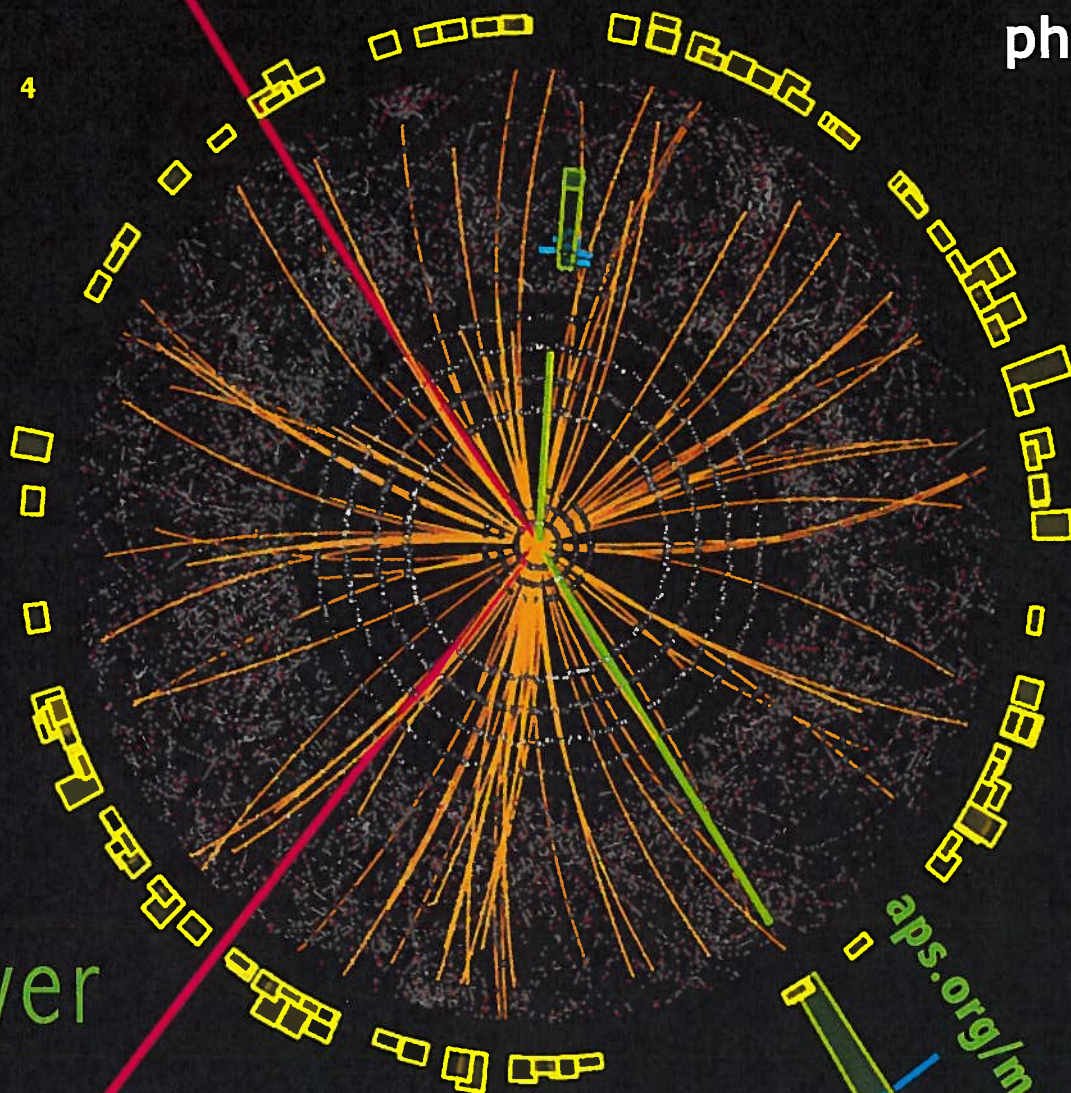


BULLETIN OF THE  
AMERICAN  
PHYSICAL  
SOCIETY

VOL 58 NO 4

APS  
physics



Denver

[aps.org/meetings/april](http://aps.org/meetings/april)

April 13-16 2013





## 2013 PRIZES AND AWARDS



### JOHN WHEATLEY AWARD

#### Session R6

**Sultana Nahar**

*The Ohio State University*

*Citation: For efforts to promote physics research and teaching through collaboration, mentoring, and philanthropy in several third-world countries, and in particular for her promotion, as both an advocate and role model, of Muslim women scientists.*



### DISSERTATION AWARD IN NUCLEAR PHYSICS

#### Session Y9

**Gang Shen**

*University of Washington*

*Citation: For the development of a new self-consistent equation of state of nuclear matter that provides a unified description of nuclei and hot dense matter, and is suitable for use in numerical simulations of core-collapse supernova, neutron star merges and related extreme astrophysical phenomena.*



### ROBERT R. WILSON PRIZE

#### Session H5

**John Galayda**

*SLAC*

*Citation: For his leadership and outstanding and pioneering contributions to the development, construction and commissioning of the LCLS, the first X-ray FEL to lase at 0.15nm, and his contribution of the Advanced Photon Source and the National Synchrotron Light Source.*



### J.J. AND NORIKO SAKURAI DISSERTATION AWARD IN THEORETICAL PARTICLE PHYSICS

#### Session L2

**David Sanford**

*California Institute of Technology*

*Citation: For his studies of supersymmetry and its possible role in resolving the naturalness, flavor, and dark matter puzzles of the standard models of particle physics and cosmology.*



### OUTSTANDING DOCTORAL THESIS RESEARCH IN BEAM PHYSICS AWARD

#### Session H5

**Daniel Ratner**

*Stanford University*

*Citation: Much ado about Microbunching: Coherent Bunching in High Brightness Electron Beams.*



occur, and, if so, at what energy scale? A new generation of CMB experiments is targeting these questions, and I will focus on recent results from the South Pole Telescope (SPT). The SPT is a ground-based mm-wave observatory located at the geographic south pole in Antarctica, and in 2011 finished its initial, 2500 square-degree "SPT-SZ" survey. The data from this survey provided an unprecedented combination of resolution, area, and sensitivity, and has been used to make ground-breaking measurements of the CMB anisotropy and the gravitational lensing of the CMB. These measurements have, in conjunction with data from the WMAP satellite, led to strong constraints on the number of neutrino-like particle species present in the early universe and the shape of the power spectrum of primordial density fluctuations. The SPT-SZ data overlaps with the ongoing Dark Energy Survey (DES) footprint, and the joint dataset will provide new probes of large-scale structure, such as the relative velocities of massive galaxy clusters. In 2012, a new polarization-sensitive camera, SPTpol, was installed on the SPT, and I will summarize its performance and prospects for detecting the B-mode CMB polarization pattern. Finally, I will touch on what will be possible with a third-generation camera, SPT-3G. The leap in sensitivity provided by this camera will yield, for example, a constraint on the sum of the neutrino masses relevant for exploring the neutrino mass hierarchy.

#### SESSION R5: INVITED SESSION: BLACK HOLE FIREWALLS

Monday Afternoon, 15 April 2013; Room: Governor's Square 14 at 13:30; Donald Marolf, University of California Santa Barbara, presiding

##### Invited Papers

13:30

**R5 1 Are there surprising quantum gravity effects near the horizons of large black holes?**

DONALD MAROLF, *UCSB*

The following three statements cannot all be true: (i) Hawking radiation is emitted from a black hole in a pure state, (ii) the information carried by the radiation is emitted from the region near the horizon, with low energy effective field theory valid beyond some microscopic distance from the horizon, and (iii) the infalling observer encounters nothing unusual at the horizon. If black hole evaporation is unitary, as it seems to be in string theory, then the most conservative resolution may be that observers falling into a sufficiently old black hole encounter intense high energy radiation. Alternatives would seem to require either or novel dynamics that causes notable violations of semiclassical physics at macroscopic distances outside the horizon or modifications of quantum mechanics in the black hole interior.

14:06

**R5 2 to be determined**

RAPHAEL BOUSSO, *UC Berkeley*

No abstract available.

14:42

**R5 3 Quantum information transfer from black holes: violent vs. nonviolent nonlocality**

STEVEN GIDDINGS, *University of California, Santa Barbara*

For a unitary resolution of the black hole information crisis preserving basic features of the semiclassical picture of black holes, quantum information must transfer from the black hole interior to its exterior environment. If described in reference to the semiclassical geometry, this transfer is nonlocal. An important question is whether it must be violent, with high-energy damage to infalling observers near the horizon. An alternative, exploiting the apparent nonlocality, is information transfer into softer modes in the black hole atmosphere.

#### SESSION R6: INVITED SESSION: FIP SESSION ON GRASSROOTS SCIENCE

Monday Afternoon, 15 April 2013; Room: Governor's Square 15 at 13:30; William Barletta, Massachusetts Institute of Technology, presiding

##### Invited Papers

13:30

**R6 1 John Wheatley Award Talk: Promoting Under-Represented Physicists in Asian and Arab Countries and Muslim Women in Science**

SULTANA NAHAR, *The Ohio State University*

Physics fascinates people's minds regardless of their geographic location. Often the best students choose the challenging profession of physics. Physicists in developing countries in Asia and Arab countries work mostly on their own with