

Astrophysics Newsletter

February 2005

The 2005 April Meeting of the American Physical Society will be held 16—19 April at the Marriott Waterside Hotel in Tampa, on the west coast of Florida. The scientific program will include three plenary sessions, approximately 75 invited and focus sessions, and more than 100 contributed oral and poster sessions. Astrophysics will be well represented in each category. A summary of invited sessions sponsored by DAP is provided below. DAP will host a wine and cheese reception at our business meeting.

Fellowship Nominations

Members of the Division of Astrophysics are invited and encouraged to submit nominations of DAP members for Fellowship in the APS. The number of Fellows elected per year is limited to one-half percent of the current membership, and is apportioned by Division membership. Every year our division has the opportunity to nominate 6 or 7 APS members for Fellowship. On surveying the current list of DAP members, the Executive Committee notes that there is a considerable number of deserving individuals who have not yet been nominated, so please consider who among your colleagues might be in this situation 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 submitted for the first time last year will be reconsidered this year by the Fellowship Committee (additional supporting letters would still be welcome). After one year, nominations must be resubmitted.

2005 Division of Astrophysics Election

You will soon receive email instructions for voting through 22 March. This year we elect a new Vice-Chair, two Executive Committee members, a Secretary-Treasurer, and a Councillor. The candidates and their statements:

Position: Vice-Chair

Neil Gehrels

NASA Goddard Space Flight Center

Resume: Neil Gehrels is Chief of the Astroparticle Physics Laboratory at NASA'S Goddard Space Flight Center. He received his Ph.D. in physics from Caltech in 1981. Since that time he has worked at Goddard. He is an Adjunct Professor of Astronomy at the Univ. of Maryland and of Astronomy & Astrophysics at Penn State. His

research interests focus on transient sources in the gamma-ray sky including gamma-ray bursts, supernovae and galactic transients. He is the Principal Investigator of the Swift mission, Deputy Project Scientist of the GLAST mission and was Project Scientist for CGRO. He is a Fellow of the American Physical Society and a member of the American Astronomical Society. He has previously served as Chair of the AAS High Energy Astrophysics Division and Secretary/Treasurer of the APS Division of Astrophysics.

Statement: The research fields represented by the Division of Astrophysics are flourishing. New frontiers are being opened in areas such as TeV, neutrino and gravitational wave astronomy. Missions such as GLAST and JDEM highlight the confluence of physics and astrophysics that is taking place in our communities. The DAP is in a unique position to provide leadership in this new environment. Unfortunately there are dark clouds upon us with current and pending budget cuts at NASA, NSF and DOE. I believe the best strategy in these difficult times is to join forces with other communities and to promote education. As the Vice Chair, the Chair Elect and Chair of the DAP, I would work closely with the other divisions in APS with shared interests such as Nuclear Physics and Particles and Fields and with the AAS High Energy Astrophysics Division. I would promote reaching out to our colleagues, agency representatives and the public through meetings, special sessions, one-on-one dialogs, publications, and popular lectures. I am also interested in helping graduate students move forward in their careers. As DAP Secretary/Treasurer from 1998 to 2001, I helped the Chair, Virginia Trimble, initiate student travel grants to APS meetings. These are still in place now and I would work to keep that program healthy.

Dan McCammon

Wisconsin University

Resume: Dan McCammon received a PhD in physics from the University of Wisconsin in 1971 under the guidance of Bill Kraushaar. He graduated from Caltech in 1966 after working with Bob Leighton and Gerry Neugebauer in the early days of infrared astronomy. His primary interests are the soft X-ray diffuse background, the interstellar medium, and X-ray detector development. He has served on the decadal survey's High Energy Astrophysics panel, the Structure & Evolution of the Universe subcommittee of SSAC, the Fermilab visiting committee, and assorted other NASA, NSF, AAS, and NRC groups. He is currently a professor of physics at Wisconsin.

Statement: The marvelous report of the Committee on the Physics of the Universe, "Connecting Quarks With The Cosmos," provides a real opportunity to increase the visibility of astrophysics within the APS. It is also an opportunity to broaden the areas that our Division represents beyond the few specialized sub-disciplines that have

traditionally participated. I would like to focus more attention on increasing our membership. Sponsoring topical sessions in exciting areas is a good way to improve visibility. If we could do some of these jointly with the AAS, it could also be an excellent recruiting tool. Above all, we must take advantage of the public's great natural interest in current developments to help assure the future of our field. This involves providing accurate and interesting material to the press, support of outreach activities at all levels, recruitment of talented undergraduate majors, and the development of collegial working relations with all members of congress. These appear to be difficult years for public funding. We are fortunate to be in a strong position and should work hard to take advantage of it.

Position: Executive Committee Members

Jim Beatty

Ohio State University

Resume: I work in the field of experimental particle astrophysics. My academic training took place at the University of Chicago (B.A. (Chemistry) 1982, M.S. (Physics) 1984, Ph.D (Physics) 1986). My thesis work on galactic cosmic ray composition and propagation was done under the direction of John A. Simpson. Prior to joining Ohio State I have held faculty appointments at Penn State, Washington University (St. Louis), and Boston University. I have been involved in many cosmic ray balloon experiments over the years, including the PBAR, SMILI and HEAT balloon-borne magnetic spectrometers and the CREAM detector. More recently I have become interested in the question of the origin of the highest energy cosmic rays. I have been working on the Pierre Auger project since 1994, and serve as the leader of the surface detector electronics task for Auger. I am also participating in ANITA, a search for radio transients emanating from the Antarctic ice sheet due to the neutrinos produced by cosmic ray interactions with the cosmic microwave background.

Statement: This is an exciting time to be an astrophysicist. New astronomical observations enrich our view of the Universe, and the interplay with cosmology, particle physics, and nuclear physics connects astrophysical phenomena to fundamental issues in these areas. The Division serves as a forum for the "physicist's approach" to astronomical and astrophysical problems, and as a link between other disciplines of physics and the wider astronomical community. Funding for major projects in our field often requires interdisciplinary, interagency, and international cooperation. The Astrophysics Division has an important role to play in fostering the interactions required for these approaches to bear fruit. The general public is fascinated by what we are learning about the Universe, and the outreach we conduct is important both to our field and to the public perception of the field of physics as a whole. As a Divisional Councilor, I would work to develop programs to support

interdisciplinary interaction through the meetings sponsored (or co-sponsored) by the Division, to explore mechanisms for enhanced international cooperation with the growing communities in other regions of the world, and to help communicate the excitement of our field to the public. I would enthusiastically work towards these ends.

Joan Centrella

NASA Goddard Space Flight Center

Resume: Joan Centrella received her PhD from Cambridge University, where she was a student at the Institute of Astronomy. Following postdoctoral appointments at the University of Texas and the University of Illinois, she joined the faculty of Drexel University in the Physics Department. In 2001, she moved to NASA's Goddard Space Flight Center to join their newly-formed gravitational wave astrophysics group, where she leads their source modeling and numerical relativity effort in support of LISA. She is currently head of the Gravitational Astrophysics Laboratory, which encompasses the gravitational wave and theoretical astrophysics groups at Goddard. Her research interests include black hole mergers, gravitational waves, numerical relativity, structure formation, and cosmology.

Statement: Astrophysics is a vibrant and fascinating field of endeavor at the juncture of physics and astronomy. Advances in observation, instrumentation, simulation, and theory promise a continued flood of new discoveries and insights about the universe, ranging from extra-terrestrial planets to massive black holes, galaxy formation, and the early universe. Interest in astrophysics, both within the scientific community and from the general public, remains high. Yet with all of this good news, there are some significant challenges that must be met to insure the future health of our field. We scientists must join together to make the case for support of basic research when there are so many urgent needs competing for attention. Outreach to students as well as to the general public is essential to educate and inform our fellow citizens about the nature, excitement, and benefits of scientific research. And we must continue to reach across the boundaries between different branches of physics, particularly those supported by different agencies (e.g., NSF, DoE, NASA...), to glean new insights and techniques, and to keep our imaginations fresh. As a member of the DAP Executive Committee, I would encourage and support these areas through activities at APS meetings such as invitations to key policy makers to interact with scientists, public talks and visits to local schools, special events for young scientists to meet with more senior colleagues, and joint symposia between divisions and topical groups within the APS.

Chung-Pei Ma

University of California, Berkeley

Resume: Chung-Pei Ma is a Professor of Astronomy at the University of California, Berkeley. She received her Ph.D. in particle physics and cosmology from the Massachusetts Institute of Technology in 1993. While at MIT, she was also enrolled in the New England Conservatory of Music in Boston for violin performance classes. She was a postdoctoral fellow at the California Institute of Technology and an Assistant and Associate Professor of Physics and Astronomy at the University of Pennsylvania before joining the Berkeley faculty in 2002. Ma was a recipient of the Maria Goeppert-Mayer Award from the American Physical Society, the Annie J. Cannon Award in astronomy, an Alfred P. Sloan Foundation Fellowship, a Cottrell Scholars Award, and the Outstanding Young Researcher Award from the Overseas Chinese Physics Association. She was also a recipient of the Lindback Award for Distinguished Teaching at the University of Pennsylvania, and the first prize winner in the 1983 Taiwan National Violin Competition. Ma has served on the ten-year planning committee of astronomy in Taiwan and is a General Member of the Aspen Center for Physics.

Statement: My research interests are in cosmology, a field that has matured to a point at which we can now use precise measurements and high-quality astronomical data to explore fascinating questions about fundamental physics at both the smallest and largest scales. Accompanying the excitement in this new intersection of discoveries is an increased need for a closer contact between the physics and astronomy communities. Having received my Ph.D. training in physics and served on the faculty in both a joint physics and astronomy and a separate astronomy department, I am aware of both the tensions and opportunities present between these two disciplines. I will use this experience to broaden DAP's efforts at bringing the two communities closer together.

Steve Ritz

NASA Goddard Space Flight Center

Resume: Steve Ritz received a BA with High Honors in Physics (and Music) from Wesleyan University in Connecticut (1981) and his Ph.D. from the University of Wisconsin-Madison (1988). While doing his thesis work in experimental particle physics at DESY and at CERN, he wrote several papers on neutrino, gamma-ray, and antimatter signatures of dark matter annihilations in the sun, earth, and galactic halo. After a two-year post-doc at Columbia, he joined the faculty in 1990. At Columbia, he enjoyed teaching a variety of courses, and he found teaching 'Physics for Poets' for three years particularly rewarding and challenging. He was a Sloan Foundation fellow starting in 1993. In 1996, Ritz started working on GLAST and, in 1998, he moved to Goddard. He is now the GLAST Project Scientist and GLAST LAT Instrument Scientist. Ritz has served on a number of committees, including the DOE-NSF High Energy Physics Advisory Panel (HEPAP), the NASA Astronomy and Physics

Working Group (APWG), the IUPAP Particle and Nuclear Astrophysics and Gravitation International Committee (PaNAGIC), and the NSF-DOE Scientific Assessment Group for Experiments in Non-Accelerator Physics (SAGENAP). He is also on the Editorial Committee of Annual Reviews of Nuclear and Particle Science. His current area of research is high-energy gamma-ray astrophysics.

Statement: You already know that astrophysical measurements are important for fundamental physics and that our understanding of the astrophysical systems themselves is improving at a fantastic pace, so I won't go on about all that here. It seems to me the two most important roles of the DAP are (1) to make sure our scientific meetings are interesting, useful, visible to the media and educators, and not redundant; and (2) to continue to encourage progress expanding our field so we more closely resemble the diversity of society. The second role should include helping to ensure that we remain open and welcoming to non-U.S. scientists. As a member of the DAP Executive Committee, I would actively seek input on these issues and do whatever I can to make improvements. We should have greater participation in the DAP, so independent of your choices I hope you will take the time to vote.

Position: APS Councilor

Charles Dermer

US Naval Research Laboratory

Resume: Chuck Dermer is an astrophysicist and civil servant employed at NRL since 1991. Before this he held postdoctoral and research faculty positions in academia, at NASA/Goddard, and at LLNL. Dermer's main research interest is to understand the nature of the high-energy space radiation environment, especially if its sources involve black holes. His training with Reuven Ramaty shaped his outlook as an astrophysicist: high quality calculations using the best available physics in models that are consistent with the most reliable observations. Besides numerous proposal reviews, his committee service includes terms with the HEAD/AAS and DAP/APS executive committees, chairing the DAP Executive Committee from 1999-2003, organizing the DAP Centennial Exhibit in 1999, and being a member of the SEUS advisory committee from 2001-2004. Dermer received his PhD in the physics of relativistic plasmas from UCSD in 1984 under the supervision of Robert J. Gould.

Statement: The Division of Astrophysics has a unique role to play in physics and society. It provides a forum where the most recent advances and results at the intersection of physics and astronomy are presented. Most physicists recognize that astronomy is the most public face of the physical sciences. It is therefore important to have a Division Councilor with extensive DAP experience who is familiar with the important policy questions facing astronomers and astrophysicists. To name the more pressing issues where the DAP and the APS have both

interests and a stake: the April APS meeting; the balance of the physical science program at NSF, NASA, and DOE; the impact of the President's Vision for Space Exploration on the Explorer and Beyond Einstein program; the issues related to HST reservicing and Shuttle return-to-flight; immigration; outreach (I think that the press activity in the April meeting could be improved); and increasing DAP membership. My records of the public SEUS advisory committee meetings are posted on my website. If I am elected Councilor, I'll do the same as appropriate regarding DAP/APS issues. Thank you for your consideration.

Position: Secretary-Treasurer

Tod E. Strohmayer

NASA Goddard Space Flight Center

Resume: Tod Strohmayer received his PhD in physics from the University of Rochester (New York) in 1992. He spent time as a postdoctoral researcher at Los Alamos National Laboratory before coming to NASA's Goddard Space Flight Center in 1994, where he remains today. He has worked on a wide range of research topics, both observational and theoretical. Some of these include, in no particular order; gamma-ray bursts, neutron star oscillations, accreting neutron stars, soft gamma-ray repeaters, thermonuclear bursts on neutron stars, and fast X-ray timing studies of neutron stars and black holes. He is a member of the AAS, APS and is presently a member of the Executive Committee of the AAS High Energy Astrophysics Division.

Statement: Astrophysics is indeed flourishing at the present time. Some have called it a "golden age." Although growth in the field has been healthy over the past decade, it is extremely important as a community that we not fail to do the work necessary to see that the present golden age is not replaced by a "dark ages" devoid of observatories with which to carry on our work. I think the DAP should be at the forefront of promoting our field both to the broader physics community as well as the general public. It is important that all of our communities resources are working together as strong advocates for astrophysics research. This means more effective communication and coordination between those who see the APS as their primary advocacy organization and those who see themselves more closely aligned with the AAS. As DAP secretary-treasurer I would enthusiastically work towards these ends.

2005 April Meeting Program

Most days at the April meeting will feature early plenary sessions, with speakers and subjects of general interest to all APS members. Of special interest to DAP members are these **plenary talks**

Hendrik Schatz

Rare isotopes and thermonuclear explosions: journey through the crust of an accreting neutron star

Felix Aharonian

Probing Supernova Remnants, Black Holes, and Dark Matter with TeV Gamma Rays

Wendy Freedman

The Standard Model of Cosmology: Successes and Challenges

Leonard Susskind

The Black Hole Information Paradox (Tentative Title)

There are many **invited sessions**, organized by DAP and/or other divisions, of great interest to astrophysicists and students potentially interested in astrophysics:

16 April 2005

- Observational Cosmology
- Neutrinos I
- Neutrinos II
- Space based gravitational wave detection

17 April 2005

- Baryogenesis and the Dark Matter Problem
- Gamma Ray Bursts
- Dark Matter
- Giant Star Evolution and Nucleosynthesis
- Neutron Stars

18 April 2005

- Active Galactic Nuclei
- Dark Energy/Inflation
- Space Plasmas
- The Link between Neutrinos and the Origin of the Elements
- Baryons: birth and death
- Earth based gravitational wave detection

19 April 2005

- The Galactic Center
- Extrasolar Planets

Please check the APS April Meeting website for further details as they develop: <http://www.aps.org/meetings/>

Join APS Sections and Topical Groups

We urge all of our division members to consider joining sections, forums and topical groups relevant to you. Membership is free for sections and forums, and very inexpensive (\$7) for topical groups. There are benefits

beyond the obvious ones of the meetings, newsletters, and lobbying efforts of the units. Your membership benefits the units and, indirectly, astrophysics.

The geographical sections are funded entirely by APS in proportion to the number of members. It takes seconds to register for *free* online and help your section. The topical groups (e.g., Plasma Astrophysics, and Gravitation) are funded through their dues, but are awarded invited sessions at APS meetings and APS Fellowship Nominations in proportion their membership. More members in groups of interest to you result in more talks and more Fellows in your area. Further, the existence of the topical groups depends on their maintaining a membership threshold. There are several good reasons to join, and no good reasons not to.

Future Newsletters

If you have items of general interest to DAP members, consider submitting them to the Secretary-Treasurer for upcoming newsletters (February and November 2005.) We will be happy to publish meeting announcements or letters.

APS/DAP on the WWW

<http://www.aps.org/units/dap>