

Electronic Newsletter 2012-2013, Part 2

February 20, 2013

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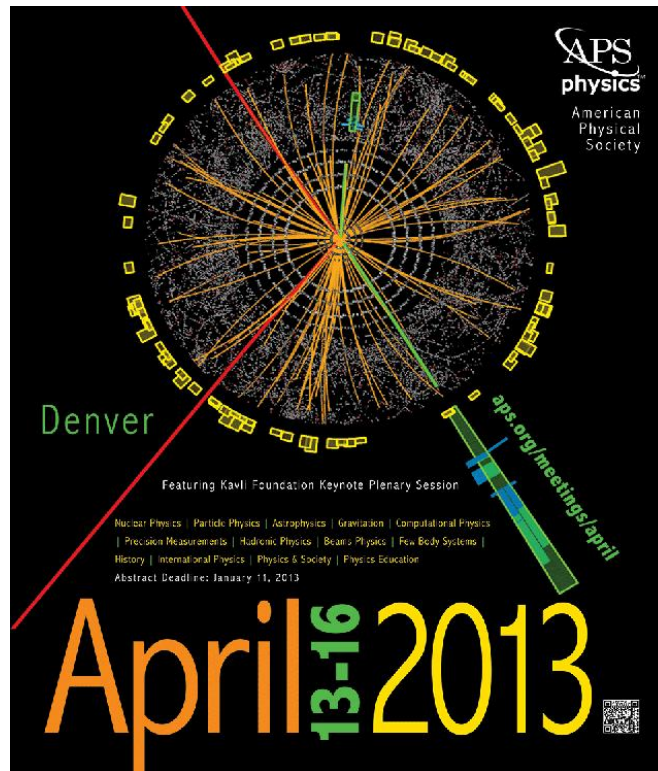
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Neil Cornish

Questions? Comments?

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April 2013 APS Meeting



Finalize your plans now to attend the April 2013 meeting held this year in Denver, Colorado. A number of plenary and invited sessions will feature presentations by DAP members. Here are the key details:

What: April 2013 APS Meeting

When: Saturday, April 13 through Tuesday, April 16, 2013

Where: Denver, Colorado, Sheraton Denver Downtown Hotel

Early-bird Registration: Friday February 22, 2013

Hotel Reservation Deadline: Sunday, March 10, 2013

The 2013 April Meeting meeting will take place at the Sheraton Denver Downtown Hotel. Detailed information for the meeting, including details on registration and the scientific program can be found online at <http://www.aps.org/meetings/april>.

Registration for April 2013 Meeting:

Early-Bird Deadline: Friday February 22, 2013

APS members receive a significant discount by pre-registering for the April 2013 meeting. Save money by registering early. The complete schedule of registration fees for the April 2013 meeting in Denver is listed below:

	Early Bird Received On/Before February 22	Late Registration Received Between Feb. 23 - Mar 15	On-Site Registration After March 15 Register in Denver
Full Member			
Full Registration	\$385	\$445	\$520
One Day	\$270	\$300	\$335
Junior Member			
Full Registration	\$230	\$255	\$295
One Day	\$175	\$200	\$215
Non-Member			
Full Registration	\$560	\$615	\$695
One Day	\$325	\$350	\$395
Students			
Grad Member**	\$135	\$155	\$190
Undergrad Member**	free	free	free
Retired	\$155	\$180	\$210

The APS DAP Executive Committee strongly encourages all Division members to plan to attend the 2013 April meeting. Finalize your plans to attend!



Student Travel Grants For April 2013 Meeting:

Travel Grant Application Deadline: Friday February 22, 2013

Once again, the DAP will offer travel grants to support the attendance of graduate students (or advanced undergraduate students) at the April 2013 APS meeting in Denver. Graduate students who have oral and/or poster presentations accepted by the APS are encouraged to apply.

The amount of each grant will be up to \$600 for travel related expenses for those students who are members of the DAP and who are presenting in DAP-sponsored sessions. DAP students presenting papers in related and/or co-sponsored sessions are eligible for grants of up to \$300. 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 who wish to apply for a grant should apply by email only as follows:

- Send an email addressed to Corbin Covault, DAP Secy-Tres at this email address: corbin.covault@cwru.edu
- Subject Header: "Application for DAP Travel Grant 2013"
- Indicate your Full Name.
- Indicate your Institutional Affiliation include your Department and/or research group.
- Indicate the Title of your presentation.
- Indicate the APS Session Assignment code (e.g. T2.00042) assigned to your talk by the APS.
- Indicate whether you are applying for a travel grant of up to \$600 (for DAP-sponsored or co-sponsored sessions only) OR for up to \$300 (for work in DAP related field).
- Indicate the Name, Institution and email address of your sponsoring dissertation-advisor/research-supervisor.
- Indicate whether or not you have ever previously received travel support from the APS to attend an April meeting and if so, indicate amounts, dates, and sponsoring units.
- Include and/or attach text or PDF copy of your accepted abstract.

Please note: The deadline for email applications for travel grants to the April 2013 meeting is **11:59 PM EST Friday February 22, 2013**. Applicants will be informed of decisions for travel grants not later than March 2, 2013.

Annual DAP Business Meeting at April 2013 APS Meeting:

The Division of Astrophysics will hold its annual **Business Meeting** at the April APS meeting in Atlanta on **Monday, April 15 at 5:45 PM** in room *Governor's Square 10*. ***All members of DAP are warmly encouraged to attend the annual business meeting.*** Please join us for discussion of issues relevant to the membership of the DAP. Newly elected APS Fellows from the DAP will be honored. Lavish refreshments will be served. See you there.



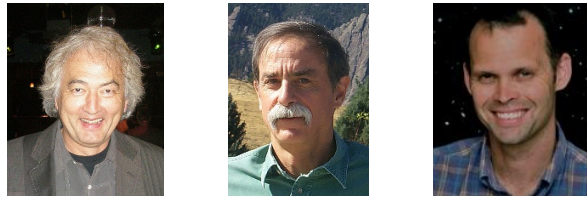
PhysPAG Town Hall Lunch Meeting

Tuesday, April 16, 12:30pm to 1:30pm – NASA Physics of the Cosmos (PCOS) Program and Program Analysis Group (PhysPAG) lunch time Town Hall. Join us for discussion. Room assignment: To-Be-Determined.

Food will be available for purchase, arranged by the APS DAP, in the room so you won't miss lunch! Much of high-energy astrophysics and cosmology in NASA astrophysics resides in the NASA PCOS program. Chief Scientist Ann Hornschemeier (NASA GSFC) will provide an update of current activities in PCOS (including how NASA is implementing the decadal survey recommendations and future plans for roadmapping). Members of the PhysPAG Executive Committee will describe its activities, including providing technology needs input to NASA and serving as focal points for gravitational wave, X-ray, cosmic microwave background polarization, cosmic ray and gamma ray measurements via five Science Analysis Groups (SAGs). For more information on PCOS and the PhysPAG please visit pcos.gsfc.nasa.gov/physpag.

Plenary Session Highlights for April 2013 Meeting:

Plenary Session I: Kavli Keynote Session: Frontiers of Physics, From the Lab to the Cosmos
Saturday, April 13, 8:30 AM



- John W. Harris (Yale) *“Creating the Primordial Quark-Gluon Plasma at the LHC”*
 - David Wineland (NIST) *“Superposition, Entanglement, and Raising Schroedinger’s Cat”*
 - Lloyd Knox (UC Davis) *“The Universe According to Planck”*
-

Plenary II: The Quantum 100 Years Ago, the Quantum Today, and the Quantum Tomorrow
Monday, April 15, 8:30 AM



- John Heilbron (UC Berkeley & Oxford) *“Bohr’s Creation of his Quantum Atom”*
 - John Preskill (Caltech) *“Quantum computing and the entanglement frontier”*
 - Deborah Jin (JILA)
-

Plenary III: Recent Results and Future Directions in High-Energy and Neutrino Physics
Tuesday, April 16, 8:30 AM



- GERALYN “Sam” Zeller (FNAL) *“Recent Results and Future Opportunities in Neutrino Physics”*
- Florencia Canelli (ETH Zurich) *“Results from the CERN Large Hadron Collider”*
- Tim Tait (UC Irvine) *“Life post - Higgs”*

DAP Sessions for April 2013 Meeting

The current schedule of plenary, invited, and contributed sessions sponsored or co-sponsored by DAP is tabulated in time-order below. On the following pages find the highlight descriptions of selected sections. This year's April meeting promises to be particularly exciting for members of the astrophysics and astroparticle physics and cosmology communities.

Session ID	Day Date	Start Time	Room	Title
A1	Sat Apr 13	8:30 AM	Plaza ABC	Plenary I: Kavli Keynote: Frontiers in Physics, From Lab to Cosmos
B4	Sat Apr 13	10:45 AM	Plaza F	Invited Session: Gamma-Rays and Active Galaxies
B8	Sat Apr 13	10:45 AM	Gov's Square 10	Cosmology & Early Universe
C4	Sat Apr 13	1:30 PM	Plaza F	Invited Session: Nature's Particle Accelerators
C8	Sat Apr 13	1:30 PM	Gov's Square 10	CMB I
D4	Sat Apr 13	3:30 PM	Plaza F	Invited Session: Tidal Disruption Events
D8	Sat Apr 13	3:30 PM	Gov's Square 10	CMB II
D14	Sat Apr 13	3:30 PM	Plaza Court 3	Missions and Surveys
G2	Sun Apr 14	8:30 AM	Plaza D	Invited Session: Dark Matter
H4	Sun Apr 14	10:45 AM	Plaza F	Invited Session: Dark Energy
H8	Sun Apr 14	10:45 AM	Gov's Square 10	Gravitational Wave Astronomy
J4	Sun Apr 14	1:30 PM	Plaza F	Invited Session: Neutron Stars and Core-Collapse Supernovae
J14	Sun Apr 14	1:30 PM	Plaza Court 3	Dark Matter, Gamma-ray Experiments, & Elementary Particles
L4	Sun Apr 14	3:30 PM	Plaza F	Invited Session: Galaxy Clusters Across the EM Spectrum
L5	Sun Apr 14	3:30 PM	Gov's Square 14	Invited Session: Gravitational Wave Astrophysics
L8	Sun Apr 14	3:30 PM	Gov's Square 10	Supernovae and Extragalactic Backgrounds
P1	Mon Apr 15	8:30 AM	Plaza ABC	Plenary II: The Quantum 100 Years Ago, Today, & Tomorrow
Q3	Mon Apr 15	10:45 AM	Plaza E	Invited Session: Origin of the Elements
Q4	Mon Apr 15	10:45 AM	Plaza F	Invited Session: Cosmic Particle Probes of Fundamental Physics
Q8	Mon Apr 15	10:45 AM	Gov's Square 10	Neutron Stars
Q14	Mon Apr 15	10:45 AM	Plaza Court 3	Dark Matter Theory
R4	Mon Apr 15	1:30 PM	Plaza F	Invited Session: New Stars in Astrophysics
R8	Mon Apr 15	1:30 PM	Gov's Square 10	Ultra-High Energy Cosmic Rays I
T4	Mon Apr 15	3:30 PM	Plaza F	Invited Session: Hot Topics in Astrophysics
T8	Mon Apr 15	3:30 PM	Gov's Square 10	Ultra-High Energy Cosmic Rays II
T14	Mon Apr 15	3:30 PM	Plaza Court 3	New Direction in Astrophysics
U7	Mon Apr 15	5:45 PM	Gov's Square 10	DAP Business Meeting and Reception
W1	Tue Apr 16	8:30 AM	Plaza ABS	Plenary III: Results & Future: High-Energy & Neutrino Physics
X4	Tue Apr 16	10:45 AM	Plaza F	Invited Session: Multimessengers from Space
X8	Tue Apr 16	10:45 AM	Gov's Square 10	Geophysical Astronomy
Y4	Tue Apr 16	1:30 PM	Plaza F	Invited Session: Energetic Neighbors
Y8	Tue Apr 16	1:30 PM	Gov's Square 10	Galactic Astronomy

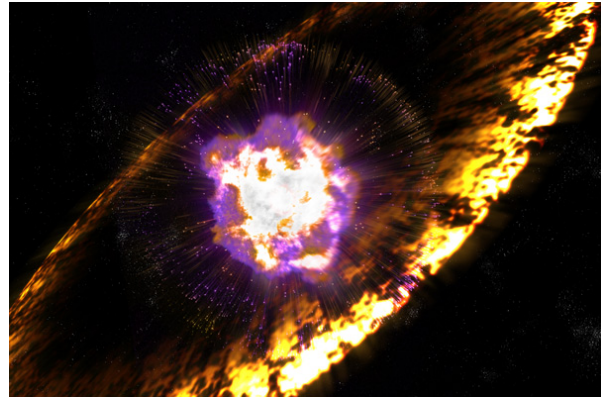
April 2013 Meeting DAP Invited Sessions Highlights: Part 1 of 5



Gamma-Rays and Active Galaxies

Saturday, April 13, 10:45 AM

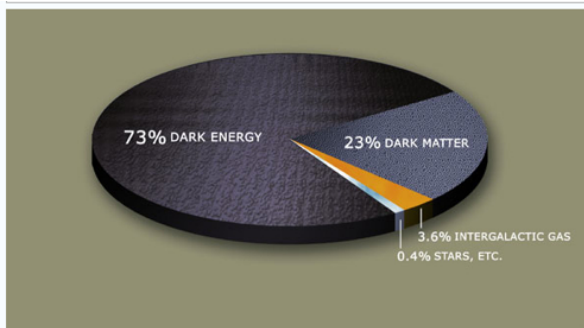
In this session, we consider three distinct connections between gamma-rays and AGN that have led to new understandings. In the first talk, Paolo Coppi will describe what we can learn about particle acceleration and emission regions from recent observations of AGN by both space- and ground-based gamma-ray telescopes. Next, Rudy Gilmore will report on how gamma-ray spectra from AGN can be used to place strong constraints on UV, optical and IR extragalactic background light (EBL). And finally, Marco Ajello will report on how new measurements by Fermi have led to a new understanding of the role of AGN in contributing to the isotropic gamma-ray background (IGRB).



Nature's Particle Accelerators

Saturday, April 13, 1:30 PM

This session will focus on recent progress and puzzles involving Cosmic Particle Acceleration. Great advances in numerical studies and surprising new data highlight the complex phenomena of particle acceleration in astrophysical objects. Understanding particle acceleration in supernova shocks will be the topic of the talk by Damiano Caprioli. Alice Harding will discuss how the Crab pulsar is an old friend, the standard pulsar wind nebula, but it is full of surprises that keep challenging our understanding. Sera Markoff will show how X-ray binaries are compelling objects to study as they are nearby examples of the highest energy steady cosmic accelerators observed, blazars. (Image credit: Greg Stewart/SLAC National Accelerator Laboratory).



Dark Energy

Sunday, April 14, 10:30 AM

The acceleration of the Universe shows that the Universe is dominated by some form of dark energy. The nature of this dark energy is one of the most interesting puzzles of current knowledge. In this session, Rachel Bean will cover the theoretical models of Dark Energy. The most recent effort in studying dark energy, the Dark Energy Camera, will have their first results presented by Jiangang Hao. The future of Dark Energy observations will be discussed by Jeffrey Newman.

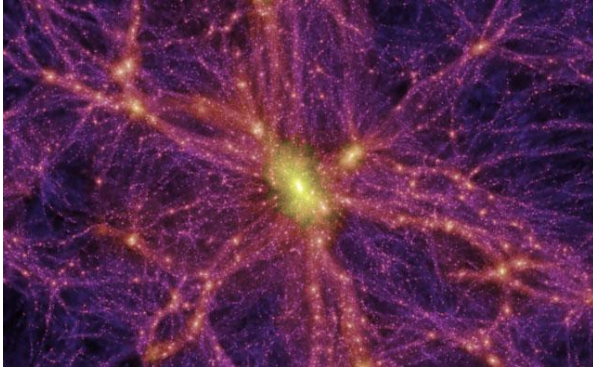


Tidal Disruption Events

Saturday, April 13, 3:30 PM

Ripped to shreds. When a star gets uncomfortably close to a black hole it can be torn apart by the hole's tidal gravitational field. What does such an event look like and what are the observational signatures? Have such events been observed already? This session will explore the current theoretical and observational understanding of tidal disruption events. (Image Credit: NASA/CXC/M. Weiss)

April 2013 Meeting DAP Invited Sessions Highlights: Part 2 of 5



Dark Matter

Sunday, April 14, 8:30 PM

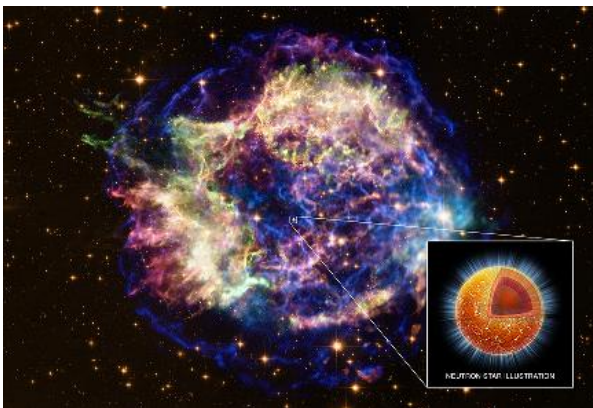
This invited session will provide a look at the latest results and future prospects in the search for Dark Matter. Tom Shutt (CWRU) will present an overview of recent results from direct dark matter searches along with a summary of new experimental efforts that are coming online in the near future. Alex Drlica-Wagner (Stanford) will describe efforts in the indirect search for dark matter using astrophysical signatures such as gamma-ray emission. And Jason Kumar (Hawaii) will discuss the connections between theoretical models for dark matter and the general search strategies that are employed today.



Galaxy Clusters Across the EM Spectrum

Sunday, April 14, 3:30 PM

Cluster of galaxies are proving to be excellent and important cosmological probes, but this requires an accurate determination of their masses. The most promising avenue is to study them via as many ways as possible. This session presents recent developments in our understanding of cluster astrophysics and cosmology through complementary multi-wavelength observations, with an emphasis on X-ray, optical and SZ surveys. Speakers include: Christine Jones (Harvard-Smithsonian Center for Astrophysics), who will cover “Clusters as cosmological probes, and X-ray emission as a measure of their masses;” Eduardo Rozo (KIPAC/Stanford) who will discuss “Gravitational lensing measurements of clusters;” and Neelima Sehgal (SUNY/Stony Brook) who will present the summary of “Sunyaev-Zeldovich observations of clusters.”

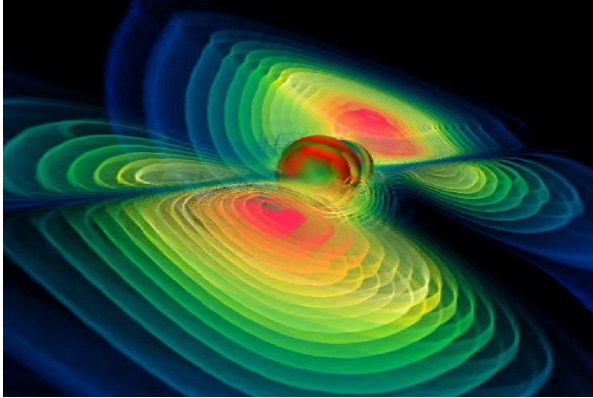


Neutron Stars and Core-Collapse Supernovae

Sunday, April 14, 1:30 PM

Although we know the basic facts about core-collapse supernovae and their consequences, many important aspects remain mysterious. What is the nature of the neutron stars that are left behind? How can details of the neutron stars be observed? How much do we really understand about the explosions that produce these neutron stars? The first speaker is Dany Page (UNAM); he will cover “Superfluidity in the Core of Neutron Stars.” The second speaker is Andrew Cumming (McGill); he will cover “X-Ray Bursts and the Neutron Star Crust.” The third speaker is Mansi Kasliwal; she will cover “Observing Core-Collapse Supernovae.”

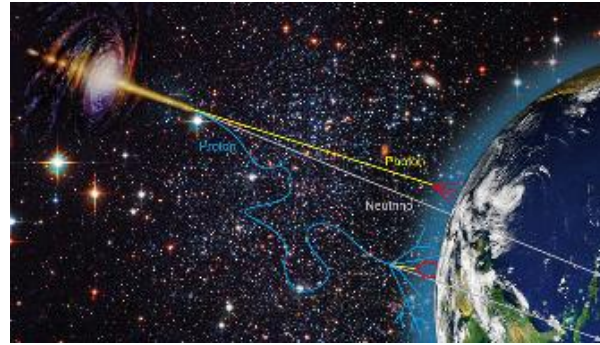
April 2013 Meeting DAP Invited Sessions Highlights: Part 3 of 5



Gravitational Wave Astrophysics

Sunday, April 14, 3:30 PM

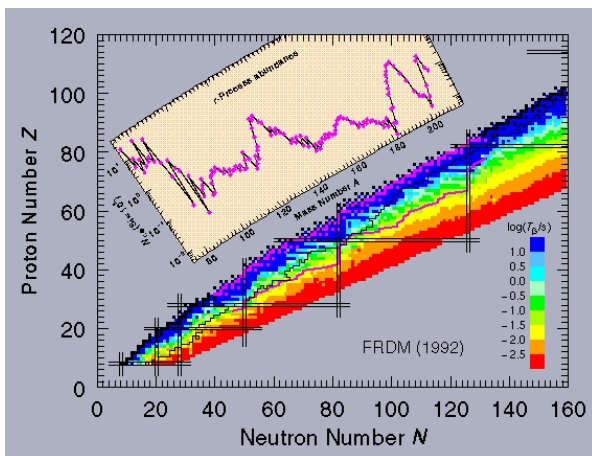
Chris Fryer (Los Alamos National Laboratory) “Gravitational Waves: Probes of Stellar Collapse.” Jocelyn Read (California State University Fullerton) “Learning about dense matter from gravitational waves.” Will Farr (Northwestern University and CIERA) “Gravitational waves from binaries and dense stellar clusters.” (Image Credit: Werner Berger.)



Cosmic Particle Probes of Fundamental Physics

Monday, April 15, 10:45 AM

This session will discuss the Cosmic Probes of Fundamental Physics based on a subsection of the Snowmass process Cosmic Frontier exercise. The main topic is the astrophysical probes of fundamental physics including Cosmic Rays, Gamma Rays and Neutrinos, the Cosmological Asymmetry, and the exploration of the Basic Nature of Space and Time. Francis Halzen will discuss cosmic particle probes of interactions that reach well beyond laboratory energies. Stephan Meyer will report on recent progress of the Holometer which tests Planck scale quantum geometry. Finally, John Beacom will focus on the mysterious Neutrinos and how clues from Astrophysics and Cosmology help us study the properties of this subtle particle.



Origin of the Elements

Monday, April 15, 10:45 AM

This session covers the history of the concept of the elements, how elements are produced in stars, and how superheavy elements are produced in the laboratory. The first talk is the Moseley Memorial Lecture, made possible by a generous donation from Virginia Trimble. The speaker is Eric Scerri (UCLA), and he is presenting “Henry Moseley, 1887-1915.” The second talk is the Hans A. Bethe Prize Lecture. The speaker is this year’s winner, George Fuller (UCSD), and he is presenting “Nuclear and Neutrino Astrophysics: The Weak Interaction and the Origin of the Elements.” The third talk is on the future. The speaker is Jacklyn Gates (LBNL), and she is covering “The Quest for New Elements.”

April 2013 Meeting DAP Invited Sessions Highlights: Part 4 of 5



New Stars in Astrophysics: The Edward A. Bouchet Award Talk and The 2013 DAP Early Career Recognition Lectures

Monday, April 15, 1:30 PM

This will be a session devoted to award-winners in Astrophysics, including the winner of the Edward A. Bouchet Award, and winners of DAP Early Career Recognition awards for young researchers. Stephon Alexander (Dartmouth College) will give the Edward A. Bouchet Award Talk: “Theoretical and Observational Consequences of a Parity Violating Universe,” Francesca Valsecchi (CIERA and Northwestern University) will present “Towards Synchronism Through Dynamic Tides in J0651: the ‘Antiresonance’ Locking,” and Ryan Keisler (University of Chicago) will speak on “CMB Observations with the South Pole Telescope.”



Multimessengers from Space

Tuesday, April 16, 10:45 AM

Space probes of energetic cosmic events have revealed a number of cosmic accelerators that continue to challenge our understanding. In this session, current and future space observatories of high-energy photons, cosmic rays, and gravitational waves will address current knowledge and future capabilities for understanding the most energetic cosmic events. Elizabeth Hays will show the Gamma-ray and X-ray views of the energetic Universe including recent results of the Fermi mission. Eun-Suk Seo will review the current and future Cosmic Ray Observatories in Space. Finally, the science of Gravitational Waves with Space Observatories will be discussed by James Thorpe. This session will lead into a Town Hall discussion of the NASA Physics of the Cosmos Program Analysis Group (PhysPAG).

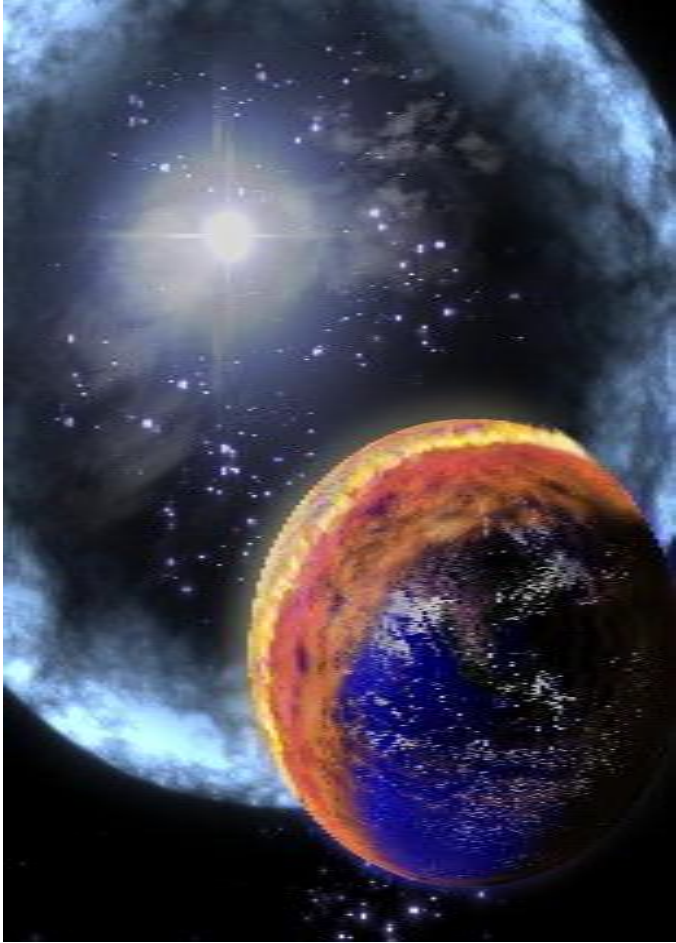


Hot Topics in Astrophysics

Monday, April 15, 3:30 PM

The DAP Executive Committee has reserved a slot in the program to allow for the presentation of particularly new and exciting results. For the April 2013 meeting we have the following three talks scheduled for our session on Hot Topics: (1) “Something Interesting from Planck” by **Duncan Hanson** (McGill), (2) “First Results from NuSTAR” by **Fiona Harrison** (Caltech) and (3) “Identifying Supernovae Before They Happen” by **Nathan Smith** (Arizona State).

April 2013 Meeting DAP Invited Sessions Highlights: Part 5 of 5



Energetic Neighbors

Tuesday, April 16, 1:30 PM

The Earth is located in a relatively calm part of the Galaxy. However our planet is in principle subject to the effects of nearby energetic events such as Magnetar flares, changing cosmic rays fluxes over history, and the more catastrophic event of a possible nearby supernova. Victoria Kaspi will show how Magnetars Storm the Earth. The intermittent Astrophysical Radiation Sources and the influence on Terrestrial Life will be the topic of the talk by Adrian Melott. Finally, Brian Fields will warn us about the possible Attack of Stars, by discussing the effects and signatures of Near-Earth Supernova. (Image credit: NASA)