APS Division of Astrophysics

Electronic Newsletter

October 19, 2009

In this issue

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Questions? Comments?

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April 2010 AAPT/APS Joint Meeting

Plan now to attend the April 2010 meeting – in February! Division of Astrophysics members will especially want to attend the April 2010 meeting, not only because of the exciting scientific program that will feature many DAP members, but also because this meeting will provide an unique opportunity for the scientific community to discuss national science program priorities and policies in the nation's capital. Here are the key details:

What: April 2010 AAPT/APS Joint Meeting
When: February 13-17, 2010 – **NOTE THE EARLY DATE THIS YEAR!**
Where: Washington, DC
Abstract Deadline: October 23, 2009 5PM EDT

The 2010 April Meeting meeting will take place at the Marriott Wardman Park Hotel, in Washington, DC. Because the April Meeting will be held in conjunction with the annual winter meeting of the American Association of Physics Teachers (AAPT), it has been moved to February. Detailed information for the meeting, including details on registration and the scientific program can be found online at http://aps.org/meetings/april/info/.

Abstract Deadline for April 2010 Meeting: October 23, 2009 5PM EDT

The deadline for submitting your abstract to for the April 2010 APS meeting in Washington is fast approaching!

- All abstracts must be submitted online at http://abs.aps.org/.
- All submission guidelines and details can be found online at: http://aps.org/meetings/april/scientific/
- Only APS members can submit abstracts.
- Be sure to proofread your abstract before submission.
- Select the right Sorting Categories will ensure your presentation is grouped and scheduled appropriately by the DAP sorting team.

Student Travel Grants For April 2010 Meeting:

DAP will will offer travel grants to support the attendance of graduate students (or advanced undergraduate students) at this meeting. The amount of each grant will be up to $600 for travel related expenses. Only student members of DAP who are giving talks or presenting posters in DAP sessions at the conference are eligible. If there are insufficient funds to support all applicants, preference will be given to applicants who have not received travel grant support from DAP to an APS meeting in the past.

Students should apply for grants by sending a copy of their submitted abstract and their institutional affiliation to Corbin Covault corbin.covault@cwru.edu. Please apply as soon as possible.

Astrophysics Plenary Sessions for April 2010 Meeting

The April 2010 APS meeting will feature two astrophysics plenaries on Tuesday, February 16: John Carlstrom (KICP/UChicago) on The Latest Results from Cosmic Microwave Background Experiments (including SZ Cluster Surveys) and Bill Borucki (NASA Ames) on First Results from the Kepler Planet Finding Mission.

DAP Invited Sessions for April 2010 Meeting

The Division of Astrophysics is sponsoring or co-sponsoring eleven Invited Session for the April 2010 Meeting:

- Extragalactic Gamma-Ray Sources
- Pulsars in the Fermi Era
- Cosmic Microwave Background Polarization
- The Nature of the Highest Energy Cosmic Rays
- Dark Matter in the Laboratory
- Dark Matter in the Universe
- International Planning for Astroparticle Physics
- Inflation
- Probing Galactic Astrophysics with Supernova Remnants
- Nucleosynthesis in Stellar Explosions
- Neutrino Astrophysics
- Magnetoplasmas in Astrophysical Jets, Lobes, and in the Laboratory

The detailed schedule of sessions are tabulated in the following pages along with highlight descriptions of selected sections.

The APS DAP Executive Committee strongly encourages Division members to plan to attend the 2010 April meeting and to contribute to the scientific program. Submit your abstract today!

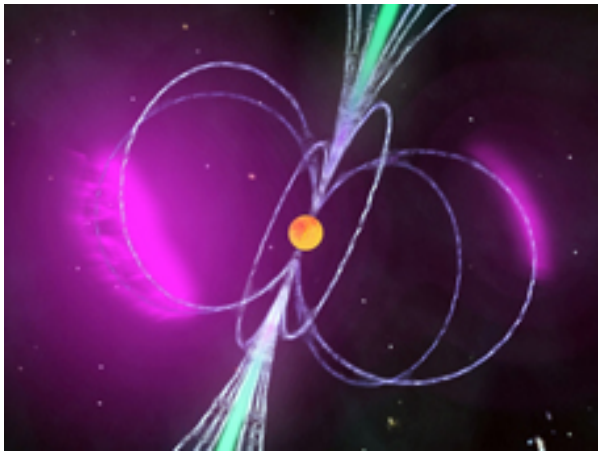
DAP Invited Session Talks for April 2010 Meeting: Part 1 of 2

DAP Invited Session:	Time:	Author:	Title
Pulsars in the Fermi Era	Feb 13 8:30	Lucas Guillemot	Fermi Observations of Gamma-ray Pulsars
		Matthew Baring	Implications of Gamma-ray Observations for Gamma-Ray Pulsar Emission Models
		Anatoly Spitkovsky	Particle Acceleration in Pulsar Magnetospheres
International Planning for Astroparticle Physics	Feb 13 10:45	Stavros Katsanevas	European Strategy for Astroparticle Physics
		Hitoshi Murayama	Japanese Programs in Astro-Particle Physics
		Steve Ritz	Report from the Particle Astrophysics Scientific Assessment Group
Extragalactic Gamma-Ray Sources	Feb 14 8:30	Erin Bonning	Multiwavelength Observations of Fermi AGN
		Jonathan Granot	Highlights from Fermi Gamma-Ray Space Telescope observations of Gamma-Ray Bursts
		Otte Nepomuk	TeV observations of Blazars and their implications
Magnetoplasmas in Astrophysical Jets, Lobes, and in the Laboratory	Feb 14 10:45	Paul Bellan	Exploring how astrophysical jets work using laboratory MHD plasma jets as a scaled-down approximate replica
		Hui Li	Global Structures of Radio Galaxies: Theory and Simulations Meet the Observations
		Lukasz Stawarz	Extended Lobes as Sources of High Energy Particles and Radiation
Inflation	Feb 14 15:30	Alan Guth	Eternal Inflation: Is Our Universe Part of a Multiverse?
		Will Kinney	Inflation Confronts Observations
		Liam McAllister	Inflation as a Probe of Fundamental Physics
Nucleosynthesis in Stellar Explosions	Feb 14 15:30	Alan Calder	Advances in the Modeling of Type I-A Supernovae
		Jordi Jose	New Hydrodynamical Models of Type I X-ray Bursts
		Sumner Starrfield	Nucleosynthesis in Classical Novae from Improved Nuclear Physics Input

DAP Invited Session Talks for April 2010 Meeting: Part 2 of 2

DAP Invited Session:	Time:	Author:	Title
Dark Matter in the Universe	Feb 15 13:30	Doug Finkbeiner	Indirect Detection and Theoretical Models
		Marla Geha	Dark Matter Observed in the Universe
		Simona Murgia	Dark Matter Searches with FERMI
Dark Matter in the Laboratory	Feb 15 15:30	Dan Akerib	Searching for WIMPs in the Galactic Halo: Scaling Up with Liquid Xenon Detectors
		Sarah Eno	Missing Energy Based Searches at Colliders: Gateway to Dark Matter in the Laboratory?
		Angela Reisetter	Results from the Cryogenic Dark Matter Search Experiment
Probing Galactic Astrophysics with Supernova Remnants	Feb 15 15:30	Carles Badenes	Supernova Remnants as Probes of Type Ia Nucleosynthesis
		Stefan Funk	Gamma-Ray Emission from Supernova Remnants
		John P. Hughes	Observational Constraints on Cosmic Ray Acceleration in Supernova Remnants
The Nature of the Highest Energy Cosmic Rays	Feb 16 10:45	John Belz	Composition Studies of the Highest Energy Cosmic Rays with the High Resolution Fly's Eye Observatory
		Guenter Sigl	Ultra-High Energy Cosmic Ray Origin and Model Building in Light of new data
		Ralf Ulrich	Observations of Ultra-High Energy Cosmic Rays by the Pierre Auger Observatory
Cosmic Microwave Background Polarization	Feb 16 13:30	Sarah Church	Results from the QUAD Experiment
		John M. Kovac	Results from the BICEP Experiment and Future Plans
		Lyman A. Page Jr.	Polarization Results from WMAP
Neutrino Astrophysics	Feb 16 13:30	Heino Falcke	Cosmic Rays and Neutrinos above 10^{21} eV: the NuMoon experiment with WSRT and LOFAR
		Gail McLaughlin	Supernova Neutrinos
		David Saltzberg	Results from the ANITA search for Ultra-High Energy Neutrinos and Cosmic Rays using the Radio detection technique

April 2010 Meeting DAP Invited Sessions Highlights: Part 1 of 3



Pulsars in the Fermi Era

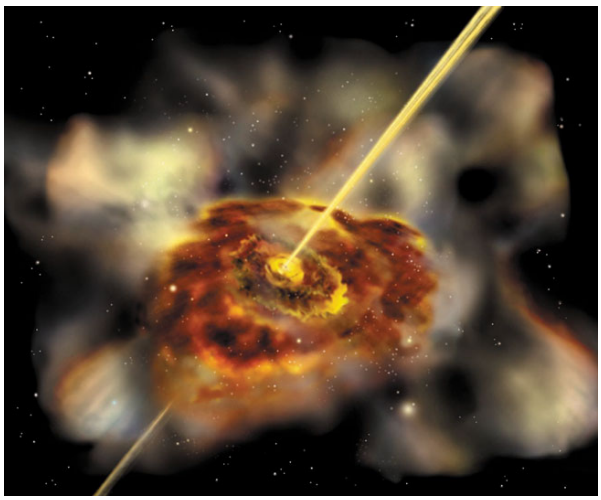
February 13, 8:30

The Fermi Gamma-ray Space Telescope has opened a new and exciting era in pulsar astronomy. The Fermi Large Area Telescope Collaboration published the detection of a pulsar in CTA 1 as the first new science result of the mission almost one year ago. Since that time, additional new pulsars have been found using only the Fermi gamma-ray data, gamma-ray pulsations have been detected from known radio pulsars, and a population of gamma-ray millisecond pulsars has been observed. Pulsars now dominate the emerging catalog of Galactic point sources emitting gamma rays. While these results explain a number of formerly unidentified gamma-ray sources, they also prompt new questions about the underlying mechanisms at work in these powerful objects. This session (Maxim Lyutikov, chair) will review Fermi observations of gamma-ray pulsars (Lucas Guillemot), explore implications for general models of the properties of these systems (Matthew Baring), and consider details of possible acceleration processes occurring in the magnetosphere (Anatoly Spitkovsky).

International Planning for Astroparticle Physics

February 13, 10:45

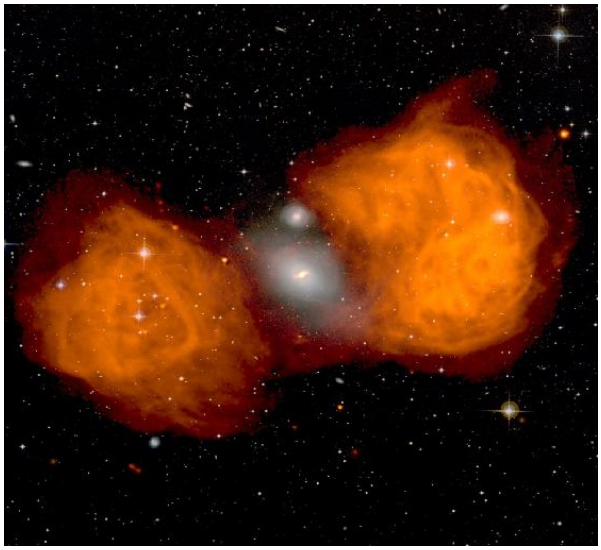
Representatives from Europe, Japan, and the United States will share their perspectives on planning and coordinating international activities in Particle Astrophysics.



Extra-Galactic Gamma-Ray Sources

February 14, 8:30

Extragalactic Gamma Ray Sources give insight into the extreme physics near black holes and in relativistic jets. In addition, they also serve as probes of the distant Universe constraining the extragalactic background light and testing the fundamental physics of Lorentz invariance. In this session, Jonathan Granot will discuss the Fermi observations of gamma-ray bursts, Erin Bonning will describe multiwavelength observations of Fermi detected blazars, and Nepomuk Otte will give the latest TeV observations from VERITAS of blazars.

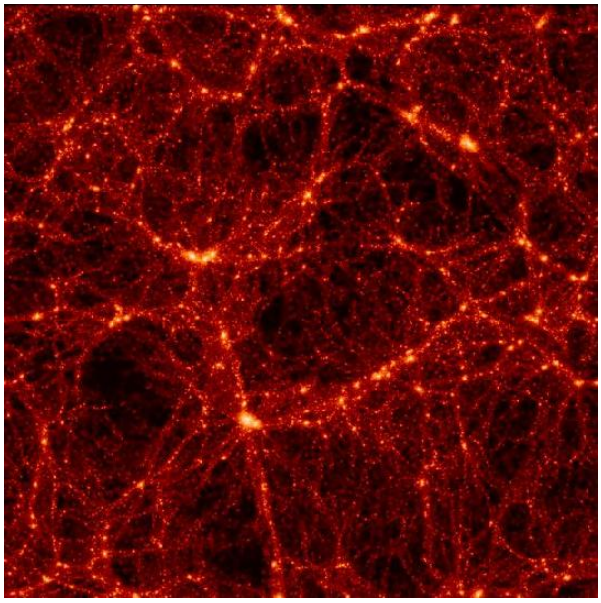


Magnetoplasma in Astrophysical Jets, Lobes, and in the Laboratory

February 14, 10:45

Three talks will be presented describing new results for both experimental and theoretical work with magnetoplasmas.

April 2010 Meeting DAP Invited Sessions Highlights: Part 2 of 3



Dark Matter in the Universe

February 15, 13:30

Dark Matter in the Laboratory

February 15, 15:30

We feature two invited sessions on Dark Matter: First, three talks on indirect detection of astrophysical matter with implications for theory, and then three talks presenting latest results and plans for direct detection using cryogenic experiments and particle physics colliders.

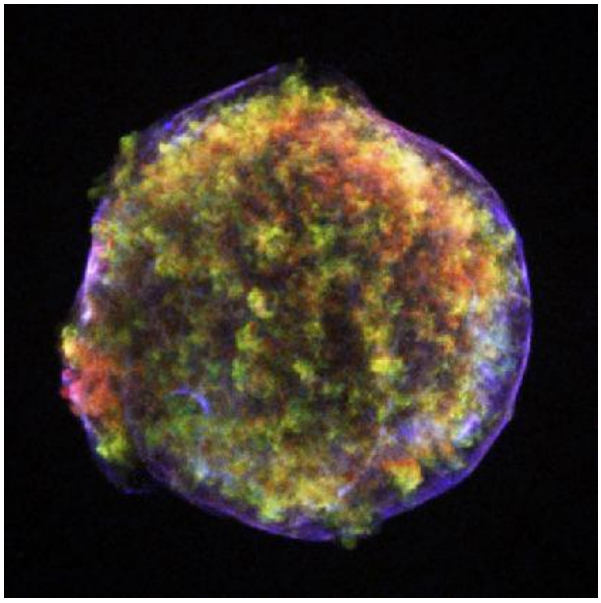
The Origins of the Most Energetic Cosmic Rays

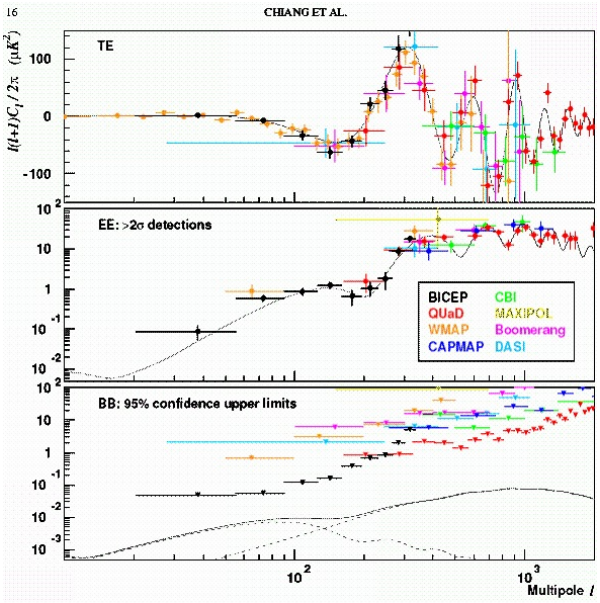
February 16, 10:45

Cosmic rays above 20 EeV represent the most energetic known particles in the Universe. Yet they remains a profound mystery. What are the astrophysical sources of the highest energy cosmic rays? How are these particles accelerated? Are the highest energy particles protons? Or heavier nuclei? Or something else entirely? What can we conclude from the most recent and rather dramatic observations of high energy cosmic rays? And what might we expect for the future?

These questions will be addressed in the invited session "The Nature of the Highest Energy Cosmic Rays". Ralf Ulrich will present the latest results from the Pierre Auger Observatory in Argentina, while John Belz will provide the most recent news from the High Resolution Fly's Eye experiment in Utah with emphasis on composition measurements. Gunter Sigl will summarize the theoretical implications and will address open questions, including new connections between cosmic ray physics and high energy particle physics.

April 2010 Meeting DAP Invited Sessions Highlights: Part 3 of 3





Probing Galactic Astrophysics with Supernova Remnants

February 15, 15:30

The rapidly-expanding stellar ejecta that are expelled under the massive energy release in a supernova explosion result in the production of collisionless shocks that heat the surrounding material, accelerate particles to extremely high energies, and energize the ejecta themselves. The resulting supernova remnants (SNRs) thus provide nearly unique environments in which to study electron-ion temperature equilibration processes, the production of cosmic-rays, the interaction fast shocks with molecular clouds, and the nucleosynthesis products from stellar explosions. These processes play integral roles in the evolution of the chemistry and energy density of the Galaxy. Starting with talks summarizing the broad evidence for cosmic-ray acceleration in SNRs, the use of spectral and dynamical information from SNRs to probe the nature of the progenitor explosions, and new results on gamma-ray emission from SNRs, the focus of this session will be on recent observational and theoretical results of SNR studies, and the impacts of these studies on broader questions in Galactic astrophysics.

Cosmic Microwave Background Polarization

February 16, 13:30

CMB Polarization Session, chaired by Clem Pryke (KICP/UChicago), with talks by Sarah Church (KIPAC/Stanford), Lyman Page (Princeton) and John Kovac (Caltech/Harvard). Hear the latest results on CMB Polarization from the South Pole, Space and the Atacama Desert in Chile and future plans. This field is driven by the long term goal of detecting the CMB signal for inflation: the B mode polarization.