



ASTROPHYSICS

newsletter

2003 APS April Meeting in Philadelphia

The 2003 April Meeting of the American Physical Society is April 5—8 in Philadelphia, Pennsylvania at the Loews Philadelphia Hotel. Astrophysics is prominently featured in the scientific program, especially in the plenary sessions. Astrophysics and related sessions are listed inside. The division reception and business meeting are at 17:30 on Monday 7 April.

Election of DAP Executive Committee

We will elect a new Vice-Chair, a Secretary-Treasurer, and two At-Large Members of the Executive Committee in the next few weeks. The results will be announced at the April 2003 Meeting in Philadelphia. In this issue you will find the candidates for these positions and their statements. The election will be conducted by email ballot. Members who have no email address, or whose email ballot is returned, will receive a paper ballot.

DAP Travel Grants for Students attending the APS April Meeting

The Division can still support a few more travel grants for students to the April Meeting. Late paper abstracts do qualify students for support. To request a travel grant, contact the DAP Chair Elect, Chryssa Kouveliotou (Chryssa.Kouveliotou@msfc.nasa.gov). See the November 2002 newsletter for details.

New APS Fellows

Congratulations to the following new APS Fellows, who were recommended by the Division of Astrophysics.

Steven W. Barwick
University of California, Irvine

Citation: For contributions to non-accelerator, experimental particle physics, especially as co-spokesperson of the Antarctic Muon and Neutrino Detector Array, charged with oversight of detector operations and management of scientific output.

Steven Robert Federman
University of Toledo

Citation: For high quality spectroscopic observations of interstellar species, especially those relevant to

light element synthesis and chemical fractionation, and for measurements of oscillator strengths needed to interpret the data.

Fulvio Melia
University of Arizona

Citation: For his fundamental work elucidating the physics of compact astrophysical objects, particularly the supermassive black hole at the Galactic Center, and the multi-phased environment within which it is embedded.

Bharat Ratra
Kansas State University

Citation: For his contributions to a range of topics in early Universe cosmology, including the quantum mechanics of inflation and the cosmological constant problem.

Linda Siobhan Sparke
University of Wisconsin-Madison

Citation: For studies of the structure and dynamics of galaxies, using orbital motions to probe both time-steady and time-varying gravitational potentials, and the distribution of dark matter.

Jack Tueller
NASA/Goddard Space Flight Center

Citation: For leading the development and flight of new technology instruments for gamma-ray astronomy and performing ground breaking observations of gamma-ray sources.

Tanmay Vachaspati
Case Western Reserve University

Citation: For seminal contributions to our understanding of the possible role of topological defects in the early Universe, from gravitational wave generation to primordial magnetic fields and baryogenesis.

Fellowship Nominations Sought

Members of the Division of Astrophysics are encouraged to submit nominations of DAP members for Fellowship in the APS. The number of new Fellows elected per year is limited to one-half a percent of the current membership, and is apportioned according to Division membership numbers. Every year, our division has the opportunity to recommend 6 or 7 APS members for Fellowship. On surveying the current list of DAP members, the Executive Committee noted that there are a considerable number

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**Division of
Astrophysics**

**American Physical
Society**

2003 February

of deserving individuals who have not yet been nominated, so please consider your colleagues and organize a nomination on their behalf.

If you would like to recommend a member for Fellowship, please do so by filling out the nomination form that can be found, along with related information, at www.aps.org/fellowship/

Please submit complete nominations by May 1 to:

Executive Officer
American Physical Society
One Physics Ellipse
College Park, MD 20740-3844
ATTN: Fellowship Program

Unsuccessful nominations are automatically reconsidered a second time by the Fellowship Committee (additional supporting letters are still welcome.) After a second year, nominations must be resubmitted

APS Units Convocation 2003

The APS held its convocation for unit officers on February 1 at the American Center for Physics. Susan Lamb and Mark Leising attended from the DAP executive committee. Much of the proceedings described how APS and its services for units work. We need not repeat any of that, however a few issues of interest to our members were discussed. One is unit dues. It is clear that our dues (currently \$6 per year) will be increased. The effective increase proposed is \$2, but whether all of this, or only one-half, comes out of your pocket directly (the other half would come out of unit budgets) is being discussed. The need for the increase was explained as due to increased unit services (especially web page hosting, which DAP does not use) and the addition of a second congressional fellow (lobbyist.) The unit officers were nearly unanimous in the opinion that lobbying is an activity on behalf of the entire APS, and should not be charged to the units. The APS officers seemed unmoved by this point.

Another issue discussed at some length is the recent APS Council statement GUIDELINES FOR PROFESSIONAL CONDUCT (see aps.org, and Rocky Kolb's article in the previous newsletter.) Specifically the discussion centered on the supplementary guideline: Responsibilities of Coauthors and Collaborators. This is clearly a complicated issue, with different problems in different disciplines, but it was interesting that most of the problems raised during the discussion were in fact reasonably well addressed by the statement. One recurring point was that many seem to feel the statement is not complete in its description of the responsibilities of the senior scientists who lead large labs or groups.

Many of the participants spent the previous day visiting the offices of their senators and representatives. Michael Lubell emphasized the importance of such visits and letters to Congress. Even a relatively small number of contacts, especially to representatives not so well versed in science, can have a demonstrable effect. Michael and his office stand ready to assist any APS members with letters or visits.

Gravitational-Wave Sources Archive

The Astrophysical Gravitational-Wave Sources (AstroGravS) Archive is now online at <http://astrogravs.gsfc.nasa.gov>. AstroGravS is a website devoted to astrophysical sources of gravitational waves. The site is intended to be a resource for both the gravitational wave physics and astrophysics communities. The site's current offerings include a Waveform Catalog and a Literature Catalog.

The Waveform Catalog is designed to be a repository of downloadable waveforms, computed by researchers worldwide. This catalog can be used for data analysis, experimental simulation and design tasks, and source identification and interpretation. To contribute to the Waveform Catalog, contact Curator John Baker at jbaker@milkyway.gsfc.nasa.gov.

The Literature Catalog is a living archive of links to relevant research papers in source modeling, data analysis, and related subfields (currently 14 subject categories in all). This catalog is regularly updated by editors who are experts in each of the subject categories. For more information regarding the Literature Catalog, contact Editor-in-Chief Kimberly New at knew@lanl.gov.

Additional content will be added to the AstroGravS site in the future. For general comments/questions regarding AstroGravS, please contact Joan Centrella at jcentrel@milkyway.gsfc.nasa.gov. AstroGravS is a service of the Laboratory for High Energy Astrophysics (LHEA) at NASA's GSFC.

2003 Election: Candidate Statements

Candidates for Vice-Chair

Richard Mushotzky

My undergraduate degree in Physics was from MIT in 1968. I went to graduate school at the University of California San Diego and received my PhD in Physics in 1976 specializing in high-energy astrophysics under Prof L. Peterson. My thesis was on high-energy observations of active galaxies based on data from OSO-7, one of the first x-ray astronomy experiments. I had a National Academy of Sciences/National research council research fellowship at Goddard and then was made a staff member at Goddard in 1981. I have been at Goddard since then. I have worked on the data from OSO-7, HEAO-1, HEAO-2 (Einstein), EXOSAT, Ginga, Rosat, ASCA, XTE, Chandra and XMM. I was a member of the ASCA, Astro-E, Chandra and XMM science working groups. I was a member of the Committee on Astronomy and Astrophysics of the National Academy of Sciences from 1999-2002. I have had 7 graduate students and numerous post-doctoral fellows working with me. My research areas are active galaxies, clusters of galaxies, groups of galaxies, astrophysics abundances, and cosmology with the x-ray background.

Statement: In recent years the connection between physics and astrophysics has become ever tighter. Once again it is

astrophysics, with the mass of the neutrino, the existence of dark energy and the unknown nature of dark matter that has shown that standard physics models are incomplete. This strong interaction between physics and astronomy was recognized this last year in the National academy of sciences report "From Quarks to the Cosmos" and NASA has risen to the challenge with the issuance of the announcement of opportunity for the "Beyond Einstein" program. I believe that in the next decade high energy astrophysics will make major contributions to our understanding of the universe and the physics necessary to understand it and the role of the APS is to facilitate the connection between these two, formerly somewhat separate fields.

Bernard Sadoulet

Bernard Sadoulet, a graduate of Ecole Polytechnique (1963) and a "Docteur es Sciences" of Paris-Orsay University (1971), is by training an elementary particle physicist. As such, he had the chance of participating in two prestigious experiments which led to Nobel Prizes: the Mark I experiment at SLAC which discovered the J/ψ , the tau lepton and the charm, and UA1 at CERN which discovered the intermediate vector bosons W and Z. In 1984 he decided to shift his efforts towards particle astrophysics and cosmology. In 1985 he was appointed Professor of Physics at the University of California, Berkeley. From 1989 to 2000 he was the Director of the Center for Particle Astrophysics, one of the first generation Science and Technology Centers of the National Science Foundation. He is the Director of the University of California Institute for Particle and Nuclear Astrophysics and Cosmology (INPAC). He is the spokesperson of the Cryogenic Dark Matter Search (CDMS), a major effort funded by the US National Science Foundation and the US Department of Energy to decipher the nature of the Dark Matter that pervades the Universe.

Bernard Sadoulet has been active in the emergence of Nuclear and Particle Astrophysics. In addition to his specific institutional responsibilities outlined above, he was the chair of the Particle Astrophysics Panel of the NRC 1991 Astronomy Decadal Survey ("Bahcall committee"), a member of the 1996 Task Group on Space Astronomy and Astrophysics of the National Academy of Sciences, a member of Particle Astrophysics and Gravity Panel of the NRC 2000 Astronomy Decadal Survey ("Taylor-McKee committee"), a member of the 2002 Committee on the Physics of the Universe ("Turner Committee") and a reviewer of the 2002 NRC report of Neutrino Facilities Assessment Committee ("Barish Committee"). He has been in 1999 and 2000 a member of the Scientific Assessment Group on Non Accelerator Physics (SAGENAP) advising DOE and NSF on Particle Astrophysics. He has served in the early 90's on the Executive Committee of the Division of Astrophysics of the APS and was from 1993 to 2002 a member of Commission C19 on Astrophysics of the International Union of Pure and Applied Physics and part of this time, a liaison to Commission C21 on Particle Physics and a Member of the US Liaison Committee.

Statement: With the emergence of Nuclear and Particle Astrophysics, the enlargement of High Energy Astrophysics to Neutrinos and Gravitational Waves and the rapid development

of Particle Cosmology, the Division of Astrophysics (DAP) of the American Physical Society is placed at a fascinating frontier.

On the national front, the Division can play an important role in facilitating the building of a consensus in the astrophysics community on the best course of action on major facilities, such as a National Underground Science Laboratory, a Large field of view Telescope in Space or the Large Interferometer Space Array, especially if political obstacles appear on the way. To this end, the Division needs to coordinate closely to the other APS Divisions involved (Nuclear Physics and Particles and Fields), with the American Astronomy Society and with the National Research Council specialized committees.

On the international front, the Division should play a more active role with the International Union of Pure and Applied Physics (IUPAP), in particular with its commission 19 (Astrophysics), which needs revival and PANAGIC, the IUPAP Particle and Nuclear Astrophysics and Gravity International Committee. The main goal would be to facilitate the coordination of major astrophysics projects worldwide, given the tendency of each nation to promote its own projects.

An other important mission of the DAP, in coordination with the rest of APS, is to help the scientific community contribute in an effective way to K-12 education, in a way which goes beyond the "collection of neat stuff" based on our fascinating science that we tend to promote, and addresses the structural problems, such as the training of teachers and the motivation of underserved students.

As the Vice Chair, the Chair Elect and then the Chair of the Division of Astrophysics, I hope that I can contribute effectively to those three goals.

Candidates for the Executive Committee

Lars Bildsten

Lars Bildsten is a Permanent Member at the Kavli Institute for Theoretical Physics (KITP) and a Professor in the Physics Department at University of California, Santa Barbara. He received his PhD in theoretical physics from Cornell University in 1991, where he held a Fannie and John Hertz Graduate Fellowship. Bildsten was at Caltech for three years as the Lee A. DuBridge Research Fellow in Theoretical Astrophysics and received a Compton Fellowship from NASA in spring 1994. He was an assistant and associate professor in both the Physics and Astronomy departments at University of California, Berkeley from January 1995 through July 1999. While there, he was awarded an Alfred P. Sloan Foundation Fellowship in 1995 and a Hellman Family Faculty Fund Award in 1997. The Research Corporation designated him as a Cottrell Scholar in 1998. In 1999, he was awarded the Helen B. Warner Prize from the American Astronomical Society. Bildsten was cited for his fundamental work on stellar structure, including nuclear burning on neutron stars, the role of neutron stars as gravity wave sources, and the theory of lithium depletion. During the McKee-

Taylor Decadal Survey of Astronomy and Astrophysics, Bildsten served on two Panels: High Energy Astrophysics from Space and Theory, Computation and Data Exploration. He was a member of the Executive Committee of the High Energy Astrophysics Division of the American Astronomical Society in 2000/2001 and has been serving on the NRC's Committee on Astronomy and Astrophysics since Fall 2001.

Statement: My research interests cross the boundaries of physics and astronomy and encompass nuclear astrophysics, gravitational wave sources, space-based observations and the physics of compact objects. My residence at KITP gives me the opportunity to witness the growing interest (and movement) of physicists into astronomy while also seeing the theoretical and experimental strengths of all fields of physics. The physics community is acutely aware of those fields of astrophysics closest to their core: particle astrophysics and cosmology. However, I feel rather strongly that there are additional opportunities for physicists in other fields of astrophysics (e.g. stellar and solar hydrodynamics, physics of dense matter, galaxy formation, extrasolar planets) that have not yet been realized. Hence, I would work to close this gap by bringing these less obvious fields of astrophysics to the attention of the physics community. In addition, astronomy has been a consumer of forefront physics since its inception, and I would work equally hard to keep astronomers aware of the progress in all fields of physics.

Scott Burles

Current Position: Assistant Professor of Physics at MIT Scott received his PhD in Physics at UCSD in 1997. He then accepted a postdoc at the University of Chicago in the Department of Astronomy and Astrophysics until 2000, when he took a Associate Scientist position at Fermilab working with the Experimental Astrophysics Group. He joined the faculty of MIT in August of 2001. His research interests include observational cosmology, nuclear astrophysics, the intergalactic medium, gravitational lensing, and astronomical instrumentation.

Statement: As a member-at-large of the Executive Committee of the Division of Astrophysics, I will contribute the perspective of a young physicist swept up in the confluence of astro-, particle-, nuclear- physics and cosmology. The current momentum in our field is palpable, and we must continue to build on our successes and learn from our mistakes. The DAP will play an increasingly important role at the convergence of astrophysics and physics. Clear leadership and detailed prioritization of goals should be a charge for the future Executive Committee. Our vision must extend past the current decade to ensure the vitality and excitement of our division.

Kevin Hurley

Kevin Hurley received his PhD in physics from UC Berkeley in 1972. His main research interest is in space-based gamma-ray astronomy, and he is or has been PI or Co-I of experiments on the Prognostic 6,7, and 9, Venera 11, 12, 13, and 14, Mars '96,

Ulysses, Wind, HETE-II and Swift missions. He currently maintains the third interplanetary network for gamma-ray burst and magnetar monitoring and triangulation. He has served on the Editorial Board of Astrophysical Letters and Communications, and is or has been a member of the HEASARC Users Group, the Compton Gamma-Ray Observatory Users Group, the NASA High Energy Astrophysics Management Operations Working Group, the Executive Committee of the High Energy Astrophysics Division of the AAS, the NASA Gamma-Ray Astronomy Program Working Group, and the INTEGRAL US Users Group. His professional memberships include the AAS, the APS, the IAU, and Phi Beta Kappa. He is currently Research Physicist and Senior Fellow at the UC Berkeley Space Sciences Laboratory.

Cole Miller

Cole Miller received his Ph.D. from Caltech in 1990. He had postdoctoral appointments at Illinois (1990-1993) and Chicago (1993-1999) before starting as an assistant professor at the University of Maryland in 1999. His research interests focus on fundamental physics related to neutron stars and black holes, including supranuclear densities, strongly curved spacetime, and ultrastrong magnetic fields. Much of his recent work has been on intermediate-mass black holes and their implications for stellar dynamics, X-ray emission, and gravitational waves. He is a member of the International Astronomical Union, the American Astronomical Society, and the High Energy Astrophysics Division within the AAS. He is on the Scientific Organizing Committee for an April 2003 meeting on astrophysical sources of gravitational radiation.

Statement: Fundamental physics in astrophysics is flourishing as never before, from the Nobel Prize winning work of Giacconi, Davis, and Koshiba to our rapidly growing understanding of the nature and fate of the universe as a whole. Much of this progress has occurred because of close contact between the physics and astrophysics communities. This must continue to expand to maximize the productivity and visibility of our field. We must also take advantage of the intrinsic excitement of our work to foster outreach programs, which will help keep us in the public eye in times of economic difficulties.

2003 April Meeting Program

For this coming April the DAP has continued its tradition of collaboration with other APS Divisions in constructing a program of invited sessions that spans many interests of our members, and builds on present, and possible future collaboration with other physicists. We have a wide variety of astrophysics and related sessions scheduled (listed below.) There are also a variety of great physics and education topics covered as well.

Please check the APS April Meeting website for further details as they develop: <http://www.aps.org/meet/APR03/>. There you can also schedule your own list of talks and events to attend.

Astrophysics Sessions

Saturday Morning, 5 April , 08:30

Session A1. APS: [Plenary Session I](#). *Lykken, Harwit, Bowles*. Millennium Hall. Chair: Stan Wojcicki, Stanford University.

Saturday Morning, 5 April , 10:45

Session B2. DAP: [Stars: From Cradle to Grave](#). *Arnett, Conti, Chakrabarty, Balick, Abel*. Regency Ballroom B. Chair: Charles Dermer, Naval Research Laboratory.

Session B9. DAP: [Elementary Particles and Astrophysics](#). Washington A. Chair: Virginia Trimble, University of Irvine, California.

Saturday Afternoon, 5 April , 12:00

Session b6. APS: [Heineman and Einstein Prize Session](#). *York, Choquet-Bruhat, Wheeler, Goldberg*. Commonwealth D. Chair: Kip Thorne, California Institute of Technology.

Saturday Afternoon, 5 April , 14:30

Session C5. GGR/DAP: [Gravitational Wave Phenomenology](#). *Thorne, Jaffe, McMillan, Hughes, Cutler*. Commonwealth C. Chair: John Friedman, University of Wisconsin at Milwaukee.

Session C9. DAP: [Cosmology and Extragalactic Astronomy](#). Washington A. Chair: Jaqueline Hewitt, Massachusetts Institute of Technology.

Session D1. [Poster Session I \(Subject to Change\)](#). TBD.

Sunday Morning, 6 April , 08:30

Session G1. APS: [Plenary Session II](#). *Slane, Freedman, Kirkby*. Millennium Hall. Chair: Myriam Sarachik, APS President.

Sunday Morning, 6 April , 10:45

Session H3. DAP: [Processed Gas in Galaxies and Clusters](#). *Bregman, Buote, Fabbiano, Strickland, Thornley*. Commonwealth A. Chair: Susan Lamb, University of Illinois.

Session H5. GGR/GFC: [Gravitational-Wave Detection with LIGO](#). *Sanders, Rowan, Katsavounidis, Creighton*. Commonwealth C. Chair: Patrick Brady, University of Wisconsin-Milwaukee.

Session H9. GGR/DAP: [Focus Session: Dark Energy in the Accelerating Universe](#). *Ma, Filippenko*. Washington A. Chair: Leonard Parker, University of Wisconsin, Milwaukee and Adam Riess, Space Telescope Sciences Institute.

Sunday Afternoon, 6 April , 14:00

Session K3. DNP/DAP: [Nucleosynthesis in Astrophysical Objects](#). *Fields, Sherrill, Hwang, Cardall, Piro*. Commonwealth A. Chair: Gail McLaughlin, North Carolina State University.

Sunday Evening, 6 April , 20:00

Session M1. APS: [Public Lecture: Ben Franklin's Scientific Amusements](#). *Herschbach*. Stearns Auditorium, Franklin Institute, 222 North 20th Street, Philadelphia, PA 19103.

Monday Morning, 7 April , 08:30

Session N1. APS: [Plenary Session III](#). *Bohigas, Grannis, Wijers*. Millennium Hall. Chair: Helen Quinn, APS President-Elect.

Monday Morning, 7 April , 10:45

Session P2. DNP: [Neutrinos, Big-Bang Nucleosynthesis; Compton Scattering](#). *Markoff, Bell, Nathan, Kroll*. Regency Ballroom B. Chair: John Beacom, Fermilab.

Session P3. DAP/DPB: [Acceleration Mechanisms for Ultra High Energy Cosmic Rays](#). *Blasi, Jones, Baring, Colgate, Tajima*. Commonwealth A. Chair: Pisin Chen, SLAC, Stanford University.

Session P7. GPAP/DPP: [Plasma Astrophysics of Accretion Disks, Turbulence, and Reconnection followed by Laboratory Plasma Physics](#). Regency Ballroom C1. Chair: Ethan Vishniac, Johns Hopkins University and Russell Kulsrud, Princeton University.

Session P9. DAP: [Gamma Ray Burst, Compact Objects, and Neutrinos](#). Washington A. Chair: Chryssa Kouveliotou, USRA - NASA/MSFC.

Monday Afternoon, 7 April , 14:30

Session R4. DAP: [Future Experiments in X and Gamma Ray Astronomy](#). *Gehrels, Weaver, Parmer, Grindlay, Michelson*. Commonwealth B. Chair: Charles Meegan, NASA/MSFC.

Session R9. DAP: [Non-Doppler Redshift Mechanisms with Possible Cosmological Applications](#). Washington A. Chair: Chuck Gallo, Supersonix Inc.

Monday Afternoon, 7 April , 17:30

Session S9. DAP: [DAP Reception followed by Business Meeting](#). Washington A. Chair: Susan Lamb, University of Illinois.

Tuesday Morning, 8 April , 08:00

Session T1. DPF/DAP: [Astrophysics and Cosmology](#). *Sambruna, Covault, Tegmark, Perlmutter, Gondolo*. Regency Ballroom A. Chair: Rene Ong, University of California, Los Angeles.

Session T2. DNP/FHP: [History of Solar Neutrinos](#). *Franklin, Bahcall, Lande, Gavrin, Totsuka*. Regency Ballroom B. Chair: Hans Frauenfelder, Los Alamos National Laboratory.

Session T7. DNP: [Nuclear Reactions: Light Ions and Nuclear Astrophysics](#). Regency Ballroom C1. Chair: Dan Shapira, Oak Ridge National Laboratory.

Session T9. DAP: [Cosmic Rays and Neutrinos](#). Washington A. Chair: Matthew Baring, Rice University.

Tuesday Morning, 8 April , 11:00

Session U4. DAP/GPAP: [Magnetic Fields in Astrophysics](#). *Kronberg, Krushelnick, Ruderman, cattaneo, Valenti*. Commonwealth B. Chair: Edison Liang, Rice University.

Future Newsletters

If you have items of general interest to DAP members, consider submitting them to the Secretary-Treasurer for upcoming newsletters (next is November 2003.) We will be happy to publish meeting announcements or letters.