

Probe Combination for Dark Matter Physics in the Era of Large Surveys

Conference Programme

University of Chicago · 2 - 4 September 2026

Wednesday 2 September		
8:30	Breakfast/coffee	
8:55	Welcome and opening remarks	
SESSION 1 · Connecting theory to observations · 9:00 - 10:15		
9:00 - 9:23	Andrew Benson Carnegie Observatories	Review: Connecting theory to observation with simulations and semi-analytic models
9:23 - 9:35	Tara Dacunha Stanford University	SUBMERGE: Subhalo Mass Evolution in Realistic Galactic Environments
9:35 - 9:47	Dimple Sarnaaik Carnegie Science Observatories & Univ. of Southern California	Calibrating Semi-Analytic Models to Beyond Cold Dark Matter
9:47 - 9:59	James Gurian Perimeter Institute	Gravothermal Collapse Across Knudsen Numbers
9:59 - 10:15	Discussion	
10:15 - 10:40	Coffee break	
SESSION 2 · Stellar streams as probe of DM · 10:40 - 12:15		
10:40 - 11:03	Sarah Pearson Technical University of Denmark	Review: Stellar streams as probes of dark matter
11:03 - 11:15	Matthieu Pélissier LPSC - CNRS	Probing dark matter with stellar-stream density fluctuations in the LSST era
11:15 - 11:27	Ella Marin University of Washington	Constraining the Dark Matter Perturber of the AAU Stellar Stream Using Simulation-Based Inference
11:27 - 11:39	Jacob Nibauer Princeton University	Inference Pipeline for Quantitative Constraints on Dark Matter from Stellar Stream Dynamics
11:39 - 11:51	Anya Phillips Harvard University	Imprints of progenitor dynamics on stellar stream velocities
11:51 - 12:03	Arpit Arora University of Washington	No Stream Left Unscathed: The Host Galaxy Baseline for Dark Matter Substructure
12:03 - 12:15	Discussion	
12:15 - 1:15	Lunch	
SESSION 3 — Parallel tutorials · 1:15 - 2:00		
Parallel tutorials: Numerical simulations		
Parallel tutorials: Stellar streams		
SESSION 4 · Alternative DM models 1 · 2:00 - 3:15		
2:00 - 2:15	Flash talks — 1 min each	

2:15 - 2:38	Vera Gluscevic University of Southern California	Review: Alternative dark matter models and the linear matter power spectrum
2:38 - 2:50	Wendy Crumrine University of Southern California	Beyond CDM: Limits from the Milky Way Satellites
2:50 - 3:02	Niusha Ahvazi University of Virginia	The Radial Distribution of MW Satellites: Survey Selection Effects and Host Properties
3:02 - 3:15	Discussion	
3:15 - 3:45	Coffee break	
SESSION 5 — Breakout/discussion · 3:45 - 5:00		
5:00 - 7:00	Reception and poster session	

Thursday 3 September

8:30	Breakfast/coffee	
SESSION 1 · Alternative DM models 2 · 9:00 - 10:25		
9:00 - 9:23	Mariangela Lisanti Princeton University	Review: Alternative dark matter models and small-scale structure
9:23 - 9:35	Sandip Roy University of California San Diego	The Cooling Curve is All You Need: A Framework for Characterising Dissipation in Dark Sectors
9:35 - 9:47	Soumyodipta Karmakar University of New Mexico	Forward Modeling of MW Satellites for Dark Matter Inference in the Large-Survey Era
9:47 - 9:59	Maya Silverman Niels Bohr Institute, University of Copenhagen	From Intact Dwarf Galaxies to Stellar Streams: Cosmological Tests of Self-Interacting Dark Matter
9:59 - 10:11	Vedant Chandra Harvard / MIT	Dark Matter with the Via Project
10:11 - 10:25	Discussion	
10:25 - 10:55	Coffee break	
SESSION 2 · Extragalactic probes of DM · 10:55 - 12:00		
10:55 - 11:18	Julian Muñoz UT Austin	Review: High-z probes of cosmic structure
11:18 - 11:30	Jared Barron Stony Brook University	Cosmological Probes of Atomic Dark Matter
11:30 - 11:42	Tyler Smith University of California, Irvine	Self-Interacting Dark Matter in the First 700 Myr
11:42 - 12:00	Discussion	
12:00 - 1:00	Lunch	
SESSION 3 — Parallel tutorials · 1:00 - 1:45		
Parallel tutorials: Modeling dwarf galaxy populations		
Parallel tutorials: Strong lensing and DM substructure		
SESSION 4 · Strong lensing as a probe of DM · 1:45 - 3:00		

1:45 - 2:08	Anna Nierenberg University of California, Merced	Review: Strong lensing by galaxies as a probe of cosmic structure
2:08 - 2:20	Ollie Jackson University of California, San Diego	Simulation-based Forward-Modeling of Strong Lensing Substructure in Dark Matter Halos
2:20 - 2:32	Hadrien Paugnat UCLA	Recent advances in the flux-ratio anomaly statistics method for DM inference
2:32 - 2:44	Derek Perera University of Minnesota	A novel probe of dark matter substructure in galaxy clusters from lensed arc asymmetry
2:44 - 3:00	Discussion	
3:00 - 3:30	Coffee break	
SESSION 5 — Breakouts/discussion · 3:30 - 5:00		
6:00 - 8:00	Conference dinner (Quadrangle Club)	

Friday 4 September

8:30	Breakfast/coffee	
SESSION 1 · DM and dwarf galaxies · 9:15 - 10:30		
9:15 - 9:27	Ting Li University of Toronto	Antlia 2, Crater 2 and Bootes III: Milky Way's Satellite Galaxies under Tidal Stripping
9:27 - 9:39	Jiaxuan Li Stanford University	The ELVES-Dwarf Survey: Satellite Populations Around Dwarf Galaxies
9:39 - 9:51	Andrew Pace University of Virginia	Building massive stellar-kinematic samples of Milky Way dwarf spheroidal galaxies and dark matter inference
9:51 - 10:03	Kaia Atzberger University of Virginia	Modeling Constraints and Dark Matter Implications of Crater II's Stellar Mass Loss
10:03 - 10:15	Alyson Brooks Rutgers, the State University of New Jersey	Rotation Curve Diversity in CDM
10:15 - 10:30	Closing discussion	
10:30 - 11:00	Coffee break	
SESSION 2 — Wrap-up session · 11:00 - 12:00		
12:00 - 1:00	Lunch (on your own)	

Flash talks and posters

1.	Michael Martinez University of California, Merced	Flux Ratios at a Range of Size Scales
2.	Muqing Wang Northwestern University	Can Action-Space Clustering Weigh a Merging Halo?
3.	Jianhao Wu University of Wisconsin-Madison	Explaining dense perturbers in strong lensing with small-scale enhanced primordial power spectrum
4.	Tjitske Starkenburg Northwestern University	CosmoGEMS: globular cluster and their stellar streams in cosmologically evolving galaxies

5.	Cian Roche Massachusetts Institute of Technology	Are Cluster Galaxies Too Efficient at Strong Lensing?
6.	Dilys Ruan Rutgers, The State University of New Jersey	Disentangling CDM and SIDM with HI Profiles in Simulated Dwarf Galaxies
7.	Jimena Gonzalez SkAI Institute / Northwestern University	Bridging AI and Traditional Inference Techniques for Large-Scale Strong Lens Modeling
8.	Anna Engelhardt George Mason University	MARVELously Dark: the density profile evolution of dwarf halos in velocity-dependent SIDM
9.	Lucas Seiji Mandacaru Guerra Princeton University	Probing Atomic Dark Matter with Stellar Streams in Milky Way-Mass Galaxies
10.	Stephanie O'Neil University of Pennsylvania / Princeton University	Coupling the FIRE galaxy simulations to velocity dependent and anisotropic SIDM
11.	Chrysostomos Sidiropoulos University of Crete	<i>Title to be confirmed</i>
12.	Ayush Dhital The Ohio State University	Probing Dark Matter Substructure in the Local Volume
13.	Shasha Arani University of California San Diego	Fractional Self-Interacting Dark Matter at Halo Scale