



KITP Conference: Cosmic Signals of Dark Matter Physics: New Synergies

(Jun 3-6, 2024)

Coordinators: Kimberly Boddy, Vera Gluscevic, Ferah Munshi, Ethan Nadler, and Annika Peter

Monday, Jun 3, 2024

Dark Matter Theory I., Chair: Kimberly Boddy (Texas)

8:50am Lars Bildsten (KITP) Welcome[Video]
9:00am Tongyan Lin (UCSD) Detecting dark substructure with stellar streams[Video][CC]
9:30am Siddharth Mishra Sharma (MIT) Simulation-based inference and generative modeling for dark matter searches[Slides][Video][CC]
10:00am Hongwan Liu (U Chicago) Fast and Differentiable BBN[Slides][Video][CC]
10:30am

Morning Break

11:00am Chanda Prescod-Weinstein (UNH) Cosmic Probes of the Dark Sector[Video][CC]
11:30am Manuel Buen Abad (Maryland) Brave New Dark: opportunities for Dark Sectors in cosmology[Slides][Video][CC]
12:00pm Yue Zhang (Carleton U) Origins of Dark Matter in the Matter Power Spectrum[Slides][Video][CC]
12:30pm

Lunch Break

Dark Matter Theory II., Chair: Vera Gluscevic (USC)

2:00pm James Gurian (Perimeter Inst.) The Fragmentation Scale in Dissipative Dark Matter Models[Slides][Video][CC]
2:30pm Brooks Thomas (Lafayette College) Deciphering the Archaeological Record: Reconstructing the Primordial Dark-Matter Velocity Distribution from its Cosmological Imprints[Slides][Video][CC]
3:00pm Yanou Cui (UC Riverside) Gravitational Wave Symphony from Oscillating Scalar Fields: Dark Matter and Beyond[Video][CC]
3:30pm

Afternoon Break

4:00pm Stefano Profumo (UCSC) Discussion[Embargoed]

SHUTTLE TO BWSCI

Tuesday, Jun 4, 2024

Dark Matter Simulations I., Chair: Ferah Munshi (George Mason)

9:00am Azi Fattahi (ICC Durham) Constraining the nature of dark matter with Galactic halos[Video][CC]
9:30am Jorge Moreno (Pomona) The intriguing lives of galaxies lacking dark matter[Slides][Video][CC]
10:00am Robyn Sanderson (U Penn) Testing dark matter theories with cosmological-baryonic zoom simulations[Slides][Video][CC]
10:30am

Morning Break

11:00am Akaxia Cruz (Princeton) Exploring Rotation Curve Diversity in the Marvelous Dwarf Simulations[Video][CC]
11:30am Giulia Despali (U Bologna) Galaxy formation in alternative dark matter models: first results from the AIDA simulations[Slides][Video][CC]
12:00pm Ebtihal Abdelaziz (USC) Flash Talks[Video][CC]
Joy Bhattacharyya (Ohio State University)
Anna Engelhardt (GMU)
Hayden R. Foote (University of Arizona)
Charles Gannon (UC Merced)
Nicole Gountanis (Ohio State)
Adam He (USC)
Hyunsu Kong (UT Austin)
Charlie Mace (Ohio State)
Gramos Qerimi (Technical University of Munich)
Siddhesh Raut (USC)
Isabel S. Sands (Caltech)
Eleanor Stuart (USC)
Zhichao Carton Zeng (Ohio State)
Yao Zhang (Tsinghua University)

Lunch Break

Dark Matter Simulations II., Chair: Ethan Nadler (Carnegie Obs)

2:00pm Benedikt Diemer (Maryland) Towards multi-wavelength constraints of DM on halo scales[Slides][Video][CC]
2:30pm Moritz Fischer (LMU Munich) How could we probe the angular dependence of dark matter self-interactions?[Slides][Video][CC]
3:00pm Luna Zagorac (Perimeter Inst.) Not Really Quantum Cosmology: How far can we get by treating a dark matter halo like an atom?[Slides][Video][CC]
3:30pm

Afternoon Break

4:00pm Stacy Kim (Carnegie Obs) DarkLight: The Impact of Reionization on the Stellar-Mass-Halo-Mass Relation for Dwarf Galaxies[Slides][Video][CC]
4:30pm Frank Van Den Bosch (Yale) Discussion[Embargoed]
5:30pm

RECEPTION

6:00pm SPECIAL EVENTS DINNER

7:30pm SHUTTLE TO BWSCI

Wednesday, Jun 5, 2024

Dark Matter Observations & Analysis I., Chair: Vera Gluscevic (USC)

9:00am	Alex Amon (Cambridge)	Dark matter opportunities with weak lensing[Video][CC]
9:30am	Ian Harrison (Cardiff U)	The Simons Observatory and its Science Goals[Slides][Video][CC]
10:00am	Raymond Carlberg (U Toronto)	CDM/WDM small scale structure: Sub-Halo counting with Stellar Streams[Video][CC]
10:30am		Morning Break
11:00am	Ting Li (Toronto)	Milky Way's Satellite Galaxies under Tidal Stripping and the Implications to the Nature of Dark Matter[Slides][Video][CC]
11:30am	Sarah Pearson (U Copenhagen)	Decoding Dark Matter with Stellar Streams from Beyond the Milky Way[Slides][Video][CC]
12:00pm	Alex Drlica Wagner (Fermilab)	Searching for the Faintest Galaxies with DECam[Embargoed]
12:30pm		Lunch Break

Dark Matter Observations & Analysis II., Chair: Annika Peter (Ohio State)

2:00pm	Simona Vegetti (MPA)	Strong Gravitational Lensing as a Probe of Dark Matter[Video][CC]
2:30pm	Daniel Gilman (U. Chicago)	Signatures of beyond-CDM physics in strong gravitational lenses[Slides][Video][CC]
3:00pm	Ioana Zelko (CITA)	Probing dark matter substructure using gravitational strong lensing in quad lensed systems[Video][CC]
3:30pm		Afternoon Break
4:00pm	Simone Ferraro (LBNL)	Cosmic shadows and cosmic structures: a CMB view of DESI galaxies[Video][CC]
4:30pm	Elisabeth Krause (Arizona)	Discussion[Slides]
5:30pm		RECEPTION
6:00pm		SPECIAL EVENTS DINNER
7:30pm		SHUTTLE TO BWSCI

Thursday, Jun 6, 2024

Dark Matter Observations & Analysis III., Chair: Annika Peter (Ohio State)

9:00am	Aditya Parikh (Stony Brook)	A Systematic EFT Approach to SIDM and Its Astrophysical Implications[Slides][Video][CC]
9:30am	Mustafa Amin (Rice)	How light can dark matter particles be?[Slides][Video][CC]
10:00am	Sten Delos (Carnegie Obs)	Prompt cusps of dark matter[Slides][Video][CC]
10:30am		Morning Break
11:00am	Sownak Bose (ICC Durham)	New frontiers for constraining the microphysics of dark matter[Slides][Video][CC]
11:30am	Francis Yan Cyr Racine (UNM)	Discussion[Embargoed]
12:30pm		Lunch Break
2:00pm	CONFERENCE END-SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location (See Registration Desk BEFORE THURSDAY to sign up.)	