

**California State University, Long Beach
Department of Physics and Astronomy**

<http://www.csulb.edu/depts/physics/>

Fall 2006

Newsletter No. 27

Physics News!

★ **New Faculty Member**
Dr. Christian Bracher (left),
and Department Chairman,
Professor Patrick Kenealy, by
the fountains outside of
Brotman Hall.



★ **Profiles of our Five
Most Recent Faculty**

★ **2006 Scholarships**

★ **CSULB Outstanding
Professor**

★ **Nominee for
Distinguished
Teaching Award**

★ **Computational
Physics**

★ **Publications and
Master's Theses,
Major Awards from
the NSF and Research
Corporation**

★ **Alumni Notes,
Contributions,
Memorable Pictures**

Graduate Advisor



Dr. Alfred Leung
PH3-17 (562) 985-4923
afleung@csulb.edu

Welcome to all incoming and returning graduate students. We are proud to say that the quantity and quality of graduate applications have steadily increased in recent years. Please feel free to drop by my office for a chat.-- Alfred

Undergraduate Advisor



Dr. Galen Pickett
PH3-103 (562) 985-4934
gpickett@csulb.edu

It is a real pleasure to be able to talk with you all now and again, about the courses you are taking now, or maybe next semester, or the larger course you are going to take in life as a scientist.
-- Galen

Associate Chair



Dr. Chuhee Kwon
ckwon@csulb.edu

Editor, Newsletter



Irene Howard
! 29 years in the Physics Dept. !

The background watermark on the front and back covers is from the koi pond of the Earl Burns Miller Japanese Gardens at the north end of the campus.

The Year In Review

By Patrick Kenealy, Professor and Chair

EARLYUNDERGRADUATE PHYSICS MAJORS: The Department initiated several programs in the last year to **recruit and retain our fledging physics majors**, with special monies from the Provost Office, in order to introduce the freshmen and sophomores to the faculty early in their studies, and to give them opportunities to accomplish projects associated with faculty research interests.

During the 3-week winter break between semesters in January, we were able to support with stipends about 6 undergraduates fresh from the introductory courses (151, 152, 254) and about an equal number of faculty mentors. The latter assign doable brief projects that allow interested students an early entry into the life of the Department and an early introduction to the entire faculty.

We will be able to do the same program this year with a \$4500 grant from the Provost's office. We see this as very important in our effort to recruit and retain bright students who are interested in a difficult subject, and often have many other options simply because they are bright and hard-working.



The other program we are initiating this summer is a Summer Fellowship Program, open to all our undergraduates. Again with help (\$5000) from the Provost's Office, we are able to offer fellowships to two or three students to work in the summer with faculty.

In the overall scheme of things, these amounts of money are not large, but can have a significant effect in the Department. We want to continue these programs in future years. Taken collectively, these two efforts are our "Undergraduate Physics Experiences (UPE)" and are a great target to consider if you contribute to us. The money would be put into a foundation account for undergraduates, and it is accessible only for Department use, not for the wider University.

SELF-STUDY YEAR: This academic year, 2006-2007, is designated as our self-study year, so the faculty and staff will be very busy compiling statistics, rethinking and describing our curriculum and degree programs, writing analyses of whether we are accomplishing what we intend to accomplish, contacting alumni, and perhaps asking you for your input—as a graduate of our program, a current student, a staff member, or whatever your connection. **Your opinions and views are needed and valued.** If you are asked, please help us out, or if you want to volunteer—just give me a call. Once the written reports are done at the end of Spring, 2007, the Provost's Office will arrange a visit by an external committee of physicists to give us their unbiased opinions of our department and our analyses of our work.

FACULTY ACHIEVEMENTS: **The strong achievements of our faculty have certainly made it a delight to be Chair.** This issue of the newsletter is literally filled with their activities, their research, and their teaching. I hope you enjoy getting this perspective on a department that has been changing relatively rapidly during the last few years. To convey some of that excitement, I will highlight the accomplishments and backgrounds of the five newest members of our talented faculty. They are Drs. Mladen Barbic, Andreas Bill, Christian Bracher, Jiyeong Gu, and Zoltan Papp. Christian Bracher is our newest Assistant Professor, arriving for the Fall, 2006, semester.

Mladen Barbic, Associate Professor

Mladen Barbic was appointed an Assistant Professor at CSULB in the Fall, 2003. He received his B.S. (1995) and Ph.D. (2000) from UC, San Diego, and was a Postdoctoral Research Scholar at Cal Tech.

As this newsletter is being prepared, the National Science Foundation announced an award of \$300,001 to Mladen and his Co-PI, Prof. Alex Scherer, Caltech. Congratulations! The work will be done both here in Prof. Barbic's laboratory and at Caltech.

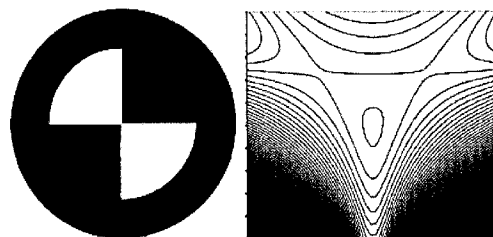
The title of the proposal is *Nuclear Magnetic Resonance Spectroscopy on a Chip*. The main objective is to integrate micrometer and nanometer scale Nuclear Magnetic Resonance (NMR) devices and materials into the lithographically fabricated micro-fluidic systems.

This research will provide new tools for the study of individual cells, enabling both spectroscopic and imaging observation of changes in cell metabolism triggered by the micro-fluidic controlled environmental changes.

Mladen has established a successful laboratory that involves our undergraduate and graduate students in a strong and productive research environment, and he has been very skillful and adept in acquiring external funding to maintain the student support and the high quality, state-of-the-art instrumentation his work needs. Mladen's website, <http://www.csulb.edu/~mbarbic/>, will lead you to excellent descriptions of his varying interests, and the names of the students and colleagues with whom he collaborates.

A description of Mladen's latest work follows, in his own words:

"Ever since the discovery of magnetic resonance in solids and liquids 60 years ago, NMR and Magnetic Resonance Imaging (MRI) have become well-established spectroscopic and visualization technologies with tremendous impact on chemistry, materials science, and clinical medicine. Although improvements in imaging resolution have steadily progressed within the last three decades, present spatial resolution is limited to approximately 1 μm magnetic resonance microscopy. The challenge in improving the imaging resolution results from the extremely weak signals in magnetic resonance, spin diffusion, and the limited ability to create sufficiently large gradient fields by current carrying coils. Over the last several years our research group has been devoted to developing several novel techniques and methodologies for pushing the limits of resolution and sensitivity in MRI with great success. Here, we propose to design, build, and test an exciting new planar permanent magnet structure that would act as a MRI "Lens" with much higher spatial resolution than can be achieved with coils currently used. The basis of our proposal is a design shown on the left in the figure. We recently proposed this structure and intend to build it. Our design is unique and novel as it creates a localized point in three-dimensional space above the structure, shown on the right in the figure, with a non-zero minimum of the magnetic field magnitude. The design thereby represents a magnetic resonance microscopy "lens" where the sample region located in the "focus" spot of the structure would be resonant and therefore detected and imaged. Following the excitement of this theoretical proposal and analysis that we have published, the challenge that remains is to experimentally construct, test, and evaluate the proposed MRI "Lens". Initially it seemed difficult to build this structure at CSU Long Beach, as permanent magnets are notoriously difficult and expensive to machine. However,



with some discussion with an undergraduate student (Chris Barrett, a Scalettar Scholarship awardee last year), we have come up with an elegant solution of how to construct these devices from component magnets.”

Andreas Bill, Associate Professor

Andreas Bill was appointed as an Associate Professor at CSULB in the fall of 2005. His first degree was a *Diploma in Music (Organ), summa cum laude*, from a Conservatoire in Geneva, Switzerland, in 1988! He was somewhat conflicted about whether to continue his studies in music or physics, and, for a time, tried to maintain both. In the end, Andreas decided that with an advanced degree in physics, he could always play music, but that the reverse would not be true, so he earned his Ph.D. in Theoretical Physics, with highest honors, from the University of Stuttgart, Germany, in 1995. He spent the next two years as a post-doc at Lawrence Berkeley Lab and a year as a Research Scientist at the Max Planck Institute in Dresden. Despite being offered a tenured professor position in France he preferred joining the Paul Scherrer Institute and ETH Zurich in Switzerland as a research scientist where he worked for five years before moving back to the US.



Here is his own description of his work:

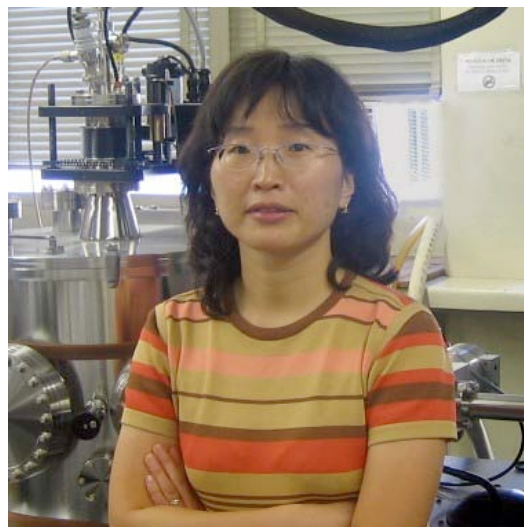
“Condensed Matter Physics is concerned with the study of physical properties of matter in solid or liquid phases. The challenge is to describe both micro- and macroscopic properties of an enormous number of particles strongly interacting with each other. My scientific interests lie in the main subfield of condensed matter physics that deals with crystalline solids. With increasing complexity of materials new issues have come to light in recent years. Among them is the possibility that in one and the same solid two states of matter can coexist. This coexistence is very different from the one known in classical thermodynamics, such as for example the triple point of water. While the latter occurs at the macroscopic scale, the coexistence of phases found in many novel materials takes place at the microscopic, nanometer scale. For example, superconductivity regions are found to coexist with ferromagnetic domains, the metallic-paramagnetic phase coexists with an insulating antiferromagnetic phase, etc. The coexistence of phases generally signals the competition between different interactions at the electronic scale. This poses a challenge to theoretical physics in that it requires a description of matter at the quantum level that accounts for electronic inhomogeneities.

My recent research focuses on such coexistence of phases in one class of systems that encompasses a large number of novel materials: layered systems. These include high-temperature and organic superconductors, halide nitrides, and diverse intercalated materials. But they also include artificially tailored heterogeneous nanostructures such as those used in modern hard disks or sensor devices. The beauty of layered systems is that they allow bridging the worlds of two- and three-dimensional physics. Two questions are at the center of my research: 1) how does the peculiar screening of the Coulomb interaction found in layered materials influence the superconducting state of these systems, 2) how do superconductivity and magnetism interact in heterogeneous multilayer structures when the magnetic phase is inhomogeneous at the nanoscale.

The treatment of these questions requires the use of both numerical (*e.g.* Density Functional Methods) and analytical techniques. Not only does this research address fundamental issues of condensed matter physics, it also invites for the development of new applications and technologies.”

Jiyeong Gu, Assistant Professor

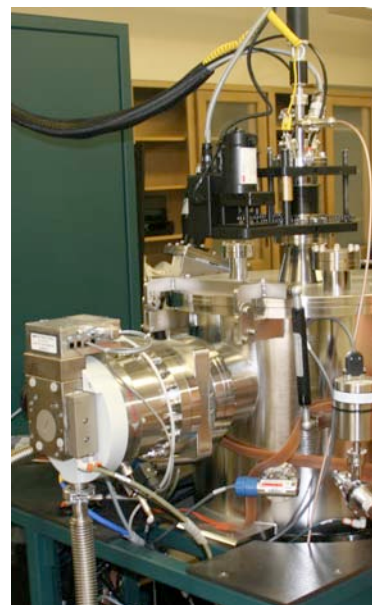
Dr. Jiyeong Gu spent the last two of her thesis years at the Center for Superconductivity Research at the University of Maryland (1996-98), and received her Ph.D degree from Seoul National University, Korea, (1998). She worked at Michigan State University in the Department of Physics and Astronomy and the NSF Center for Sensor Materials (1999-2001), and then in a postdoctoral position at Argonne National Laboratory in the Magnetic Films group of the Materials Science Division (2001-2004).



In the two years she has been here, she has specified and installed a state-of-the-art sputtering instrument for thin-film deposition, that allows a very high vacuum (10^{-8} Torr), the ability to remove and insert substrates without breaking main chamber vacuum, and the ability to create thin-film multilayers and composite of different materials—all leading to her research program of fabrication and characterization of various magnetic thin films. Her own words follow to describe her work:

“Nanomagnetism encompasses magnetic materials that are confined on the nanometer scale and magnetic phenomena that exist because of the confinement and/or in proximity to other materials. The proximity effect in ferromagnet (F) /superconductor (S) systems is critical because it makes possible the study of the interplay between magnetism and superconductivity.

“The research that I propose will break new ground in this exciting cutting-edge field, superconductor-ferromagnet hybrid systems. Specifically, we will use magnesium diboride (MgB_2) for the superconducting part in *F/S* structures. MgB_2 is recently discovered as a record high T_c (~ 40 K) superconductor among many non-oxide superconductors. The discovery of MgB_2 raised a great interest in the scientific community because its desirable electronic properties such as large critical current density and large coherence length (~ 5 nm) of MgB_2 make it a good candidate for superconducting electronic applications. By using MgB_2 as *S* layer, the temperature range we are looking for could be increased by at least one order of magnitude larger (compared to the system with Nb). Also, we expect to find new phenomena that can be observed only with the MgB_2/F hybrid structure.



“I am also interested in other types of magnetic thin films we can make using our fabrication set up. One of my students is working on the exchange-bias system. Exchange-bias system has been studied for the last decades but the origin of the phenomena is still not completely understood. We are planning to fabricate a new structure where we hope to find the way to better explain the exchange-bias phenomena.”

Announced in the Summer 2006, the NSF has awarded a Major Research Instrumentation (MRI) award, *The Acquisition of a Physical Property Measurement System (PPMS) for Materials Research*, for \$248,939 to Professor Jiyeong Gu, as Principal Investigator, along with Co-PI colleagues, Prof. Mladen Barbic and Prof. Chuhee Kwon from the Physics Dept. and Prof. Xianhui Bu from the Chemistry and Biochemistry Department.

This award will be used to purchase a Quantum Design Physical Property Measurement System

(PPMS®). The PPMS will be the first instrument of its kind within the California State University (CSU) system, and it will enable research in variable temperature (1.9 K – 400 K) and magnetic field (up to ± 9 Tesla) environments. The PPMS is also user-friendly and robust, features that will enable the instrument to be readily incorporated into both undergraduate and master's student research.

Congratulations to Jiyeong and her colleagues! Acquiring this kind of capability is a tremendous achievement, and enhances our already excellent programs of experimental research.

Zoltan Papp, Associate Professor

I have extracted some of Zoltan's history from a document that he wrote for other purposes. In his own words:

"I conduct research in the field of quantum mechanics. I apply quantum mechanics to nuclear, particle and atomic physics and develop new methods in mathematical and computational physics.

"I grew up in a small rural village in northern Hungary. I went to high school in a neighboring small town. Our class was oriented toward physics and mathematics, which meant that we had 4-5 hours a week of physics and mathematics classes for 4 years.



Later, to do thesis work, I went to the Institute of Nuclear Research of the Hungarian Academy of Sciences in Debrecen and did my thesis in applied physics, about the application of Proton Induced X-ray Emission (PIXE) to determine trace elements in biological tissues. A few months later, the head of the theoretical division of the Institute asked me if I would like to join them. This was an excellent opportunity, so I left applied physics. My way to theory was not straightforward, but I have benefited a lot from these experiences. I learned that there is a broad range of subjects that are also very interesting. Working with experimental physicists and chemists was boon to my future prospects, as I learned to appreciate them and their work. The supervisor of my Ph.D. research was Dr. B. Gyarmati, the head of the Theory Department.

"After receiving a Ph.D. in 1986, I spent 5 years as a Post-Doc at the Institute for Theoretical Physics, University of Tübingen, Germany. In 1992, I returned to the Institute of Nuclear Research, Hungary, and was appointed to Senior Research Fellow with tenure. I was Guest Professor for a semester four times at the Institute for Theoretical Physics at University of Graz/Austria; this Institute was founded in 1880's by Boltzmann and, in the 1930's, Schrodinger was professor there.

"In Z. Papp, *Three-potential formalism for the three-body Coulomb scattering problem*, Phys. Rev. C, 55, 1080-1087 (1997), I introduced the *three-potential* formalism, a key point in solving the three-body Coulomb problem. This work is probably my best paper. In a series of papers I applied the three-body solution method to describe baryons as relativistic three-quark systems. Two of those papers became top-cited. I was thesis advisor for two successful Ph.D. students. In Fall 2003, I was hired at CSULB.

"This summer I participated, together with the Chair, Dr. Kenealy, and colleague Dr. Kwon, in an AAPT meeting in College Park, Maryland, on *How to do systemic changes in undergraduate physics teaching*. The keynote speakers presented some new systems, all about how to further understanding of basic concepts. I

found the approaches very interesting, especially the concepts of teamwork. I used it before in doing research with students, but it was very interesting to see that it may also work in undergraduate education.”

Zoltan Papp has been very successful in involving students and collaborators in his research work. In his 3 years at CSULB, he has published 11 papers, including one Physical Review Letters, two in Phys. Rev. A, one in Phys. Rev. C, and one in Nucl. Phys. A. Several of these are with Prof. Hu and Hlousek, and one has a current graduate student, Firuz Demir, as a co-author.

Dr. Papp has also taken on the important challenge of development of an upper division/graduate course in Computational Physics, and has taught one pilot version and is refining the course in Fall 2006.

Our Newest Faculty Member

Dr. Christian Bracher, Fall, 2006

Born and raised in Munich, Germany, Christian studied physics at the local Technical University and received his diploma (masters) in 1995 (summa cum laude). He continued there with graduate work in theoretical physics, earning him a doctorate degree in 1999 (summa cum laude) for his thesis on “quantum ballistic motion,” prepared under the supervision of Prof. Manfred Kleber.

Following a series of postdoctoral research jobs at Germany’s Max Planck Institute for Quantum Optics, Dalhousie University in Halifax (Canada), and the College of William & Mary in Williamsburg, Virginia, Christian spent a year as a Visiting Professor at Bryn Mawr College (Pennsylvania) before accepting the position at CSULB. Christian is married to Julianna, and the couple has two children, Kilian and Norah, and one more on the way.



Christian’s research currently focuses on semiclassical theory, which aims to describe the motion of objects at the crossroads of the microscopic and macroscopic realm, using the tools of both quantum and classical mechanics. He is the author of 20 publications dealing with this subject, as well as topics in quantum optics, quantum theory, and statistics. Christian is looking forward to further pursue his research at CSU Long Beach.

Dr. Manfred Kleber, from Universität München, describes Dr. Bracher’s approach to research work as creating “a fertile scientific environment that clearly facilitates a successful and sometimes even an award-winning solution of many problems in physics”. He praises Christian for having an “outstanding clarity of thinking” that allows him to explain even complex problems in simple terms.

Bravo! That cheer is both for the five talented people just described, and for the fact that I’ve reached the end of my *Year in Review* column!

I wish you the best in the coming year,

Pat Kenealy

Winner of the CSULB Outstanding Professor Award! Professor Galen Pickett

The Outstanding Professor Award, established in 1980, is designed to reward, and publicly acknowledge outstanding performance. This award is the only award given by California State University, Long Beach, that recognizes excellence in all three areas: instruction and instructionally-related activities, scholarly and creative activities, and professional service. No more than three awards are granted annually.

“It is a real honor to have been granted this award by the university. I never would have been able to concentrate on all the things that went into this award without the support of the department and college. Thanks.” -- Galen



Galen Pickett’s research work explores possible mechanisms through which the building blocks of a “nano-molecular origami” assemble themselves in thermal equilibrium, similar to the self-assembly of DNA that relies on base-pairing to guide the assembly. His work addresses an important physical/chemical/biological area in an exciting way. Many undergraduate and graduate students have been mentored by him, and several students share authorship with him on publications. For more detail, see his website <http://www.csulb.edu/~gpickett/> and



Galen is a skillful teacher, one who strongly motivates students to perform well. He taught Physical Science 112 for many semesters in the Department.. This course is difficult to teach well. Galen’s student evaluations, along with students’ comments, are published on his website. His very high student ratings on the question of teaching effectiveness (approximately 4.5 out of 5 for classes of about 100 students and higher for smaller classes) has continued through every semester, including the latest ratings for our introductory calculus-based course for engineers and science majors. Galen was also promoted to Full Professor in the Spring.



Professor Galen Pickett is also an origami specialist. His website, given above, explains how these complex designs contribute to his research on polymers and molecular folding. Some origami designs are seen at http://www.csulb.edu/~gpickett/Origami_Pictures/.

Congratulations on a well-deserved award!

2005-2006 Nominee for CSULB Distinguished Teaching Award Dr. Hooshang Tahsiri

In many different classes, from very large service courses with over two hundred students to smaller populations of 7 to 15 physics majors in upper-division and graduate courses, Dr. Hooshang Tahsiri has demonstrated his willingness to innovate and his deep caring for the learning and well being of his students. He is an especially well-respected faculty member in the Department of Physics and Astronomy.

During the last 5 years, Hooshang has taught about 2500 students in 34 assigned courses, an average of 3.8 courses per semester! These included courses in conceptual physics, like Physical Science 112, taken primarily by future elementary school teachers, problem-solving courses like PHYS 100A and 100B, which are taken primarily by students in the life sciences, PHYS 151 and 152, calculus-based courses for engineers and science majors, and, finally, courses in the upper division and graduate levels, such as PHYS 340A (Elec. and Mag.), PHYS 360 (Symbolic Algebra Software for Physics) and PHYS 560A (Meth. of Math. Phys.).



Dr. Tahsiri's average evaluation score on Question #8 of the University Evaluation Form, *Rate the overall teaching effectiveness of this instructor in this course*, taken over the last 5 years, 2500 students, and including every course taught, is 4.10 per student on a scale where 5 is the maximum, above the average of 3.96 for the Department for the same five-year period. This is a truly remarkable performance for the wide range of courses and unusually heavy student load.

Although this record of versatility, excellence, and capacity is extraordinary, Dr. Tahsiri contributes a even more to scholarly and student life at CSULB:

- He has pursued grant support from the NSF in his area of expertise (confining plasmas in controlled thermonuclear fusion) and has been granted a patent in this area;
- He participated actively in several CNSM (College) NSF awards related to better training of teachers of science;
- He was among the first at CSULB to use and introduce a symbolic software program, Mathematica, to upper division and graduate students;
- He developed and uses active websites for his students in several different courses to help students solve problems, to have access to animated demonstrations of physical principles, and to make his course materials available to students. See <http://www.csulb.edu/~htahsiri/studyguide/> .

Dr. Tahsiri and the Chair, Dr. Kenealy, met in summer, 2006, to redevelop and redirect the PHYS 360 course. This course teaches the use of symbolic programming software (primarily *Mathematica* at this time) to enhance the students' problem-solving abilities. They perform numerical calculations and symbolic manipulations, as well as create sophisticated graphics and animations. One can greater physical insight into problems by eliminating some tedium and freeing up time for creative thinking.

Hooshang is a truly valuable colleague, scholar, and teacher. His high professional competence in all areas and his continuing dedication to the welfare of our students during his long career commands the respect and admiration of every faculty member.

Scholarship Recipients!

The following scholarships were awarded for academic excellence:



Christopher Bowman
Scalettar Scholarship

He is a senior majoring in Biochemistry,
Biology, Math and Physics.



David Murakami
Scalettar Scholarship

He is a senior majoring in Physics and
Engineering.



Ryan James
Philip Ord Johnson Scholarship

He is a senior majoring in Physics and
Computer Science.



Megumi Yamamoto
**Department of Physics and
Astronomy Scholarship**

She is a senior majoring in Physics.

Contributions!

Dr. Richard T. Scalettar (left) is shown teaching physics at U.C. Davis. He and his sister, Bethe Scalettar, donate money yearly for undergraduate men and women of exceptional academic achievement in physics and mathematics. Up to two scholarships are awarded each year. The scholarships provide \$500-\$1,000 annually. The Richard and Florence Scalettar Scholarships honor the memories of California State University Long Beach Physics Professor Richard Scalettar and his wife, mathematics teacher Florence Scalettar.



We would like to thank the following donors for their contributions:

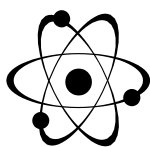
Gerald L. Brown
Benjamin P. Carter
May F. Chow
Richard H. Chow
Sandy Dana
Bernard E. Dehlin
Albert J. Franco
Zvonimir Hlousek
Irene D. Howard
Chi-Yu Hu
Mark L. Ivey
Gene K. Komatsu
James A. Lai



Dr. Anthony S. Lee
Mark McLaughlin
Nancy Mitchell
Alan G. Porter
Vicki A. Porter
Raytheon Company
Bethe A. Scalettar
Richard T. Scalettar
Barbara L. Scott
Bruce L. Scott
Peter H. Selby
John M. Turner

Your contributions are always valuable to us.

Enclosed with this Newsletter is a flyer that describes programs that we are particularly interested in establishing on a permanent basis, like the winter break Undergraduate Physics Experience (UPE) described in the Chair's "Year in Review" column. In the end, small and large contributions can help to establish a modest endowment fund for both the UPE and summer fellowships for undergraduates. Support for graduate students is also needed. ***Your contributions will make a difference***—for scholarship funds, for colloquiums, for this Newsletter (No public tax funds are used for the Newsletter!), for the undergraduate students' Society of Physics Students, or for discretionary use. All contributions are tax deductible. Thank you for your help! Please see the enclosed flyer and we will also post the pertinent information on the Department's web page.



The SPS Club

The Society of Physics Students



CSULB students and faculty are shown enjoying another Society of Physics Students (SPS) meeting. Ryan James (at left), is the new SPS president for the 2006-2007 academic year. SPS plans to continue a long, proud tradition of physics discussions, good food, and barrels of fun.

Retired Faculty Member Richard Chow taught at CSULB for 36 years.



Professor Emeritus Richard Chow and his wife, May. Professor Chow passed away on January 26, 2006 from pneumonia. He taught physics at CSULB for 36 years. He and May were married for 56 years. Professor Chow specialized in nuclear physics.

Professor Jing Liu Resigns, Now Lives in Sweden

By Professor Sema'an Salem

This is a tribute to Jing. Her career here is an example of activity and accomplishment that should be emulated. Jing received her Ph.D. Degree from the University of Michigan working with Prof. Duncan G. Steel. Her thesis dealt with four-wave mixing laser spectroscopy. For three years, she worked as a postdoctoral fellow at Exxon Research and Engineering. Her studies were financed by five different scholarships, and she is the recipient of many awards. Here we mention the Distinguished Faculty and Scholarly Achievement Award, which she received in 1998.



Jing accepted a position at CSULB and joined the faculty in the fall of 1992, and resigned her position in the fall of 2006. During that period she received from external sources 14 different grants and awards for a total of \$1,487,385, and an additional \$175,901 from the University for a grand total of \$1,663,286 -- a sum that was well used in helping students and in the advancement of her research: first in laser spectroscopy and later in the application of magnetorheological fluids to medicine. She has published some sixty papers of which fifty were in refereed journals. She has given a total of 74 invited presentations, and chaired many conference sessions.

In the fall of 2006, she decided to relinquish that illustrious career to be with her family. She is not only a distinguished faculty member, but also a superb mother and wife. She will be sorely missed by all.

Professor Jing Liu now lives in Sweden with her husband, Sven, and her two children, Erik and Lena. Jing is now the president for a newly established company: *NLF Sweden AB*, which produces and sells natural drinks and foods made from wild Swedish flowers and herbs. Her business has just received Swedish government support for about \$86,600 to build a production factory near her home. Swedish Northwest Radio and newspapers have interviewed Jing a few times during the year. Her website is <http://www.moosegrass.com/>. **Best wishes for continued success!**

Graduation 2006



Prof. Lowell Eliason, a faculty marshal. He always honors our



Ms. Roberta Johnson, Mr. Choodamani Khanal, Chairman Patrick Kenealy, Mr. Jeremy Young, and Mr. Mark McLaughlin relax

new graduates by participating.

2006 Graduation, continued

together after the graduation ceremony. Their hard work paid off.



Mr. Choodamani Khanal (second from left) stands proudly with his parents and his wife. His parents came all the way from Nepal to join in the celebration.



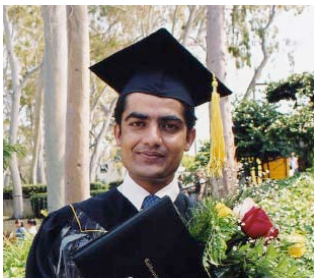
Receiving the Dr. Khalil Salem Award for academic leadership achievement are Ms. Cassandra Delicia Kleve (left) and Mr. Jeremy Lee Young (right). Standing between them is Professor Emeritus Sema'an Salem, the brother of the late Dr. Khalil Salem.



Baby Dylan, Mr. James Ranshaw, and Ms. Stefany Ranshaw enjoy a day of togetherness at the CSULB Graduation Ceremony.



Mr. Mark McLaughlin, who works in the Physics Issue Room, celebrates the awarding of his Master's Degree in physics. He also has a B.S. Degree in mathematics from the University of Chicago and a Master's Degree in engineering from USC. He graduated from CSULB with academic distinction.



Mr. Choodamani Khanal



Mr. Kevin Reed



Ms. Roberta Johnson

Name	Thesis Title	Advisor
Richard Edwin Allman	Comprehensive Exam	
Roberta Johnson	<i>The Search for Tidal Tails of Globular Clusters</i>	Carl J. Grillmair, Spitzer Sci. Cntr. Cal. Inst. Tech.
Choodamani Khanal	<i>Study of the Local Current Transport Properties of Striated Coated Conductor Using Variable Temperature Scanning Laser</i>	Chuhee Kwon
Luis Marchen	<i>Direct Detection of Extra-Solar Planets Physics, Techniques, and Requirements</i>	Stuart Shaklan, JPL, Cal. Inst. Tech.
Mark Thomas McLaughlin	<i>A Device for Stroboscopic Studies of the LIP Reed</i>	Dean Ayers
Michelle Miller	<i>Fluid Cell Atomic Force Microscopy of Superoxide Dismutase</i>	Chuhee Kwon
Kevin Reed	<i>$N=1$ Supersymmetric Dirac-Born-Infeld Action with Self-Dual Mass Term</i>	Subhash Rajpoot
Peter Selby	<i>Variable Temperature Scanning Laser Microscopy Reveals Current Distribution Around Features in Striated Superconductor</i>	Chuhee Kwon

More Graduation Photos, 2006



Mr. Naresh Shenoy Kotacherry and Mr. Saravana Kumar Raman (left to right) were excellent Teaching Assistants for the Physics Department. They hold diplomas for their Master's Degrees in EE. Naresh has accepted a design engineer job at Protek Devices in Arizona and Saravana works as a faculty member in EE at So. Cal. Univ., and is currently in a joint Ph.D. program with CSULB and Claremont Graduate School.



Ms. Sandy Dana graduated with honors with a B.S. Degree in Family and Consumer Sciences. She is grateful to have had the opportunity to use the staff fee waiver program to take her classes at CSULB.

Colloquium List for Physics & Astronomy, Fall, 2005

1. **Monday, September 12, 2005.** Axel Scherer, California Institute of Technology, "Integrated Opto-Fluidics for Biochemical Applications."
2. **Monday, September 19, 2005.** Andreas Bill, Department of Physics and Astronomy, CSULB, "Relation between the Electronic Structure and the Magnetic susceptibility in the Superconducting State of High- T_C Materials."
3. **Monday, September 26, 2005.** Jacob Darwin Hamblin, Department of History, CSULB, "Dispassionate Science? Dumping Radioactive Waste during the Cold War."
4. **Monday, October 3, 2005.** Donald Yeomans, Senior Research Scientist, JPL, "Deep Impact: Cratering a comet to release our past."
5. **Monday, October 10, 2005.** Todd Brun, University of Southern California, "Realistic Models of Single-Spin Measurements via Magnetic Resonance Force Microscopy."
6. **Monday, October 17, 2005.** Koichi Okamoto, California Institute of Technology, "Surface Plasmon Enhanced Super Bright Solid-State Light Emitters."
7. **Monday, October 24, 2005.** Zed Mason, CSU, Long Beach, "The Institute for integrated research in materials, environments and society (IIRMES): A new collaborative paradigm for staying on the cutting rather than the bleeding edge of Science."
8. **Monday, October 31, 2005.** Chuck Greenfield, General Atomics, "Advances and new developments in fusion energy research using the Tokamak."
9. **Monday, November 7, 2005.** Michael Werner, Jet Propulsion Laboratory, Pasadena, "The Spitzer Space Telescope: Exploring the Infrared Universe."
10. **Monday, November 14, 2005.** David Hansen, Boeing Corporation, UCLA, "Radiation effects on high speed satellite electronics."
11. **Monday, November 21, 2005.** Bumsoo Kyung, University of Sherbrooke, Canada, "Anomalous normal states of strongly correlated electron systems."
12. **Monday, November 28, 2005.** Bonnie Buratti, Jet Propulsion Laboratory, Pasadena, "From Darkness to Light: The Exploration of the Planet Pluto."

Colloquium List for Physics & Astronomy, Spring, 2006

1. **Monday, February 13, 2006.** Ken Cooper, Science International Research Corporation, "Artificial Atoms on a Chip: The Road to Quantum Computation."
2. **Wednesday, February 15, 2006.** Denis Funfschilling, University of California, Santa Barbara, "Turbulent Rayleigh Benard Convection."
3. **Wednesday, February 22, 2006.** Christian Bracher, Bryn Mawr College, Quantum Ballistic Motion: "The strange and fascinating ways of electrons in electric and magnetic fields."
4. **Monday, February 27, 2006.** Timo Thonhuaser, Rutgers, The State University of New Jersey, "Orbital magnetization in periodic insulators."
5. **Monday, March 1, 2006.** Bumsoo Kyung, University of Sherbrooke, Canada, "Recent progress in strongly correlated electron systems using computational methods."
6. **Thursday, March 9, 2006.** Rene Lopez, Vanderbilt University, "Nanostructured V_2O_5 as an active element for photonic applications."
7. **Monday, March 13, 2006.** John Baez, University of California Riverside, "Loop Quantum Gravity."
8. **Monday, March 20, 2006.** Kris Slowinski, Department of Chemistry and Biochemistry, CSULB, "Electrical conductivity of single molecules."
9. **Monday, March 27, 2006.** Ramiro Moro, University of Southern California, "Magnetic and electric deflection experiments with clusters in a molecular beam."
10. **Monday, April 3, 2006.** Chi-Yu Hu and Sergey Iakovlev, Department of Physics, CSULB, "The Physics of Positron-Electron Direct Annihilation in Positron-Hydrogen Collision."
11. **Monday, April 17, 2006.** Harvey Leff, California State Polytechnic University, Pomona, "Entropy, the second law and Maxwell's demon."
12. **Monday, April 24th, 2006.** Andrew Mc Dowell, New Mexico Resonance and ABQMR, Inc., Nuclear Magnetic Resonance on the Small Scale: "Nanopores and Microcoils."
13. **Monday, May 1, 2006.** Chongwu Zhou, University of Southern California, Oxide nanowires and carbon nanotubes: "Synthesis, Properties, and Applications."

Presentations, Publications, Grants and Awards in the Academic Year 2005-2006

Mladen Barbic

Barbic Group

Publications 2005-2006

- 1.M. Barbic, L. Eliason, and J. Ranshaw, "Quartz Tuning Fork Sensor with 480(N/m) Spring Constant and 6.5(fN/√Hz) Force Sensitivity" Submitted to Review of Scientific Instruments (2006).
- 2.M. Brady and M. Barbic, "Angular Dependence of Reversible Transverse Susceptibility in Magnetic Nanoparticles" IEEE Transactions on Magnetics, Accepted-In Press (2006).
- 3.M. Barbic and A. Scherer, "Stray Field Magnetic Resonance Tomography using Ferromagnetic Spheres" Journal of Magnetic Resonance 181, 223 (2006).
- 4.M. Barbic and A. Scherer, "Magnetic Nanostructures as Amplifiers of Transverse Fields in Magnetic Resonance", Solid State Nuclear Magnetic Resonance 28, 91 (2005).
- 5.M. Barbic and A. Scherer, "Nanomagnetic Planar Magnetic Resonance Microscopy 'Lens'" Nano Letters 5, 787 (2005).
- 6.M. Barbic and A. Scherer, "Composite Nanowire-Based Probes for Magnetic Resonance Force Microscopy" Nano Letters 5, 187 (2005).

Presentations 2005-2006

1. Contributed talk 2006 Intermag Conference, San Diego, CA May 2006.
2. Invited Talk SPIE International Symposium on Optics, Boston, MA October 2005.
3. Contributed talk 8th International Conference on Magnetic Resonance Microscopy, Utsunomiya, Japan Aug. 2005.
4. Plenary Lecture XIII Ampere NMR Summer School, Zakopane, Poland June 2005.
5. Two contributed talks MRS Spring Meeting San Francisco, CA April 2005.
6. Two contributed talks American Physical Society Meeting Los Angeles, CA March 2005.

Active NSF Research Grants

1. NSF-ECS "NMR Spectroscopy on a Chip" Awarded 2006 \$300,000 for 3 years
2. NSF- DMR "MRI: Acquisition of a Physical Property Measurement System (PPMS) for Materials Research" Awarded 2006 \$248,000 for 3 years
3. NSF "CAREER Award" Awarded 2004 \$450,000 for 5 years

Andreas Bill

Grants: - SCAC award for Assigned Time.

Seminars:

- Invited talk at the International Conference on "Lattice Effects in Superconductors", April 2006, Santa Fe, USA.
Title: "How Conventional are Superconducting Halide Nitrides?"

Poster at the International Conference on "Materials and Mechanisms of Superconductivity High Temperature Superconductors VIII"

Title: "Size-quantization Effect in a Superconducting Graphite-based Bilayer"

- Colloquium Talk at CSULB.

Title: "Relation between the Electronic Structure and the Magnetic Susceptibility in the Superconducting State of high-Tc Materials."

-Contribution to the department theory seminar with three lectures.

Titles: "Effective Hamiltonian in Solids and 2nd quantization"

"Cooper Instability and the BCS Hamiltonian"

"BCS wave-function and the Gap Equation"

Simon George, Emeritus

1. Presented an invited workshop on Lasers and Holography at the International Conference of ICPE at New Delhi, August 22, 2005.
2. Presented invited talks on Lasers and Holography with demonstrations at
 - a. Saurashtra University (August 16)
 - b. University of Chandigarh (August 18)
 - c. University of Amritsar (August 19)
3. Vice President, International Community Council
4. Member, International Education Committee, CSULB
5. Reviewer, Long Beach School District Science Fair (April 2006).
6. Presented an invited talk on Lasers and Holography at the University of Lucknow, India, on August 7, 2006.



7. Conducted an invited workshop on the Applications of Lasers and Holography at the International Workshop on Laboratory Innovations in Physics at Government College, Ajmer, Rajasthan, India, on August 11, 2006.
8. Presented an invited lecture and workshop on Lasers and Holography at the International Conference on Physics Education in Tokyo, Japan on August 15, 2006.



Mark Gross

On Leave: Professor Mark Gross is on official leave for the Academic Year 2006-07.

Jiyeong Gu

Presentation: “Inverse Proximity Effect in Ferromagnet/Superconductor Hybrid System” at the 2006 APS (American Physical Society) March meeting.

Cottrell College Science Award from Research Corporation.
SCAC Award from the College of Natural Sciences and Mathematics.

Zvonimir Hlousek was promoted to Full Professor this Spring. As Coordinator of Instructional Computing for the Department, he has established and maintained a very secure physics department server that maintains the facilities in our instructional labs. He has also helped establish and enhance a computing facility with an Altix 350 supercomputer.

1. Z. Papp, J. Darai, J. Zs. Mezei, Z. T. Hlousek, and C.-Y. Hu, *Accumulation of resonances in three-body Coulombic systems*, Proceedings of the 19th European Conference on Few-Body Physics, Groningen, 2004. AIP Conference Proceedings, 768, p 436-438, (2005).
2. Z. Papp, J. Darai, J.Zs. Mezei, Z.T. Hlousek, and C.-Y. Hu, *Accumulation of three-body resonances above two-body thresholds*, Phys. Rev. Lett. 94, 143201 (2005).
3. F. Demir, Z.T. Hlousek, and **Z. Papp**, *Coulomb-Sturmian matrix elements of the Coulomb Green's operator*, Phys. Rev. A 74, 014701 (2006).



Irene Howard

She had her poem, “Tomodachi” published in the CSULB English Department’s RipRap 2006, Volume 28, page 167.

Chuhee Kwon

Publications

1. “The Distribution of Transport Current in the YBCO Coated Conductor with Zipper Striations”, L. B. Wang, P. Selby, C. Khanal, George Levin, Timothy J. Haugan, Paul N. Barnes, and C. Kwon, IEEE Transactions on Applied Superconductivity **15**, 2950 (2005).
2. “Investigation of Current Percolation Characteristics in Coated Conductors”, L. B. Wang, G. You, K. R. Barraca, K. Waller, J. M. Mahoney, J. L. Young, and C. Kwon, IEEE Transactions on Applied Superconductivity **15**, 3676 (2005).

Presentations

1. Invited presentation at Korea Electrotechnology Research Institute, C. Kwon, "Scanning Laser Microscopy in Coated Conductor Characterization", Changwon, Korea (July 2005).
2. Talk in Materials Research Society Meeting, San Francisco, CA, C. Kwon, J.L. Young, G. You, G. Levin, T. J. Haugan, and P. N. Barnes, "Study of Striated Coated Conductors using Scanning Laser Microscopy", (April 18 - 21, 2006).
3. Talk at Stanford-Wisconsin Workshop on Coated Conductors, Palo Alto, CA, C. Kwon, "Local Current Transport and Dissipation in Striated Coated Conductors", (April 24 - 26, 2006).
4. Talk at Stanford-Wisconsin Workshop on Coated Conductors, Palo Alto, CA, J. L. Young, "Enhancing the Capabilities of the Scanning Laser Microscope", (April 24 - 26, 2006).

Research Grants

a. CSULB Internal

1. Sabbatical Leave for Spring 2006.
2. SCAC Assign-Time for AY 2006/2007 awarded, "Establishing a Standard Methodology to Study Superoxide Dismutase (SOD) Aggregates with Atomic Force Microscopy".

b. External Grants Awarded

Received an additional funding for equipment purchase from Air Force Office of Scientific Research. Total additional fund was \$14,960.

c. External Grants Continued

1. National Science Foundation in Nanotechnology Undergraduate Education (ESI) program entitled "A Tour in Nano-Land and Understanding the Nano-Landscape: Developing Multidisciplinary NUE Courses". Total fund from NSF was \$100,000.
2. National Science Foundation in Major Research Instrumentation (DBI) entitled "Acquisition of LaserScissor Workstation for Studies in Reproductive biology and research in superconductivity". Total fund from NSF was \$205,587.
3. Air Force Office of Scientific Research (Dr. H. Weinstock), entitled "Characterizing Coated Conductors with Variable Temperature Scanning Laser Microscopy". Total fund from AFOSR was \$299,965.

Alfred Leung

My apparatus entitled "Measuring the thickness of a transparent ring with a laser" received 2nd prize in the Introductory Laboratory Category and was declared a winner in the Low Cost Category in the 2005 American Association of Physics Teachers Apparatus Competition held in Salt Lake City, August 2005.

Publication: "Radius of gyration of a sphere and a barrel," The Physics Teacher, volume 44, pages 222-225, 2006.



Keung Luke

Presented two invited seminars on solar-energy related topics to the Physics Department at Cairo University, Cairo, Egypt on March 7, 2006. He reviewed a Ph.D. thesis titled "Study of the Physical Properties of the Semiconductor/Polymer Thin Films Prepared by Plasma Enhanced Chemical Vapor Deposition" for the Faculty Board of the Faculty of Science, Cairo University. The honorarium was donated as scholarships to the top three students of its Physics Department.

Zoltan Papp

4. S. A. Moszkowski, P. Doleschall and **Z. Papp**, *Spin dependence and non-locality in NN interactions*, Proceedings of the 19th European Conference on Few-Body Physics, Groningen, 2004. AIP Conference Proceedings, 768, p 72, (2005).
5. **Z. Papp**, J. Darai, J. Zs. Mezei, Z. T. Hlousek, and C.-Y. Hu, *Accumulation of resonances in three-body Coulombic systems*, Proceedings of the 19th European Conference on Few-Body Physics, Groningen, 2004. AIP Conference Proceedings, 768, p 436-438, (2005).
6. **Z. Papp**, J. Darai, J.Zs. Mezei, Z.T. Hlousek, and C.-Y. Hu, *Accumulation of three-body resonances above two-body thresholds*, Phys. Rev. Lett. 94, 143201 (2005).
7. P. Doleschall and **Z. Papp**, *p-d scattering with nonlocal nucleon-nucleon potential below the breakup threshold*, Phys. Rev. C, 72, 044003 (2005).
8. J.Zs. Mezei and **Z. Papp**, *Efimov resonances in atomic three-body systems*, Phys. Rev. A 73, 030701(R) (2006).

9. C.-Y. Hu, S.L. Yakovlev and **Z. Papp**, *Positronium annihilation above the positronium formation threshold in e^+e^-H scattering*, Nucl. Inst. Meth. Phys. Res. B, 247, 25-30 (2006).
10. F. Demir, Z.T. Hlousek, and **Z. Papp**, *Coulomb-Sturmian matrix elements of the Coulomb Green's operator*, Phys. Rev. A 74, 014701 (2006).
11. **Z. Papp**, *Coulomb-Sturmian separable expansion approach to the Faddeev-type integral equations of three-body Coulomb problem*, in *J-matrix method and its applications*, edited by A. D. Alhaidari, E.J. Heller, H.A. Yamani and M. S. Abdelmonem, Springer Lecture Notes in Physics, invited paper, 31 pages, in print.

Galen Pickett

"Origami Architecture", TESTA Architecture and design, Dec. 05.

"Folding Physics", Johns Hopkins CTY Odyssey Series, Mar. 06.

"Arnoldgami 2", six-week origami GATE course at AE Arnold School in Cypress, CA.

"Motion Mysteries" 2 week seminar for K12Alliance and Montebello Unified School District

"Tannabatta decorations" at Origami Festival, Japanese Garden, CSULB.

Origami Art Exhibitions:

"Arnoldgami 2," at OCPL, Cypress branch, April-June 2006.

"Origami Works," at Unitarian Universalist Church of Long Beach, Aug-Sept. 2006.

Subhash Rajpoot

Publications-refereed

1. H. Nishino and S. Rajpoot, *'Supernbrane with Non-Abelian Gauging and Chern-Simons Quantization'*, hep-th/0309100, Eur. Phys. Jour. C39 (2005) 389.
2. H. Nishino and S. Rajpoot, *'Hodge Duality and Cosmological Constant'*, hep-th/0404088, Mod. Phys. Lett. A21 (2006) 127.
3. H. Nishino, S. Rajpoot & K. Reed, *'Supersymmetric Dirac-Born-Infeld Action with Self-Dual Mass Term'*, hep-th/0410052, Class. & Quant. Grav. 22 (2005) 1553.
4. H. Nishino and S. Rajpoot, *'Dual Vector Multiplet Coupled to Dual $N=1$ Supergravity in 10D'*, hep-th/0502089, Phys. Rev. 71D (2005) 085011.
5. H. Nishino and S. Rajpoot, *'Alephnull-Hypergravity in Three-Dimensions'*, hep-th/0504097, Phys. Rev. 71D (2005) 125002.
6. H. Nishino and S. Rajpoot, *'Non-Abelian Tensor with Consistent Interactions'*, hep-th/0508076, Phys. Rev. 72D (2005) 085020.
7. H. Nishino and S. Rajpoot, *'Interacting Vector-Spinor Gauge Field for Nilpotent Supersymmetry'*, hep-th/0511267, Class. & Quant. Gr. 23(2006) 5215.
8. H. Nishino and S. Rajpoot, *'(Curvature)²-Terms in Supergravity in Three Dimensions'*, hep-th/0607241, Phys. Lett. 639B (2006) 110.

Conference Presentations-peer refereed

1. H. Nishino and S. Rajpoot, *'Broken Scale Invariance in the Standard Model'*, hep-th/0403039, Talk presented at Cairo International Conference in High Energy Physics, Egypt (January 2006), to appear in ALP Conference Proceedings, Melville, New York, 2006.
2. H. Nishino and S. Rajpoot, *'Nilpotent Spinor Symmetry with Interactions'*, Talk presented at International Conference on Supersymmetry, Irvine, California, to appear in Proceedings for SUSYO6, UC Irvine (June, '06).

Master Thesis Students

Brad Gold (2005) and Kevin Reed (2006).

Sema'an Salem

The Fertile Crescent and Domestication, Dahesh Voice, Vol. 10, No. 4, p. 4-12.

The Effect of Plant and Animal Domestication on the Rise of Civilization, Dahesh Voice No. 2, p. 12-19.



Hiroki Sunahata

Lecturer, Dr. Hiroki Sunahata, recently earned his Ph.D. in Engineering and Industrial Applied Mathematics. He was in the Claremont-CSULB joint Ph.D. program.

Congratulations, Hiroki!

1. "Stochastic Electrodynamics as analytical tool---The case of the quantum vacuum inertia hypothesis" in "Navegante sin Fronteras-Homenaje a Luis de la Pena" (2006) A. Rueda and H. Sunahata

2. "Inertia and the vacuum---view on the emergence of the inertia reaction force" in "Beyond the Quantum", eds Th.M.

Nieuwenhuizen, V. Spicka, B. Mehmani, M. Jafar-Aghdami and A. Yu Khrennikov (World Scientific, 2007)

A. Rueda and H. Sunahata



Hooshang Tahsiri

He was designated as the inventor/co-inventor of U.S. patents; patent No: US patents; patent No: US 6,995,515 B2, Feb. 7, 2006 and patent No: US7,015,646 B2, Mar. 21, 2006, and titled "Formation of a Field Reversed Configuration Plasma", Office of Technology Transfer, University of California at Irvine. For more information, see the display case by Dr. Tahsiri's office.

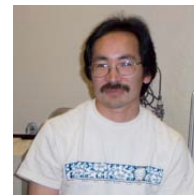
Alumni Notes

Bernard Dehlin (BS 1962 Vacparaiso University, MA 1970 CSULB), retired in January 2003 from Raytheon. He worked primarily with airborne radar. He designed avionic simulation systems for use in integration facilities.

Kelli Fifer (B.S. 2005), works for a company called DRS where she makes optical sensors for military applications. DRS originally stood for Dynamic Retrieval Systems, but no one uses this name anymore. The company is most famous for the mass mounted sight (MMS) on top of the Kiowa Warrior. Her e-mail address is zooropa135@yahoo.com

Peter Hansen (B.S. Math 1968, M.A. Physics 1979), is the Senior Project Leader at the Aerospace Corporation in El Segundo, CA (since January 1979). Since 1984 he has worked in Project West Wing, which is a technical counterpart to the Air Force that performs assessments and technical studies of foreign technology and space systems. His e-mail address is phansen1@socal.rr.com

Leo Hayashibara (A.S. in Physics, Cypress College, 1985, B.S. in Physics, CSULB, 1987, M.S. in Physics, CSULB, 1993) is a Senior Lab Technician at Butte College. He is in charge of the stockroom preparations for all physics labs. His e-mail address is hayashibarale@butte.edu



David Hunter (B.A. in Mathematics: Applied Mathematics, 1987, M.S. in Physics, CSULB, 1994) is teaching high school mathematics and is buying a large house in Gardiner, MT. It's a former bed-and-breakfast with three floors, 5 bedrooms and 5 baths! His email address is davidhunter2114@msn.com

James Lai (BSEE 1991, MS Physics 1999) MSCE (Structural), BSEE (Electronics and Power), MS Physics (Plasma Physics and Fusion Energy), Theoretical Research on Plasma Physics and Controlled Fusion. Since 1979 employment with Bridge Department in Sacramento. From 1989 with Caltrans District 12 in Irvine. Design of bridges and freeway structures. Professional Civil Engineer.

Daniel Mahgerefteh (B.S. 1983 CSULB, Ph.D. 1990 USC) is co-founder and currently Chief Technology Officer at AZNA LLC. He has a bio in his website <http://www.aznacorp.com/BioDaniel.html>.

Memorable Pictures

Dr. Shamena Anwar, daughter of Dr. Zahur Anwar, received a Ph.D. degree in Economics from Yale University, New Haven, on May 22, 2006. She has accepted a position as a faculty member at the Carnegie-Mellon University in Pittsburg, PA. She received her B.A. from the University of California, Berkeley, and M.A. and M.Phil. in Economics from Yale University. Carnegie-Mellon University has fifteen Nobel laureates amongst their faculty and alumni.



Mr. Tony Torres (left) and Mr. Mark McLaughlin are the Department's extraordinary Instructional Service Technicians. Tony initiated our website years ago, developed and maintains it, and is the current Webmaster. He supervises the Issue Room, and makes sure everything is functioning well for the instructional labs. Mark also does a great deal in keeping the instructional labs functioning, including designing new equipment and labs. He has helped with setting up the computing environment in the labs, and does many of the jobs that are required in the various research labs.



Department Office student assistants. From left are Ms. Katie Ho, Ms. Kelly Huynh, Ms. Xiao Wong and Ms. Huin Chhay. Behind them is the "ghost ship" that Xiao drew for Halloween, 2006.



Alumnus Dr. James R. Johnston (left) came by to visit the Physics and Astronomy Department and to talk with the Chairman, Professor Patrick Kenealy.

More Memorable Pictures



What a way to retire! Professor Emeritus Sema'an Salem (far right) is seen trout fishing in the High Sierras with his grandson, Sam. That day Sam caught more fish than his grandfather!



Professor Subhash Rajpoot shows some of the beautiful Egyptian posters that he gave as gifts to the secretaries. He went to Egypt to present a talk at the Cairo International Conference on High Energy Physics.



The Sphinx and The Great Pyramid at Giza, Egypt. In his tour of Israel, Jordan and Egypt, Professor Emeritus Keung Luke gave two invited seminars at Cairo University and visited many historical sites, including a 2AM climb of Mt. Sinai.



Professor Mladen Barbic's older son, Atash, welcomes Professor Barbic's newborn son, Shayan.



Professor Paul Hintzen, who teaches Astronomy, was finally captured for a photograph by his daughter Callie.



Professor M. Zahur Anwar



For Halloween 2005, some members of the Department dressed up with an Egyptian theme. From left to right are Professor Lowell Eliason, Ms. Irene Howard, Mr. Mark McLaughlin, Ms. Sandy Dana, and Ms. Kelly Huynh. They won an award and some prizes.



First CSULB/JPL Tennis Tournament, March 29, 1992
The East Court of the Caltech/
Athenaeum, Pasadena, California,

Back row (from left):
Art Murphy, Donald Rapp, Hooshang Tahsiri, and K. Y. Shen
Front row (from left):
Bruce Scott, Simon George, Alfred Leung, and Fred Shair



Sandy Dana offers indispensable help in the Department Office. She has many enthusiasms, two of which this photo captures: Halloween and, as the bouquet of roses on her desk indicates, a Co-Chief-Gardener for our Annual Rose Show. She also drove half-way across the country last summer to purchase a show pony, trained it, and won first prize in a local show, where the pony was ridden by her grandchild.

Irene Howard has been with the Physics Department for 29 years! She attended CSULB from Fall, 1973 until 1977, earning a B.A. in English: Creative Writing. She has published numerous poems in the CSULB English Department's *Riprap*, starting in 1983. In the annual College Convocation at the beginning of each academic year, I have described her as the heart of the Department. She knows how to get things done with the Administration, and handles her interactions with the faculty and students with a great warmth and aplomb. She keeps track of the financial and purchasing records, and is the right-hand person for the Chair. She is a mover behind the department celebrations of various holidays, showers, and the Annual Rose Show. Irene is also the chief editor and photographer (with the Chair) for the Newsletter. Sometimes, over the years, she has been the only energy behind this Newsletter. Thanks, Irene! —Pat Kenealy



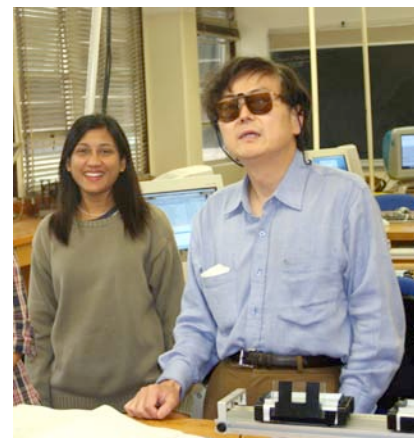
Some Faculty Not Seen Elsewhere In This Newsletter



Professor Lowell Eliason,
currently in FERP



Mr. Kim Gordon, Lecturer



Dr. Hitoshi Nishino, Lecturer, and
Graduate Student Rosie Than



Dr. George Kuck, Lecturer



Ms. Jasmina Stankovic, Lecturer



Mr. Michael Frey, Lecturer, with a
telescope he acquired for the Dept.

**College of Natural Sciences and Mathematics
Rose Show 2006**
A few of the many Rose Show attendees were:



Professor Emeritus Bruce Scott



Ms. Kay Belletti and
Ms. Jeane Bright



Ms. Sandy Dana and
Ms. Irene Howard

Research Groups



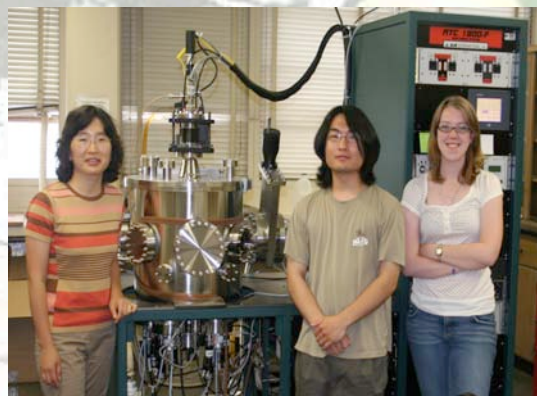
Major Research Instrumentation Grant Awardees:
Prof. Xianhui Bu, Prof. Chuhee Kwon, Prof. Lijuan Li,
and Principal Investigator Prof. Jiyeong Gu.



Professor Mladen Barbic (far right) is shown with
some of the students in his lab.



Some of the students working in Professor Chuhee
Kwon's lab are (from left) Mr. Jeremy Young, Ms.
Janice Lee, Ms. Megumi Yamamoto and Mr. Ryan
James. On the far right is Professor Chuhee Kwon.

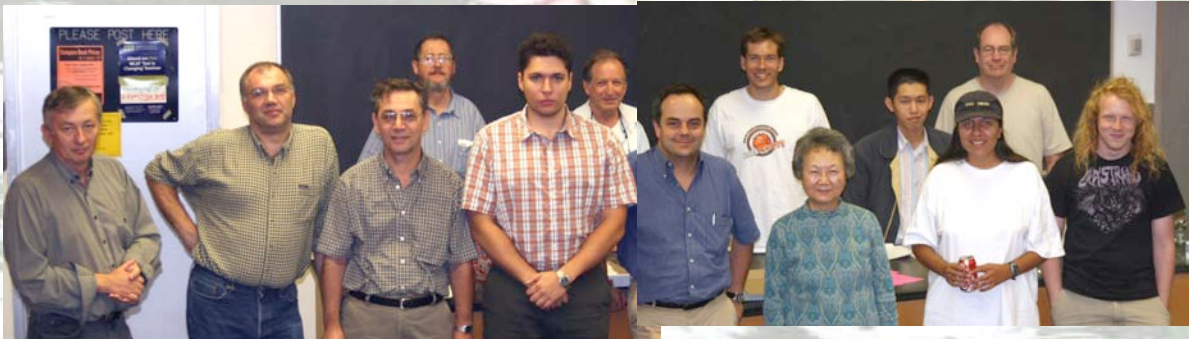


Professor Jiyeong Gu (left) is shown in her lab with
her students Mr. David Murakami and Ms. April
O'Brien.

DEPARTMENT OF PHYSICS AND ASTRONOMY
CALIFORNIA STATE UNIVERSITY, LONG BEACH
LONG BEACH, CA 90840-3901

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The Friday afternoon theoretical seminar has been running for several years. From left, front row, Profs. Zoltan Papp and Zvonimir Hlousek, Sergey Iakovlev, a visiting Professor and his son, Alexander, Prof. Andreas Bill, Prof. Sue Hu, graduate student Lluvia Zuniga, undergrad. student Ryan James. From left, back row, contributor Ben Carter, graduate student David Grant, Master's CSULB graduate and Dept. Technician, Mark McLaughlin, graduate student, Yang-Yueh Fan, and Extension Post-Bac. student, Robert Chambers.

In addition to meeting fully its obligations of nondiscrimination under federal and state law, CSULB is committed to creating a community in which a diverse population can live, learn, and work in an atmosphere of tolerance, civility, and respect for the rights and sensibilities of each individual, without regard to economic status, ethnic background, political views, or other personal characteristics or beliefs. An Equal Opportunity Employer.

This Newsletter was designed and edited by Irene Howard. Special thanks goes to Chair Patrick Kenealy for his assistance. No state tax dollars were used in reproducing this Newsletter