

KITP Conference: New Probes for Physics Beyond the Standard Model

(Apr 9-12, 2018)

Coordinators: Nathaniel Craig, Rouven Essig, Mariangela Lisanti, and Kathryn Zurek

Scientific Advisors: Chris Tully

Monday, Apr 09, 2018

The Diversity of Dark Matter Models, Chair: Graciela Gelmini (UCLA)

8:50am	Lars Bildsten (KITP Director)	Welcome
9:00am	Ken Van Tilburg (IAS/NYU)	Halometry from Astrometry
9:45am	Hai-Bo Yu (UC Riverside)	Self-Interacting Dark Matter and Galactic Rotation Curves
10:30am		Morning Break
11:00am	Asher Berlin (SLAC)	Signals of Strongly Interacting Dark Matter at Low-Energy Accelerators
11:45am	Jonathan Feng (UC Irvine)	FASER and Other Outposts on the Lifetime Frontier
12:30pm		Lunch Break

Light Dark Matter at Accelerators, Chair: Yiming Zhong (BU)

2:00pm	Natalia Toro (SLAC)	New Accelerator Searches for Light Dark Matter and Other New Physics
2:45pm	Marco Battaglieri (INFN)	The BDX Experiment: Light Dark Matter Search at Accelerators
3:30pm		Afternoon Break
4:00pm	Bertrand Echenard (Caltech)	The LDMX Experiment: Search for Light Dark Matter
4:45pm	Stefania Gori (U of Cincinnati)	Dark Sectors at the Fermilab SeaQuest Experiment
5:30pm		SHUTTLE TO BWSCI

Tuesday, Apr 10, 2018

keV-GeV Dark Matter, Chair: Robert Lasenby (Perimeter)

9:00am	Adam Ritz (U Victoria)	Portal Couplings and Precision Cosmology
9:45am	Oren Slone (Princeton)	Indirect Direct Detection of Ultra-Light Dark Matter with Molecular Clouds

10:30am **Morning Break**

11:00am Sam McDermott (Fermilab) Supernova Bounds on Dark Sectors

11:45am Simon Knapen (UC Berkeley) Detecting Light Dark Matter with Athermal Phonon Modes

12:30pm **Lunch Break**

keV-GeV Dark Matter, Chair: Sally Shaw (UCSB)

2:00pm Graham Giovanetti (Princeton) Searching for sub-GeV Dark Matter using Liquid Argon TPCs

2:45pm Peter Sorensen (LBNL) Return of the Large Liquid Xenon Detector

3:30pm **Afternoon Break**

4:00pm Javier Tiffenberg (FNAL) The SENSEI Experiment, Status and Plans

4:45pm Dan McKinsey (UC Berkeley) Probing Sub-GeV Dark Matter with Superfluid Helium

5:30pm **SHUTTLE TO BWSCI**

6:00pm **SPECIAL EVENTS DINNER**

8:00pm **SHUTTLE TO BWSCI**

Wednesday, Apr 11, 2018

keV-GeV Dark Matter Cont., Chair: Yue Zhao (U Michigan)

9:00am Matt Pyle (UC Berkeley) Searching for 10 meV to 100 MeV Dark Matter with Inelastic Optical Phonon-Creation Processes in Polar Crystals

9:45am Sunil Golwala (Caltech) Extending the Low-mass Sensitivity of Cryogenic Dark Matter Detectors using Phonon-mediated Kinetic Inductance Detectors

10:30am **Morning Break**

11:00am Ben Mazin (UCSB) Microwave Kinetic Inductance Detectors for Light Dark Matter

11:45am Jesus Perez-Rios (Purdue) Detecting Dark Matter-Nucleus Scattering through Molecular Excitations

12:30pm **Lunch Break**

B Quarks and Neutrinos, Chair: Sophie Renner (JGU)

2:00pm Janet Conrad (MIT) BSM Searches with Neutrinos from MeV to PeV Energies

2:45pm Subir Sarkar (Oxford) Probing New Physics with Ultrahigh Energy Neutrino Absorption in the Earth

3:30pm **Afternoon Break**

4:00pm Jan Strube (PNNL) The Belle2 Experiment: Status and Physics Prospects
4:45pm Michael Williams (MIT) Dark Sectors @ LHCb
5:30pm **RECEPTION**

8:00pm **SHUTTLE TO BWSCI**

Thursday, Apr 12, 2018

Light Scalars, Chair: Ben Safdi (U Michigan)

9:00am Peter Graham (Stanford) Ultralight Dark Matter and Gravitational Wave Detection
9:45am Lindley Winslow (MIT) Axions and Neutrinoless Double-Beta Decay: Searches for New Physics at the GUT Scale
10:30am **Morning Break**
11:00am Ronald Walsworth (Harvard) Quantum Tools to Explore the Universe
11:45am Aaron Chou (Fermilab) Enhanced Bosonic Dark Matter Detection with Quantum Metrology Techniques
12:30pm **Lunch Break**

Light Scalars, Chair: Masha Baryakhtar (Perimeter)

2:00pm Mina Arvanitaki (Perimeter) Dark Matter Searches with Atomic Clocks, Resonant Bars and Molecules
2:45pm Marianna Safronova (U Delaware) Searching for BSM Physics with Atoms and Molecules
3:30pm Masha Baryakhtar (Perimeter) Searching for Ultralight Particles with Black Holes and Gravitational Waves
4:45pm **CONFERENCE END SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location. (See Registration Desk BEFORE THURSDAY to sign up.)**