



<http://kicp-workshops.uchicago.edu/DM-LHC2013/>

## WORKSHOP PROGRAM



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KICP is hosting a workshop "Dark Matter at the LHC" this fall on the University of Chicago campus. The workshop will include both theorists and experimentalists actively working on LHC signals of dark matter. Some topics we plan to cover are monojet, monophoton, and related searches, as well as improvements in theoretical predictions and experimental techniques. The goal of the meeting is to discuss avenues for taking full advantage of the next LHC run for dark matter studies. This includes exploring new signals of DM models that may be challenging for direct detection or indirect detection experiments, as well as more sophisticated calculations and analyses to improve existing searches.

**Topics:**

Monojet searches for dark matter

Mono-photon, mono-Z, mono-b, and other signatures

Effective field theory constraints

Theoretical improvements in calculations

## Organizing Committee

**Rocky Kolb**

University of Chicago

**Tongyan Lin**

Kavli Institute for Cosmological Physics

**Sarah Malik**

Rockefeller

**Bjoern Penning**

Fermilab/Chicago

**Lian-Tao Wang**

Kavli Institute for Cosmological Physics

**Steven Worm**

Rutherford/CERN

**WORKSHOP PROGRAM**

September 19-21, 2013 @ University of Chicago

**Thursday - September 19, 2013**

9:00 AM - 9:30 AM	<i>BREAKFAST</i>
9:15 AM - 9:30 AM	<i>WORKSHOP OPENING</i> <i>Rocky Kolb</i>
	<b>MORNING SESSION</b> <i>Chair: Tongyan Lin</i>
9:30 AM - 10:00 AM	<b>Joseph Lykken</b> , Fermilab <i>Opening Overview Talk ~ "Prospectus for the Discovery of Dark Matter at the LHC"</i>
10:00 AM - 10:30 AM	<b>Alvaro Chavarria</b> , Kavli Institute for Cosmological Physics <i>DAMIC and low mass WIMP searches</i>
10:30 AM - 11:00 AM	<i>COFFEE BREAK</i>
11:00 AM - 11:20 AM	<b>Sarah Malik</b> , Rockefeller <i>Search for dark matter using monojet events at CMS</i>
11:20 AM - 11:40 AM	<b>Steven Schramm</b> , University of Toronto <i>Dark Matter searches in the mono-jet channel with the ATLAS Detector</i>
11:40 AM - 12:00 PM	<b>Jordan Damgov</b> , Texas Tech University <i>Search for dark matter using mono photon events at CMS</i>
12:00 PM - 12:20 PM	<b>Mario Martinez</b> , ICREA/IFAE Barcelona <i>ATLAS Monophoton results</i>
12:20 PM - 2:00 PM	<i>LUNCH</i>
	<b>AFTERNOON SESSION</b> <i>Chair: Liantao Wang</i>
2:00 PM - 2:20 PM	<b>Andrea De Simone</b> , CERN & SISSA <i>On the validity of the EFT for DM searches at the LHC</i>
2:20 PM - 2:40 PM	<b>Johanna Gramling</b> , University of Geneva <i>Validity of EFT interpretation of LHC Monojet results</i>
2:40 PM - 3:00 PM	<b>Haipeng An</b> , Perimeter Institute for Theoretical Physics <i>Monojet constraint on simplified models of dark matter</i>
3:00 PM - 3:20 PM	<i>DISCUSSION</i>
3:20 PM - 4:00 PM	<i>COFFEE BREAK</i>
4:00 PM - 4:20 PM	<b>David Salek</b> , GRAPPA, Amsterdam <i>H-&gt;inv at Atlas and CMS</i>
4:20 PM - 4:40 PM	<b>James Unwin</b> , Notre Dame <i>Dark matter searches at the LHC - The impact of heavy quark loops</i>
4:40 PM - 5:00 PM	<b>Felix Kahlhoefer</b> , University of Oxford <i>Theoretical uncertainties in mono-jet searches</i>
5:00 PM - 5:20 PM	<i>DISCUSSION</i>

**Friday - September 20, 2013**

9:00 AM - 9:30 AM	<i>BREAKFAST</i>
	<b>MORNING SESSION</b> <i>Chair: Steve Worm</i>
9:30 AM - 9:50 AM	<b>Spencer Chang</b> , University of Oregon <i>Effective WIMPs</i>
9:50 AM - 10:10 AM	<b>Hao Zhang</b> , UCSB, ANL, IIT <i>Dark matter with <math>t</math>-channel mediator: a simple step beyond contact interaction</i>
10:10 AM - 10:30 AM	<b>Yang Bai</b> , University of Wisconsin-Madison <i>Fermion Portal Dark Matter</i>
10:30 AM - 10:50 AM	<i>DISCUSSION</i>
10:50 AM - 11:30 AM	<i>COFFEE BREAK</i>
11:30 AM - 11:50 AM	<b>Christopher S Rogan</b> , Harvard University <i>Weakly-interacting particle kinematics at the LHC and the super-razor variables</i>
11:55 AM - 12:15 PM	<b>Matthew Buckley</b> , Fermilab/Rutgers <i>Dark Matter, New Electroweak Particles, and LHC Searches</i>
12:20 PM - 2:00 PM	<i>LUNCH</i>
	<b>AFTERNOON SESSION</b> <i>Chair: Sarah Malik</i>
2:00 PM - 2:20 PM	<b>Gabriella Sciolla</b> , Brandeis University <i>collider searches for dark matter with heavy quarks</i>
2:25 PM - 2:45 PM	<b>Klaas Padeken</b> , RWTH Aachen <i>Search for dark matter in the mono-lepton channel at the CMS</i>
2:50 PM - 3:10 PM	<b>Bjoern Penning</b> , Fermilab/Chicago <i>ATLAS Mono-Z</i>
3:15 PM - 4:00 PM	<i>COFFEE BREAK</i>
4:00 PM - 4:20 PM	<b>JoAnne L Hewett</b> , SLAC/Stanford <i>Bounds on Dark Matter with Electroweak Gauge Bosons</i>
4:20 PM - 4:40 PM	<b>Jing-Yuan Chen</b> , University of Chicago <i>Dark Matter Coupling to Electroweak Gauge and Higgs Bosons</i>
4:40 PM - 5:00 PM	<b>Michael A. Fedderke</b> , University of Chicago <i>Indirect constraints</i>
5:00 PM - 5:20 PM	<i>DISCUSSION</i>

**Saturday - September 21, 2013**

9:00 AM - 9:30 AM	<i>BREAKFAST</i>
	<b>MORNING SESSION</b> <i>Chair: Bjoern Penning</i>
9:30 AM - 9:50 AM	<b>Ahmed Ismail</b> , ANL/UIC <i>Dark Matter Complementarity in the pMSSM</i>
9:55 AM - 10:15 AM	<b>Sean Tulin</b> , U Michigan <i>Beyond collisionless dark matter: implications for astrophysics, direct detection, and colliders</i>
10:20 AM - 10:40 AM	<b>Ian Low</b> , Argonne/Northwestern <i>The Case for Three-body Decaying Dark Matter</i>
10:50 AM - 11:20 AM	<i>COFFEE BREAK</i>
11:20 AM - 11:40 AM	<b>Brian Batell</b> , University of Chicago <i>Searching for Light Dark Matter at Neutrino Factories</i>
11:40 AM - 12:00 PM	<b>Marcela Carena</b> , Fermilab/University of Chicago <i>Light Dark Matter, Direct Detection and Searches at the LHC</i>
12:00 PM - 12:30 PM	<b>Tim M.P. Tait</b> , UC Irvine <i>New Directions in EFTs for Dark Matter</i>
12:20 PM - 1:00 PM	<i>LUNCH</i>