.02.26	美國夏威夷	胡宇光	國科會
2004Nano Materials for Defense Applications Symposium	930217~930227	美國夏威夷	吳茂昆	國科會
匹茲堡會議	93.03.07-93.03.12	美國匹茲堡	何侗民	本所
美物理學春季會議	93.03.22-93.03.26	美國	何侗民	本所
International Symposium on Mesoscopic Superconductivity and Spintronics	93.03.01-93.03.04	日本東京	葉崇傑	本所及國科會
未來電廠微中子實驗研討會	93.02.19-93.02.23	日本新瀉市	王子敬	國科會
2004物理年會	93.03.21-93.03.27	加拿大蒙特婁	陳洋元	本所
2004物理年會	93.03.21-93.03.28	加拿大蒙特婁	鄭天佐	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
Technology 2004 - International Nanotechnology Exhibition and Conference	93.03.17-93.03.19	日本	吳茂昆	國科會
台灣微中子2004國際會議	93.06.13-93.06.20	法國巴黎	王子敬	本所
台菲學術會議	93.03.25-93.03.27	菲律賓馬尼拉	魏金明	國科會
國際非微擾量子重力會議	93.05.01-93.05.09	法國馬賽	余海禮	國科會
第91屆統計國際會議及2004複雜系統國際會議	93.05.12-93.05.21	美國密西根	胡進錕	本所及國科會
小x物理會議	93.05.23-93.05.28	中國上海	李湘楠	本所
赴德出席會議及芬蘭研究訪問	93.07.26-93.08.05	德國/芬蘭	葉崇傑	本所
國際磁光記錄2004研討會	93.05.16-93.05.19	日本橫濱	姚永德	國科會
第22屆統計物理國際會議	93.07.04-93.07.10	印度	杜其永	國科會
亞太區微中子物理國際研討會	93.07.11-93.07.15	日本	王子敬	國科會
第3屆國際表面介面薄膜研討會	93.05.26-93.05.30	中國上海	張嘉升	國科會
第10屆國際粒子誘發x射線產生及其分析應用會議	93.06.02-93.06.11	斯洛維尼亞	余岳仲	本所
2004年夸克與原子核物理會議	93.05.25-93.05.28	美國	王明哲	本所
赴香港訪問，順道赴上海及新加坡出席會議	93.06.01-93.07.31	中國上海/新加坡	謝雲生	本所
第5屆越南粒子物理國際會議	93.08.05-93.08.11	越南	王子敬	本所
第8屆亞太電子顯微學	93.06.06-93.06.12	日本	鄭天佐	本所
第4屆海外全球華人物理大會	93.06.27-93.07.01	中國上海	鄭海揚	本所
5th International Symposium on Development and Application of Semiconductor Tracking Detectors	93.06.12-03.06.18	日本廣島	侯書雲	國科會
西海母磁性研討會	93.06.24-93.07.05	德國	姚永德	國科會
2004電子強作用會議	93.07.25~93.07.31	德國	陳洋元	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
第11屆國際流場顯微相會議	93.08.08-93.08.20	美國	黃榮鑑	本所
第29屆國際紅外線及毫米波會議	93.09.26-93.10.02	德國	何侗民	國科會
第4屆華人物理學會會議	93.06.27-93.07.02	中國上海	章文箴	國科會
第2屆亞太物理研討會	93.06.14-93.06.24	香港	李定國	國科會
出席國際會議及赴英法短期訪問	93.06.12-93.06.30	西班牙	杜其永	本所
第4屆華人物理學會會議	93.06.25-93.07.03	中國上海	陳志強	國科會
第8屆歐洲表面晶格學學動態...	93.07.18-93.07.21	西班牙	黃英碩	本所
物理教育及前沿研究國際會議	93.06.27-93.06.30	中國上海	胡進錕	國科會
第3屆非限性科國際會議	93.06.09-93.07.03	新加坡	梁鈞泰	國科會
第2屆從固態到生物物理	93.06.26-93.06.29	克羅埃西	胡宇光	主題
APC Asia 2004會議	93.07.19-93.07.23	日本	鄧炳坤	本所
2004電場發射研討會	93.07.10-93.07.18	奧地利	鄭天佐	本所
第22屆統計物理國際會議	93.07.04-93.07.10	印度	胡進錕	國科會
第20屆歐洲物理學會固態研討會及訪問	93.07.12-93.07.25	法國	李尚凡	本所
第22屆之衛星會議並順道訪問	93.07.16-93.07.24	日本	胡進錕	國科會
第14屆真空紫外光輻射物理	93.07.18-93.07.24	澳大利亞	胡宇光	主題
五夸克研討會	93.07.18-93.07.30	日本	章文箴	本所及國科會
2004美國物理年會	93.07.25-93.09.08	美國	鄭海揚	本所及國科會
第8屆歐洲表面結晶及動力學會議	93.07.18-93.07.21	西班牙	魏金明	本所及國科會
赴西班牙出席會議，並於會前訪問巴黎CernAime Cotton 實驗室	93.07.14-93.07.21	西班牙	黃英碩	本所
五夸克態國際研討會	93.07.18-93.07.23	日本	王明哲	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
第32屆高能物理國際研討會	93.08.15-93.08.23	中國北京	李湘楠	國科會
2004夏季研討會	93.08.01-93.08.15	美國	吳建宏	本所
海峽兩岸顆粒技術研討會	93.08.29-93.09.02	中國山東	任盛源	本所
海峽兩岸顆粒技術研討會	93.08.29-93.09.02	中國山東	姚永德	本所
第49屆磁性及磁材料年會	93.11.07-93.11.12	美國佛羅里達	任盛源	國科會
WI 2004會議	93.09.20-93.09.24	中國北京	李世炳	本所及國科會
出席國際會議	93.06.12-93.06.18	日本	侯書雲	本所
第3屆國際廢水海洋放流與海洋環境研討會	93.09.26-93.10.02	義大利	蕭葆義	本所
微電子產業之奈米及高頻挑戰學術研討會	93.09.13-93.09.17	波蘭	鄭天佐	本所
歐洲材料年會	93.09.06-93.09.10	波蘭	胡宇光	主題
第18屆國際加速器在研究及工業應用會議	93.10.10-93.10.15	美國	余岳仲	國科會
2004年味物理與CP破壞國際會議	93.10.04-93.10.09	韓國	鄭海揚	本所
WI 2004會議	93.09.20-93.09.24	中國北京	李世炳	國科會
第28日本應用磁氣學會學術講演會	93.09.21-93.09.24	日本	姚永德	會議主辦單位
Determination of CKM Matrix Element V_{ub}/V_{cb} at Belle會議	93.10.12-93.10.13	日本	李湘楠	國科會
同步輻射光源年度用戶會議	93.10.03-93.10.05	瑞士	胡宇光	會議主辦單位
第9屆亞太物理會	93.10.24-93.10.30	越南	陳志強	國科會
第一屆杭州模擬物理國際會議	93.11.05-93.11.07	中國杭州	胡進錕	主題及國科會
第三屆日本經濟新聞社經濟物理研究會議	93.11.09-93.11.11	日本東京	胡進錕	主題及國科會
第一屆KIAS宇宙及結構形成國際研討會	93.10.28-93.10.29	韓國	吳建宏	本所
YKIS 2004會議	93.1.10-93.11.05	日本	葉崇傑	本所
第9屆亞太物理會議	93.10.25-93.10.31	越南	李定國	本所

會議名稱	會議期間	舉辦地點	出席人員	經費來源
第49屆磁學及磁性材料會議	93.11.07-93.11.11	美國	姚永德	主題
第九屆亞太物理學大會	93.10.25-93.10.31	越南河內	李定國	國科會
第四屆過渡金屬氧化物之新穎量子現象國際研討會	93.11.22-93.11.24	日本仙台	李定國	本所及國科會
第二屆中國國際新材料展覽會	93.11.25-93.11.27	中國北京	李定國	本所及國科會
International Symposium on Oscillation, Chaos and Network Dynamics in Nonlinear Science	93.11.24-93.11.28	日本京都	陳志強	本所
第四屆國際環境水利及第十四屆亞太水理學研討會	93.12.15-93.12.18	香港	蕭葆義	本所
4th ISEH & 14TH IAHR - APD 2004會議	93.12.14-93.12.18	香港	黃榮鑑	國科會
第22屆德克薩斯天文物理國際會議	93.12.12-93.12.19	美國	吳建宏	吳建宏
同步輻射成像新方法及其應用學術研討會	93.12.17-93.12.20	中國上海	胡宇光	胡宇光

Institute Sponsored Meetings

本所協辦會議

研討會名稱	會議期間	地點	主辦人
2004 Taipei Winter Workshop on Nonlinear and Complex Systems	93.01.12 ~ 93.01.13	中研院物理所	胡進錕
奈米科技整合計劃研究會 Forum for NanoScience Programs of Academia Sinica	93.02.01 ~ 93.02.01	中研院物理所	李定國
2004台灣系統生物學暑期學校	93.06.19 ~ 93.06.23	中研院物理所	陳志強
The 7th Taiwan International Symposium on Statistical Physics (StatPhys-Taiwan 2004) : Biologically Motivated Statistical Physics and Related Problems	93.06.22 ~ 93.06.26	中研院物理所	胡進錕
2004 Taipei Summer Workshop on Statistical and Nonlinear Physics	93.07.01 ~ 93.07.01	中研院物理所	胡進錕
2004年暑期非線性與複雜系統研討會 2004 Summer Workshop on Nonlinear and Complex Systems	93.08.04 ~ 93.08.06	桃園縣龍潭鄉渴望學習中心	胡進錕
2004年鄭天佐院士七十華誕學術研討會暨第六屆表面薄膜及奈米科學研討會	93.08.17 ~ 93.08.19	中研院物理所	張嘉升

Seminars
中央研究院物理研究所九十三年度演講一覽表
(2004 January ~ December)

演講題目	演講者	所屬機構	日期
Coherent Back-action correlation to Casimir-Polder Force and Motional Decoherence of atoms in a Quantum Field	B. L. Hu	Univ. of Maryland	2004/1/5
Protein network and nonlinear dynamics	Ouyang Qi	Beking University	2004/1/5
Multiphoton Fluorescence Microscopy of the Skin: Combining Biophysics and Biotechnology	董成淵	台灣大學物理系	2004/1/5
Bioimaging using Fluorescent Nanoparticles	董成淵	國立台灣大學物理系	2004/1/8
Quantum Computing on Si Chips	R. J. Joynt	University of Wisconsin	2004/1/9
Higgs Physics at GLC and GRACE project	Yoshiaki Yasui	KEK	2004/1/9
DNA bending, twisting, and supercoiling	James C. Wang	Harvard University	2004/1/12
Simulations of Met-Enkephalin with Solvent-Accessible Area Parameterizations	Hsiao-Ping Hsu	Institute for Computing	2004/1/12
Through the Interaction of Neutral and Adaptive Mutations, Evolutionary Search	Gwoing Tina Yu	Chevron Texaco Information Technology	2004/1/13
A Growth-based Optimization Algorithm for Lattice and Off-lattice Protein Toy Models	Hsiao-Ping Hsu	Institute for Computing	2004/1/13
The Scientific Study of Societal Conflict Processes	Monty Marshall	Univ. of Maryland	2004/1/14
Social Forms: Integration and Disintegration in Societal Systems	Monty G. Marshall	Univ. of Maryland	2004/1/15
Quantum Phase Transition in a Parallel-Coupled- Quantum-Dot	Jeng-Chung Chen	Department of Physics, Purdue University	2004/1/16
BEC-BCS crossover in a strongly interacting-quantum gas	Cheng Chin	Inst. fur Experimental Physik, Universitat Innsbruck	2004/2/2
Entropically Driven Interactions Between Colloids and Their Assembly	Keng-hui Lin	Harvard Univresity	2004/2/12
磁力顯微鏡之原理及操作介紹	Dmitry Kozodaev	NT-MDT	2004/2/13
Design of a Novel Paroxysmal Atrial Fibrillation Identification System	林可軒	Cornell University	2004/2/13
Ab-initio calculations of quantum-well states in ultrathin metallic films	Michel A. Van Hove	Ernest Orlando Lawrence Berkeley National Laboratory	2004/2/16
olecular Cloning, Expression and Functional Analysis of Zebrafish PYK2 Gene	林宜欣	國立台灣大學生化科學研究所	2004/2/17
Quantum Phases of Frustrated Mott Insulators	Chung-Hou Chung	U. of Toronto	2004/2/18
漢米頓圖形一些有趣的問題	徐力行	交通大學資訊科學系	2004/2/19
Phase Diagram of Degenerate Exciton Systems	C. W. Lai	Lawrence Berkeley National Laboratory	2004/2/20

演講題目	演講者	所屬機構	日期
Structure and dynamics of copper/electrolyte interfaces	P.Broekmann	Institute of Physical and Theoretical Chemistry, University of Bonn	2004/2/20
Optical thin films and nano-materials for nanoscale lithography application	陳學禮	台大材料所	2004/2/23
Frustrated Ising Pyrochlore Magnets	Ying-Jer Kao	U. of Toronto	2004/2/24
Leptogenesis without right-handed neutrino in extra dimension	張維甫	TRIUMF	2004/2/25
Atomic and Molecular Radiation Processes in the Interstellar Medium	郭新	中央研究院天文所	2004/2/26
A Fundamental Approach to Reactivity at Solid Surfaces	Sir David King	英國首席科技顧問	2004/2/27
Single-molecule fluorescence resonance energy transfer reveals a dynamic equilibrium between closed and open conformations of	Jiang Hon-Ren		2004/3/1
Multiscale Molecular Simulations: from atomistic to coarse-grained models	Sheng Der Chao	Los Alamos National Laboratory	2004/3/2
Multi-GeV astrophysical tau neutrinos	Athar Husain	National Center for Theoretical Sciences	2004/3/5
Black hole and string theory	朱創新	清華大學物理系	2004/3/11
D-term inflation in string models	Osamu Seto	National Chiao Tung University	2004/3/12
The Restless Protein: A NMR Spectroscopist's View	Huang Tai-Huang	Inst. of Biomedical Science	2004/3/15
Semileptonic decays of polarised top quarks: V + A admixture and QCD corrections	Umeda Yoshiaki	National Chiao Tung University	2004/3/19
Some recent theoretical progress on high temperature superconductivity	李定國	中央研究院物理研究所	2004/3/25
Nanotechnology Research in the National Institute for Materials Science, Japan.	Masakazu Aono	Nanomaterials Lab., National Institute for Materials Science, Japan.	2004/3/26
Chiral Lagrangians for Electroweak Symmetry Breaking	羅亦安	Harvard University	2004/3/26
Structural basis of the ligand specificity of FHA domains	Tsai Ming-Daw	Genomic Research Cente	2004/3/29
Global topological study of the protein-protein interaction networks	Ng Ka-Lo	Taichung Healthcare and Management	2004/4/5
Testing the limits of quantum mechanics : motivation , state of play , prospects	A. J. Leggett	2003 Nobel Prize Winner	2004/4/8
The chiral limit $K \rightarrow \pi\pi$ electroweak penguin matrix elements from hadronic tau	Kim Maltman	York University	2004/4/9
Quantum-mechanical modeling of complex chemical processes: Examples for some gas-phase and gas-surface reactions. Also to present some recent result that may be relevant to the H ₂ O splitting by solar energy.	Ming-Chang Lin	Emory University	2004/4/12
Evidence for the pentaquark	Ken Hicks	Ohio University	2004/4/13

演講題目	演講者	所屬機構	日期
SUPERSYMMETRIC GRANDUNIFICATION: QUEST FOR THE	Goran Senjanovic	ICTP	2004/4/15
基因體研究中心的進展	翁啟惠	基因體研究中心	2004/4/15
Hints in B --> K f0 data	楊桂周	中原大學	2004/4/16
PCR in a Rayleigh-Benard Convection Cell	Chi-Keung Cha	Institute of Physics, Academia Sinica	2004/4/19
From Mr. SQUID to Wireless Filters: Applications of Thin Film High Temperature Superconductors, Status and Challenges	Luke Shing-Jen Peng	Superconductor Technologies, Inc, USA	2004/4/19
Stereo Sound Reproduction and Advanced Electronic Warfare Technology	Ming Li	Naval Research Lab. U.S.A.	2004/4/19
Major Research Directions: USA and Oak ridge National Laboratory	Lee L. Riedinge	Deputy Director for Science and Technology, Oak Ridge National Lab	2004/4/22
Charged scalar quasinormal modes of dyonic black holes	曹慶堂	Tamkang University	2004/4/23
Softmatter – Biophysics Journal Club:A model of friction between surfaces and a model of unfolding of the protein titin.	H. Y. Chen	Dept of Phys. National Central University	2004/4/26
Mesoscopic Phenomena in the Rectangular Ising Lattice	Shu-Chiuan Chang	National Taiwan University	2004/4/27
Micro/Nano technology in Cardiology	簡艾琪	Department of Bioengineering, UCLA	2004/4/28
Phenomenology of the strange-beauty squark	張敬民	NTHU	2004/4/30
Interactions of long DNA chains with charged surfaces: Entropy, Conformations and Applications	Rondelez	Laboratoire de Physico Chimie Curie, Institut Curie,	2004/5/3
Exclusive processes and the transition from meson-nucleon to quark-gluon picture	Hai-Yan Gao	Duke University	2004/5/6
2000年以來的新超導體	林俊源	國立交通大學物理研究	2004/5/6
The littlest Higgs model and one-loop electroweak precision constraints	Mu-Chun Chen	Brookhaven National Laboratory	2004/5/7
Selected Highlights in Sonoluminescence	朱明中	香港 中文大學	2004/5/13
Gauge symmetry breaking in Higher-Dimensional Gauge Theories and its Applications	Hisaki Hatanaka	NTHU	2004/5/14
Softmatter and Biophysics Journal Club:Spontaneous Ratchet Effect in a Granular Gas	K. W. To	Institute of Physics, Academia Sinica	2004/5/17
Quantum Computing & Superconducting qubits	Per Delsing	Chalmers University of Techonology, Sweden	2004/5/18
Higgs search in qq->qqH at CMS/LHC	Mehmet Zeyrek	Middle East Technical University , Turkey	2004/5/19
A lattice theory for low energy fermions at finite chemical potential	陳俊瑋	NTU	2004/5/21
Softmatter and Biophysics Journal Club: Interaction of Bubble with Acoustic Waves	M. J. Chen	台灣科技大學機械系	2004/5/24

演講題目	演講者	所屬機構	日期
Has PHENIX discovered the Quark-Gluon Plasma?	Mickey Chiu	Columbia University	2004/5/26
Half a century of the Yang-Mills Theory	梁宗嶽	中央研究院物理研究所	2004/5/27
Large N Cosmology	高賢忠	NTNU	2004/5/28
Softmatter and Biophysics Journal Club:Adhesive force of a Single Gecko foot-hair	L. C. Jia	Institute of Meical Image, Yuanpei Univ. of Sci. and Tech.	2004/5/31
Metamaterials and micro fuel cell	Daivd Yen	UCLA	2004/6/1
Inside the IC Semiconductor Technology	胡正明	台積電	2004/6/3
Heavy meson chiral perturbation theory in finite volume	C. J. David Lin	University of Washington	2004/6/4
Application of the Triangulation Method for Determination of Molecular Cavities	Jan Busa	Department of Mathematics Technical University	2004/6/4
Evolution, Ageing and Gene Expression	Yong Mao	School of Physics and Astronomy, University of Nottingham, UK	2004/6/7
Patterns and Defect Chaos in Rotating Convection	Yuan-Nan Young	Stanford University, USA	2004/6/7
Learning eta' from B decays	陳泉宏	NCKU	2004/6/11
Transition from stick-slip to continuous Sliding in Atomic Friction	K. T. Leung	Institute of Physics, Academia Sinica	2004/6/14
Nano-objects: an intermediate state of the matter	Catherine Brechignac	CNRS Aime Cotton	2004/6/15
Physical measurements using a sub-nm electron beam on individual nanostructures	Christian Colliex	CNRS Aime Cotton Lab	2004/6/15
Measurement of phi-meson photoproduction with linearly polarized photons at	Tsutomu Mibe	Research Center of Nuclear Physics, Osaka University	2004/6/17
The Dynamical 1/M_b Corrections in B->PP Decay	葉聰文	台中師院	2004/6/18
Historical perspective of superconductivity and superconductors	James Ho	Wichita State University	2004/6/23
Quantum Cryptography	Hoi-Kwong Lo	University of Toronto	2004/6/24
Quantum Transport in Low-Dimensional Systems	Dr. N. O. Birge	Michigan State University	2004/7/5
奈米磁性粒子與生醫之運用	傅昭銘	國立高雄師範大學	2004/7/7
The worm turns: The worm-like chain and the statistical mechanics of alpha-helical polypeptides.	Alex J. Levine	University of Massachusetts, Amherst	2004/7/26
The Sudbury Neutrino Observatory (SNO) and Beyond	Min-Fang Yeh	Brookhaven National Laboratory , USA.	2004/7/27
Interplay of D-wave Superconductivity and Antiferromagnetism in the Cuprate Superconductors: Phase Separation and the Pseudogap Phase Diagram	Wu-Pei Su	University of Houston, USA	2004/7/28
Terascale and Terahertz Research at Rensselaer	K. C. Wang	Dept. of Physics,Rensselaer Polytechnical Institute,N.Y.	2004/7/28

演講題目	演講者	所屬機構	日期
Sailing the surfactant sea: Dynamics of rigid and flexible bodies in lipid membranes.	Alex J. Levine	University of Massachusetts, Amherst	2004/7/28
What is being measured in microrheology?	Alex J. Levine	University of Massachusetts, Amherst	2004/7/30
Micro-Scale Thermal and Fluid Dynamics	Chen Shi Yi	Dep. of Mechanical Engineering, The John Hopkins University.	2004/8/4
Development of Quantum Circuit Designing and Simulating Environment	Hiroshi Watanabe	Department of Complex Systems Science, Nagoya University	2004/8/12
Superfluid ³ He in Silica Aerogels: The Response of a p-wave BCS State to Impurity	Douglas Osheroff	Department of Physics, Stanford University	2004/8/16
Overview of Complex Economic Dynamics and Applications in Macroeconomics and Spectroscopic Studies of Diluted Magnetic Semiconductors for Future Spintronics.	Barkley Rosser	Department of Economics, James Madison University	2004/8/20
生活中的物理演示教材	陳秋民	東吳大學	2004/8/27
First-Principles calculations by Diffusion Monte-Carlo method	Ryo MAEZONO	National Institute for Materials Science	2004/9/2
Free electron laser systems and relativistic strophotron	Organesyan	中央研究院物理所	2004/9/8
漫遊奈米世界	齊正中	清華大學物理系教授及台聯大系統奈米中心主任	2004/9/9
Hybrid model of protein interaction network	Doochu Kim	Department of Physics, Seoul National University	2004/9/15
A Quantum Interference Effect using Spin Polarized Positrons	Sewan Fan	Stanford Linear Accelerator Center, USA	2004/9/17
酒杯變奏曲	陳義裕	台灣大學物理系	2004/9/23
The magnetic screening of an anisotropic medium	Chungwen Kao	North Carolina State University	2004/9/24
Interplay of Electron Correlation and Electron-Lattice Interaction in the High T _c Superconductivity	Sumio Ishihara	Dept. of Physics, Tohoku University, Sendai, Japan	2004/9/30
New Spacetime Card Diagrams and their Applications	John Wang	NTU	2004/10/1
Synthesis of IR and UV Materials using Molecular Chemistry	Kouvetakis	Department of Chemistry, Arizona State University	2004/10/4
Softmatter and Biophysics Journal Club: Molecular nanosprings in spider capture-silk threads	C. K. Chan	Institute of Physics, Academia Sinica	2004/10/4
Is there a core engine in the life process? 生物體中的觸酶輪	鄭天佑	中研院物理所特聘講座	2004/10/7
Softmatter and Biophysics Journal Club: Pattern formation of microtubules and	Hsuan-Yi Chen	Dept of Physics, National Central University	2004/10/11
Edge states and supersymmetry in nanowires	牟中瑜	清華大學物理系	2004/10/14

演講題目	演講者	所屬機構	日期
Casimir Effect in a SUSY-Breaking Brane-World as Dark Energy: a New Approach to the Cosmological Constant	Je-An Gu	NTU	2004/10/15
Softmatter and Biophysics Journal Club: Kinetic Pinning and Biological	David Lu	Dept. of Chemistry, National Taiwan University	2004/10/18
Photonic Band Gap Materials: Engineering the Fundamental Properties of Light	Sajeev John	加拿大皇家科學院院士 Department of Physics, University of Toronto	2004/10/18
Applications of Nanostructures in Biology	C. F. Chou	Center for applied nano-bio Science, Arizona State University	2004/10/19
Generalized antiferromagnetic Heisenberg spin ladders	Yan-Chr Tsai	中正大學物理系	2004/10/22
Non-Linear Sigma Models on Noncommutative Superspace	Takeo Inami	Chuo University, Tokyo	2004/10/28
Advanced applications of FEG-TEM in Nano-Science and Technology	及川哲夫	日本電子株式會社應用中心	2004/10/29
Elastic Properties of a Single-Stranded Charged RNA	鄭智豪	中央研究院物理研究所	2004/11/1
中研院奈米科技研究計畫場發射穿透式電子顯微鏡	洪英傑	JEOL代理商	2004/11/2
Softmatter and Biophysics Journal Club: How do Cells Get the Right Chromosomes? (microtubule in mitosis)	江宏仁	中央研究院物理研究所	2004/11/8
Formation of Highly Ordered Porous Materials and Assembling Colloid Fine Particles	Yuren Wang	Institute of Mechanics, Chinese Academy of	2004/11/15
Quark Mass Matrix from Dimensional Deconstruction	Andrea Soddu	NTU	2004/11/17
Why There Is What There Is --- A Symmetry Perspective	江祖永	中央大學物理系	2004/11/18
Softmatter and Biophysics Journal Club: locomotion and the water-repellent legs of water striders	梁鈞泰	中央研究院物理研究所	2004/11/22
Berry Phase and Neutrino Oscillation	Xiao-Gang He	NTU	2004/11/25
Synthesis of Novel Hydride Materials by High Pressure and Their Characterization.	Stanislaw Filipek	Institute of Physical Chemistry, Polish Academy of Sciences	2004/11/25
Softmatter and Biophysics Journal Club: Direct mean flow measurement in pattern	陳培亮	中央大學	2004/11/29
Hadron Therapy to Cure Cancer	Gong-Ping Yeh	美國費米實驗室	2004/12/9
台灣的環境變遷	劉翠溶	中研院台史所	2004/12/23
Reactor Neutrino Oscillation Experiments	Yi-Fang Wang	北京中科院高能物理所	2004/12/24
When did the universe lit and warmed up?	方勵之	University of Arizona	2004/12/24
文字、文明與文化：珍藏人類的記憶	曾志朗	中央研究院	2004/12/30

Visiting Scholars
 中央研究院物理所九十三年度訪問學人表
 (2004 年 1 月 - 2004 年 12 月)

訪 問 學 人	所 屬 機 構	訪 問 期 間
朱越鋒	北京清華大學	2003.10.20 - 2004.04.18
Kaice T. Reilly	The LIGO Laboratory, U. S. A.	2003.11.15 - 2004.07.31
鮑杰	北京原子能科學研究院	2003.11.20 - 2004.07.08
辛標	北京原子能科學研究院	2003.11.20 - 2004.03.01
路家棋	南京大學	2003.12.03 - 2004.12.02
歐陽頌	北京大學	2003.12.30 - 2004.01.06
李匡邦	美國麻州大學	2004.01.01 - 2004.01.31
羅玉林	聖約翰技術學院	2004.1.01 - 2004.06.30
陳宣毅	中央大學	2004.01.06 - 2004.09.15
曾文哲	淡江大學	2004.01.09 - 2004.09.15
Monty G. Marshall	美國馬里蘭大學	2004.01.11 - 2004.01.16
鄒忠毅	中國文化大學	2004.01.15 - 2004.09.15
洪東興	銘傳大學	2004.01.15 - 2004.02.15
梁正宏	清華大學	2004.01.15 - 2004.02.15
蔡志申	東海大學	2004.01.15 - 2004.09.15
李大興	東華大學	2004.01.17 - 2004.09.15
蕭又新	東華大學	2004.01.19 - 2004.09.30
彭逸凡	暨南國際大學	2004.01.20 - 2004.09.30
Vu Nguyen Thuc	Vietnam National University	2004.01.27 - 2004.09.26
向斌	北京大學	2004.01.28 - 2004.05.27
V. B. Priezzhev	俄國聯合核子科學研究院	2004.02.06 - 2004.03.05
蔣正偉	美國 University of Wisconsin	2004.03.03 - 2004.03.06
Edik Hayryan	俄國聯合核子科學研究院	2004.03.31 - 2004.05.31
Aono Masakazu	日本大阪大學	2004.03.25 - 2004.03.27
A.J. Leggett	美國 University of Illinois	2004.04.07 - 2004.04.13
Jan Busa		2004.05.01 - 2004.06.06
Francis Rondelez	法國國家科學研究中心	2004.05.02 - 2004.05.06
陳慕群	美國Brookhaven國家實驗室	2004.05.03 - 2004.05.07
Mehmet Zeyrek	土耳其 METU大學	2004.05.16 - 2004.05.22

訪問學人	所屬機構	訪問期間
胡比樂	美國馬里蘭大學	2004.05.22 - 2004.05.25
嚴大任	美國 UCLA	2004.06.01 - 2004.06.04
李匡邦	美國麻州大學	2004.06.01 - 2004.08.31
Aleksenko Vasyl	美國密西根科技大學	2004.06.05 - 2004.08.03
何健民	美國 Wichita State University	2004.06.06 - 2004.07.13
Mai Suan Li	波蘭Institute of Physics, Polish Academy of Science	2004.06.14 - 2004.06.26
梁培德	美國波特蘭大學	2004.06.15 - 2004.07.15
T. Mibe	日本大阪大學	2004.06.16 - 2004.06.20
Herbert Levine	美國 UCSD	2004.06.19 - 2004.06.23
Marcelo Osvaldo Magnasco	美國 Rockfeller university	2004.06.19 - 2004.06.23
Ashot Gevorkyan	亞美尼亞	2004.06.30 - 2004.08.31
厚美瑛	中國科學院物理研究所	2004.07.01 - 2004.08.31
邱建偉	美國愛荷華大學	2004.07.03 - 2004.07.12
郭子克	美國普渡大學	2004.07.02 - 2004.07.13
周美吟	美國喬治亞理工學院	2004.07.04 - 2004.07.14
胡比樂	美國馬里蘭大學	2004.07.07 - 2004.07.09
Frank Eisenmenger	德國	2004.07.25 - 2004.07.31
伍法岳	美國東北大學	2004.07.31 - 2004.08.17
伊士麥林尼可	亞美尼亞	2004.08.01 - 2004.09.30
王長海	新加坡國立大學	2004.08.01 - 2004.09.30
Seol Seung Kwon	韓國Dept. of Materials Science and Engineering POSTECH	2004.08.02 - 2004.08.15
Pyun Ahram	韓國Dept. of Materials Science and Engineering POSTECH	2004.08.02 - 2004.08.15
Fujimori Atsushi	日本東京大學	2004.08.16 - 2004.08.21
Maezono Ryo	日本 National Institute of Materials Science, Computational Materials Science Center	2004.08.22 - 2004.09.04
蔣正偉	中央大學物理系	2004.08.23 - 2004.09.22
魏正濤	西班牙 University of Valencia	2004.09.01 - 2004.10.03
夏克清	香港中文大學	2004.09.02 - 2004.09.10
Glenn. H. Fredrickson	美國加州大學	2004.09.05 - 2004.09.07
Maseo Doi	日本東京大學	2004.09.08 - 2004.09.10
Muhammed Deniz	土耳其 METU大學	2004.09.15 - 2005.05.31

訪問學人	所屬機構	訪問期間
杜富阮	越南 University of Science	2004. 01. 27 - 2004. 11. 16
George W. Crabtree	美國 Argonne National Laboratory	2004. 09. 05 - 2004. 09. 11
Eric D. Issacs	美國 Argonne National Laboratory	2004. 09. 05 - 2004. 09. 11
Orlando Auciello	美國 Argonne National Laboratory	2004. 09. 05 - 2004. 09. 11
Sumio Ishihara	Department of Physics, Tohoku University(Japan)	2004. 09. 26 - 2004. 10. 02
小林俊一	日本東京農工大學	2004. 09. 20 - 2004. 09. 24
Frederick Casper	德國 Wissenschaftliche Mitarbeiter Johannes Gutenberg University	2004. 09. 11 - 2004. 10. 29
伊士麥林尼可	亞美尼亞	2004. 10. 01 - 2004. 11. 30
董克君	中國 北京原子能科學研究院	2004. 11. 01 - 2005. 01. 31
琴龍淵	清華大學國家理論科學中心	2004. 11. 09 - 2004. 11. 15
李梅樹	波蘭 Institute of Physics, Polish Academy of Science	2004. 10. 29 - 2004. 12. 23
小林俊一	日本東京農工大學	2004. 12. 04 - 2004. 12. 13
蘇君辰	中國 吉林大學	2004. 11. 24 - 2004. 12. 24
王長海	新加坡國立大學	2004. 11. 15 - 2004. 12. 31
陳煜璋	美國 University of California	2004. 12. 13 - 2004. 12. 31
鄭信佳	美國 Harvard University	2004. 12. 16 - 2004. 12. 22
王貽芳	中國 北京原子能科學研究院	2004. 12. 22 - 2004. 12. 29
郭青齡	美國 Harvard University	2004-12. 22 - 2005. 01. 04
周家復	美國 Arizona University	2004. 12. 30 - 2005. 01. 07

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