



<http://kicp-workshops.uchicago.edu/uheap2016/>

## WORKSHOP PROGRAM

The Kavli Institute for Cosmological Physics at the University of Chicago is hosting a workshop this winter on the Next Generation Techniques for Ultra-High Energy (UHE) Astroparticle Physics. The origin of the most energetic particles in the universe could be related to extremely energetic astronomical phenomena or other exotic processes, such as the decay of the super-heavy dark matter in the halo of our galaxy or topological defects created in an early phase of the development of the universe. In order to clarify their origin, it is essential to develop next-generation techniques for detection of their particles by large amounts of statistics. The workshop will address the road map and near-future prospects of cosmic rays and neutrinos above the PeV scale. Included topics are reviews of the latest results, upcoming detectors and techniques, and related theory topics. The anticipated structure is a series of presentations with ample time for discussion and working sessions.

## Organizing Committee

**Cosmin Deaconu**  
University of Chicago

**Toshihiro Fujii**  
University of Chicago

**Dan Hooper**  
Kavli Institute for Cosmological Physics

**Eric Oberla**  
University of Chicago

**Angela Olinto**  
Kavli Institute for Cosmological Physics

**Paolo Privitera**  
Kavli Institute for Cosmological Physics

**Abigail Vieregg**  
Kavli Institute for Cosmological Physics

## Invited Speakers

**Markus Ahlers**  
UW-Madison & WIPAC

**Thomas Bretz**  
RWTH Aachen University

**Stijn Buitink**  
Vrije Universiteit Brussel (VUB)

**Mauricio Bustamante**  
Center for Cosmology and AstroParticle Physics, The Ohio State University

**Marco Casolino**  
RIKEN and INFN

**Ke Fang**  
University of Maryland

**Toshihiro Fujii**  
University of Chicago

**Jordan Hanson**  
The Ohio State University

**Kael Hanson**  
University of Wisconsin - Madison (WIPAC)

**Daisuke Ikeda**  
Institute for Cosmic Ray Research, University of Tokyo

**Claudio Kopper**  
University of Alberta

**Thomas Meures**  
UW-Madison

**Pavel Motloch**  
KICP, U Chicago

**Ryan Nichol**  
UCL

**Foteini Oikonomou**  
Penn State

**Carl Pfendner**  
Ohio State University

**Mariangela Settimo**  
LPNHE-CNRS

**Radomir Smida**  
KIT

**Yuichiro Tameda**  
Kanagawa University

**Andrew Taylor**  
DIAS

**Lenka Tomankova**  
Karlsruhe Institute of Technology (KIT)

**Nonaka Toshiyuki**  
Institute for Cosmic Ray Research, University of Tokyo

**Stephanie Wissel**  
Cal Poly SLO

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**WORKSHOP PROGRAM**


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**Monday - February 29, 2016**


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- 10:00 AM - 10:10 AM Welcome Address  
*James Cronin, Toshihiro Fujii*
- 10:10 AM - 10:15 AM **Toshihiro Fujii**, University of Chicago  
*Workshop Information*
- 10:15 AM - 12:00 PM **SESSION 1**  
*Chair: Eric Oberla*
- 10:15 AM - 10:45 AM **Claudio Kopper**, University of Alberta  
*Recent Results from IceCube*
- 10:45 AM - 11:15 AM **Mariangela Settimo**, LPNHE-CNRS  
*Recent Results from the Pierre Auger Observatory*
- 11:15 AM - 11:45 AM **Yuichiro Tameda**, Kanagawa University  
*Recent Results from the Telescope Array Experiment*
- 11:45 AM - 12:00 AM **Piotr Homola**, Institute of Nuclear Physics, Polish Academy of Sciences, Krakow  
*Brainstorming on a distributed, open and diversified cosmic ray detector*
- 12:00 PM - 2:00 PM Lunch
- 2:00 PM - 5:15 PM **SESSION 2**  
*Chair: Angela Olinto*
- 2:00 PM - 2:30 PM **Marco Casolino**, RIKEN and INFN  
*Perspectives and techniques of UHECR observation from space with EUSO detectors*
- 2:30 PM - 3:00 PM **Nonaka Toshiyuki**, Institute for Cosmic Ray Research, University of Tokyo  
*Surface detector for TAx4 expansion and status of Muon measurement at TA site.*
- 3:00 PM - 3:15 PM **Radomir Smida**, KIT  
*AugerPrime - Primary cosmic ray identification for the next 10 years*
- 3:15 PM - 3:30 PM **Sean Quinn**, Case Western Reserve Univ.  
*Auger@TA: current progress and future plans*
- 3:30 PM - 3:45 PM Break
- 3:45 PM - 4:15 PM **Lenka Tomankova**, Karlsruhe Institute of Technology (KIT)  
*Studying telescope properties using an airborne light source*
- 4:15 PM - 4:45 PM **Thomas Bretz**, RWTH Aachen University  
*SiPMs for AugerPrime and IceCube Gen2*
- 4:45 PM - 5:15 PM **Toshihiro Fujii**, University of Chicago  
*Next-Generation Observatory: Fluorescence detector Array of Single-pixel Telescopes*
- 5:15 PM - 7:00 PM Welcome Reception

**Tuesday - March 1, 2016**


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9:00 AM - 9:30 AM	Morning Coffee
9:30 AM - 12:15 PM	<b>SESSION 3</b> <i>Chair : Paolo Privitera</i>
9:30 AM - 10:00 AM	<b>Stijn Buitink</b> , Vrije Universiteit Brussel (VUB) <i>Radio detection of air showers with LOPES and LOFAR</i>
10:00 AM - 10:30 AM	<b>Radomir Smida</b> , KIT <i>Radio and microwave detection of extensive air showers at the Pierre Auger Observatory</i>
10:30 AM - 11:00 AM	<b>Daisuke Ikeda</b> , Institute for Cosmic Ray Research, University of Tokyo <i>Radio detection for the ultra-high energy cosmic rays</i>
11:00 AM - 11:15 AM	Break
11:15 AM - 11:45 AM	<b>Pavel Motloch</b> , KICP, U Chicago <i>Properties of transition radiation induced by particle showers</i>
11:45 AM - 12:15 PM	<b>Kael D Hanson</b> , University of Wisconsin - Madison (WIPAC) <i>IceCube Gen2: The Next Generation Neutrino Observatory</i>
12:15 PM - 2:00 PM	Lunch
2:00 PM - 5:15 PM	<b>SESSION 4</b> <i>Chair: Abigail Viereg</i>
2:00 PM - 2:30 PM	<b>Jordan C Hanson</b> , The Ohio State University <i>A review of UHE neutrino detection using the Askaryan Effect</i>
2:30 PM - 3:00 PM	<b>Ryan Nichol</b> , UCL <i>ANITA: Current status and future prospects</i>
3:00 PM - 3:30 PM	<b>Thomas Meures</b> , UW-Madison <i>The Askaryan Radio Array - status and future plans</i>
3:30 PM - 3:45 PM	Break
3:45 PM - 4:15 PM	<b>Ke Fang</b> , University of Maryland <i>The Giant Radio Array for Neutrino Detection: Present and Perspectives</i>
4:15 PM - 4:45 PM	<b>Carl G Pfendner</b> , Ohio State University <i>The ExaVolt Antenna: Concept and Development Updates</i>
4:45 PM - 5:15 PM	<b>Stephanie Wissel</b> , Cal Poly SLO <i>Implications for Radio Detection of Cosmic Rays from Accelerator Measurements of Particle Showers in a Magnetic Field</i>
5:15 PM - 7:00 PM	Informal Discussion & Reception

**Wednesday - March 2, 2016**

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- 9:00 AM - 9:30 AM Morning Coffee
- 9:30 AM - 12:00 PM **SESSION 5**  
*Chair: Dan Hooper, Cosmin Deaconu*
- 9:30 AM - 10:00 AM **Foteini Oikonomou**, Penn State  
*UHECRs and Neutrinos: Expectations for the next 20 years*
- 10:00 AM - 10:30 AM **Andrew M Taylor**, DIAS  
*Extragalactic Cosmic Rays in the Knee to Ankle Region*
- 10:30 AM - 10:45 AM Break
- 10:45 AM - 11:15 AM **Mauricio Bustamante**, Center for Cosmology and AstroParticle Physics, The Ohio State University  
*Flavor composition of high-energy astrophysical neutrinos: present and future*
- 11:15 AM - 11:45 AM **Markus Ahlers**, UW-Madison & WIPAC  
*Multi-Messenger Aspects of Cosmic Neutrinos*
- 11:45 AM - 12:00 PM **Toshihiro Fujii**, University of Chicago  
*Closing Remarks*