

KAVLI INSTITUTE FOR THEORETICAL PHYSICS
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KITP Conference: Dark matter detection and detectability: paradigm confirmation or shift?

(Apr 30 - May 4, 2018)

Coordinators: **Laura Baudis, Mike Boylan-Kolchin, and Simona Murgia**
Scientific Advisors: **Graciela Gelmini, Julio Navarro, and Josh Simon**

Monday, Apr 30, 2018

The theory of dark matter, Chair: Graciela Gelmini (UCLA)

8:50am	Mark Bowick (KITP)	Welcome
9:00am	Celine Boehm (Durham)	Debate 1 (Theory)
9:30am	Alex Kusenko (UCLA)	Debate 1 (Theory)
10:00am	All Participants{discussion}	Discussion
10:30am		Morning Break
11:00am	Erik Verlinde (UvA)	Emergent Gravity or Dark Matter
11:30am	Dan Hooper (U Chicago)	In Defense of Dark Matter
12:00pm		Lunch Break

Session Chair: Anne Green (Nottingham)

2:00pm	Tim Tait (UCI)	Dark Messages from Accelerators
2:30pm	Tongyan Lin (UCSD)	Low mass dark matter and direct detection prospects
3:00pm	Filip Tanedo (UC Riverside)	Composite mediators
3:30pm		Afternoon Break
4:00pm	Neal Weiner (NYU)	Halometry from Astrometry
4:30pm	All Participants{discussion}	Discussion
5:30pm		SHUTTLE TO BWSCI

Tuesday, May 01, 2018

Astrophysics and simulations, Chair: Josh Simon (Carnegie)

9:00am	Carlos Frenk (Durham)	Debate 2 (Astro)
9:30am	Stacy McGaugh (CWRU)	Debate 2 (Astro)
10:00am	All Participants{discussion}	Discussion

10:30am **Morning Break**

11:00am Manoj Kaplinghat (UCI) Diverse Rotation Curves and an Acceleration Scale In Self-interacting Dark Matter Models

11:30am Alyson Brooks (Rutgers) Understanding Dwarf Galaxies in order to Understand Dark Matter

12:00pm Raymond Carlberg (U Toronto) CDM sub-halos and gaps in tidal streams

12:30pm **Lunch Break**

Session Chair: Mike Boylan-Kolchin (U. Texas)

2:00pm Annika Peter (OSU) A golden era for dark matter physics with new astronomical facilities

2:30pm Justin Read (Surrey) Evidence for dark matter heating up in dwarf galaxies

3:00pm Matthias Steinmetz (Postdam) Constraints on dark matter in the Milky Way and the Local Group

3:30pm **Afternoon Break**

4:00pm Katie Mack (NC State) Dark matter, first light

4:30pm Andrew Newman (Carnegie) Mapping Dark Matter in Galaxies Large and Small

5:00pm Neelima Sehgal (Stony Brook) Measuring the Small-Scale Matter Power Spectrum with High-Resolution CMB Lensing

5:30pm **RECEPTION**

6:00pm **SPECIAL EVENTS DINNER**

8:00pm **SHUTTLE TO BWSCI**

Wednesday, May 02, 2018

Indirect detection, Chair: Simona Murgia (UC Irvine)

9:00am Shunsaku Horiuchi (Virginia Tech) Debate 4 (Indirect detection)

9:30am Tim Linden (OSU) Debate 4 (Indirect detection)

10:00am All Participants{discussion} Discussion

10:30am **Morning Break**

- 11:00am Jordan Mirocha (UCLA) The first highly-redshifted 21-cm detection from EDGES: implications for dark matter and galaxy formation
- 11:30am Kev Abazajian (UCI) Sterile Neutrino Dark Matter: Searches in X-ray Astronomy and Signatures in Galaxy Formation
- 12:00pm Tesla Jeltema (UCSC) Multiwavelength Indirect Dark Matter Detection and RX-DMFIT
- 12:30pm **Lunch Break**
- 2:00pm **FREE AFTERNOON-Shuttle Available to BWSCI**

Thursday, May 03, 2018

Direct detection, Chair: Laura Baudis (U Zurich)

- 9:00am Jocelyn Monroe (Royal Holloway) Debate 3 (Direct detection)
- 9:30am Rouven Essig (Stony Brook) Debate 3 (Direct detection)
- 10:00am All Participants{discussion} Discussion
- 10:30am **Morning Break**
- 11:00am Anne Green (Nottingham) Are Primordial Black Holes a viable CDM candidate?
- 11:30am Elena Aprile (Columbia U) Noble liquid for WIMP searches
- 12:00pm Dan McKinsey (UC Berkeley) Superfluid Helium for Sub-GeV Dark Matter Detection
- 12:30pm **Lunch Break**

Session Chair: Elena Aprile (Columbia U)

- 2:00pm Jodi Cooley-Sekula (SMU) Overview of mK Dark Matter Detectors and Low Mass WIMP Searches
- 2:30pm Claudia Frugieuele (WIS) Dark matter searches at fixed target experiments
- 3:00pm All Participants{discussion} Discussion
- 3:30pm **Afternoon Break**
- 4:00pm Asher Berlin (SLAC) Dark sector searches with SeaQuest
- 4:30pm Nassim Bozorgnia (Durham U) From cosmological simulations to dark matter direct detection
- 5:30pm **RECEPTION**
- 6:00pm **SPECIAL EVENTS DINNER**

8:00pm

8:00pm SHUTTLE TO BWSCI

Friday, May 04, 2018**The path forward, Chair: Julio Navarro (UVIC)**

9:30am Jonathan Feng (UCI)

Debate 5 (The path forward) Dark
Matter: Back to the Future

10:10am

All Discussion

10:30am

Morning Break

11:00am Simona Vegetti (MPA Garching)

Constraining the properties of dark
matter with milli-lensing

11:30am Vera Gluscevic (IAS)

Cosmological searches for dark matter-
baryon interactions

12:00pm

Lunch Break

2:00pm **CONFERENCE END-SHUTTLE TO BWSCI *Also available to SB Airport and
SB Airbus, Goleta location. (See Registration Desk BEFORE FRIDAY to
sign up.)**