

**Title:** Opening Remarks

**Speakers:** Selim Hotinli

**Collection/Series:** Cosmic Ecosystems

**Subject:** Cosmology

**Date:** July 28, 2025 - 9:00 AM

**URL:** <https://pirsa.org/25070001>



**Welcome to Perimeter!**

**25** YEARS

**PI** PERIMETER  
INSTITUTE



In the spirit of understanding and learning from what has come before, Perimeter respectfully acknowledges that we are located on the traditional territory of the Attawandaron, Anishnaabeg, and Haudenosaunee peoples. Perimeter is situated on the Haldimand Tract, land promised to Six Nations, which includes six miles on each side of the Grand River.

As settlers, we thank all the generations of people who have taken care of this land for thousands of years. We are connected to our collective commitment to make the promise and the challenge of Truth and Reconciliation real in our communities.



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# Respectful Environment Code of Conduct

- Perimeter Institute is committed to creating and maintaining a physical and virtual environment that is free from unlawful harassment, violence and/or discrimination. PI supports a zero-tolerance policy with regards to workplace harassment, violence and/or discrimination.
- Visit Perimeter's website for more information

<https://perimeterinstitute.ca/respectful-environment-code-conduct>



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# Conference Information

For up-to-date information about daily activities,  
please see:

- Daily e-mails from  
[conferences@perimeterinstitute.ca](mailto:conferences@perimeterinstitute.ca)
- Our conference website:  
<https://events.perimeterinstitute.ca/e/cosmicecosystems>
- Timetable: Use the QR code on your name tag





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## At Perimeter – Facilities

- Talks will take place here in the **Theatre**, and via Zoom with over 200 participants registered to attend virtually
  - Please use the upper entrance to the theater from the 2nd floor if you are arriving late
- Coffee breaks and the poster session will take place in the main floor **Atrium**
- Lunches will be upstairs in the upper **Bistro, with access to the upper courtyard patio**
- Washrooms are located through the glass door at the coffee station and at the main entrance of the theater
- Gender neutral washrooms are on the 2nd floor above the entrance hallway (use stairs/elevator by the Bistro)



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# In the theatre

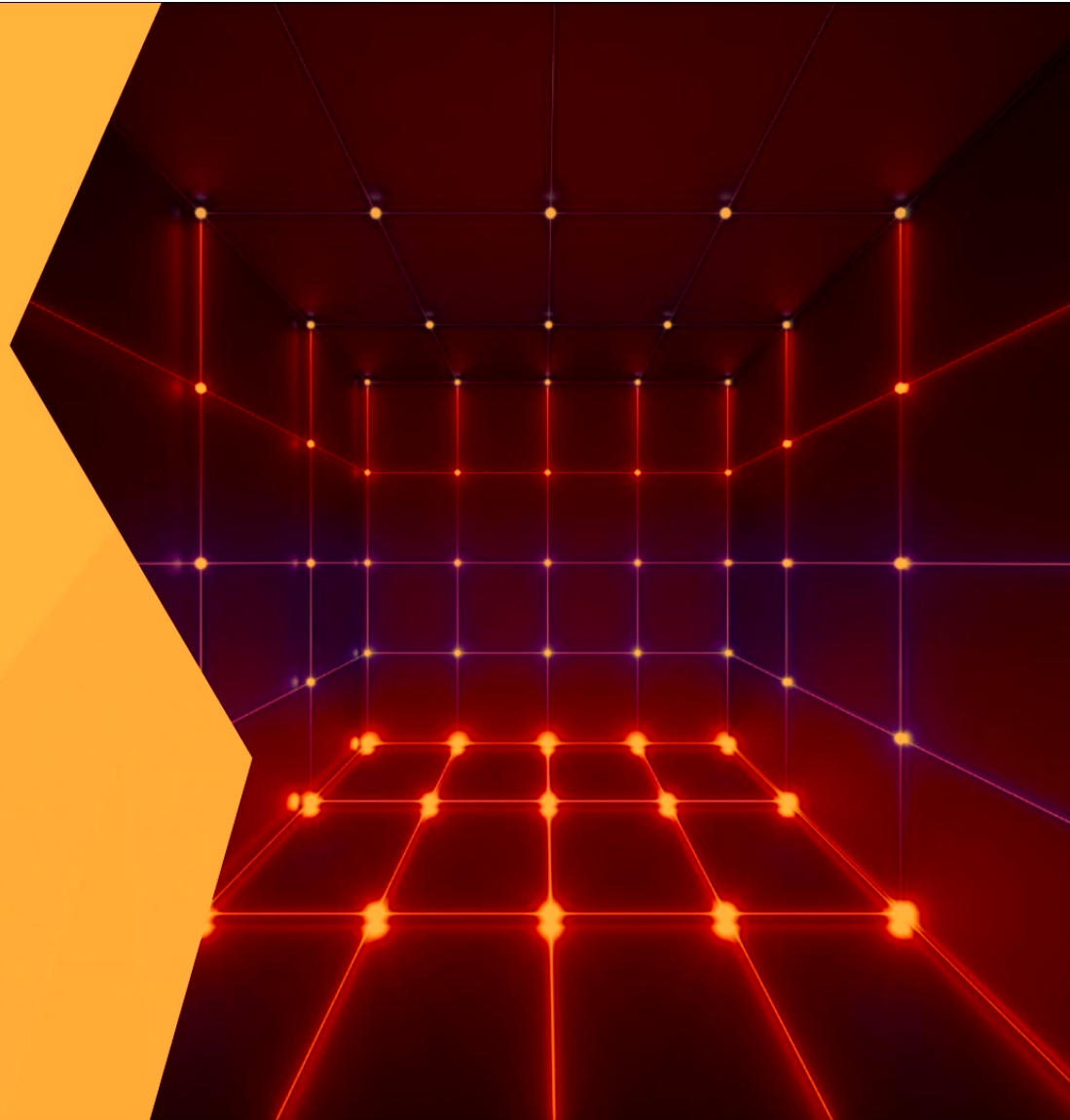
- **Presenting a talk** - Stay on the carpeted area, between the screens and the floor monitors for optimal sound quality.
- **Q&A – Use the catchbox microphones** when asking questions so that everyone in the theatre and online can hear you clearly, and so the question is captured on the recording



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# Online Participants

- Join the Slack community from the link in your email this morning
- Use the **chat** module on Zoom to submit questions.
- To access **AI translated captions**, click the CC button and choose your preferred language.
- **Conference talks will be recorded and uploaded** to Perimeter's PIRSA.org archive.
- Presentation slides will be included as a PDF with the recording.







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## Flash Talks/Posters

- Posters can be set up any time prior to the Wednesday poster session on the poster boards in the **Atrium**.
- Poster presenters will each give a 1-minute summary of their work in our 'flash talk' sessions today and tomorrow.
- If you haven't done so already, please submit your **single slide** via the "Flash talk/poster session" page on the website by **noon today**



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## Other Announcements

- Please join us in the **Atrium** right before lunch on **WEDNESDAY** for our conference group photo





Make sure you have a go at filling the

PI Scavenger Hunt List!



# COSMIC ECOSYSTEMS

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JULY 28 - AUG 1, 2025

## Interconnected Cosmic Ecosystems

- Galaxy formation is deeply linked to the cosmic web and surrounding gas
- Matter cycles through accretion, feedback, and redistribution across scales
- Understanding baryonic feedback is key to tracing cosmic structure evolution

# COSMIC ECOSYSTEMS

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JULY 28 - AUG 1, 2025

## Astrophysics as a Foundation for Precision Cosmology

- Cosmological observables are now sensitive to baryonic physics
- Interpreting LSS, lensing, and CMB data requires credible feedback models
- Astrophysical uncertainties must be constrained to avoid biasing cosmology



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JULY 28 - AUG 1, 2025

## Joint Data Interpretation in a Multi-Probe Era

- New surveys span CMB, LSS, UV/X-ray, FRBs, 21-cm, and more
- Different dataset can probe different phases of the cosmic baryon cycle
- Joint modeling and simulation are essential to unlock their full power!



Thu, July 31

9:00 a.m.	<b>Review Talk: Unveiling Hot Gas Motions in Galaxy Clusters with XRISM: First Results and New Puzzles</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Irina Zhuravleva
9:30 a.m.	
9:35 a.m.	<b>Cosmic Ray Coupling and Subgrid Modeling in the CGM</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Irina Butsky
9:55 a.m.	
10:00 a.m.	<b>The Simulated CGM at 200 pc</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Scott Luchini
10:10 a.m.	
10:15 a.m.	<b>Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre
10:30 a.m.	
11:00 a.m.	<b>Kinetic simulations of the cosmic ray pressure anisotropy instability: cosmic ray scattering rate in the saturated state</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> XIAOCHEN SUN
11:10 a.m.	
11:15 a.m.	<b>Investigating Galaxy Ecosystems with Multi-wavelength Observations of Gas and Dust</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Varsha Kulkarni
11:25 a.m.	
11:30 a.m.	<b>From Disk to IGM: A Comprehensive Mapping of Andromeda's Circumgalactic Medium</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Nicolas Lehner
11:40 a.m.	
11:45 a.m.	<b>Magnetic fields and cosmic rays in cosmological simulations</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Freke van de Voort
11:55 a.m.	
12:00 p.m.	<b>Creating Mock Maps for Line Intensity Mapping Experiments</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Deja Tolgay
12:10 p.m.	
12:15 p.m.	<b>Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre
12:30 p.m.	
1:45 p.m.	<b>Mergers in the cosmic ecosystem</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Andrew Pontzen
2:05 p.m.	
2:10 p.m.	<b>Panel Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speakers:</i> Brian R. McNamara, Cassandra Lochhaas, Claude-Andre Faucher-Giguere, Freke van de Voort
3:00 p.m.	
3:30 p.m.	<b>Baryon Fraction in Halos: Observational Constraints from HI, X-ray, and Stellar Components</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Ajay Dev
3:40 p.m.	
3:45 p.m.	<b>Chemical enrichment patterns as a tool to identify feedback processes in the CGM</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Suyash Kumar
3:55 p.m.	
4:00 p.m.	<b>Cosmic Infrared Background Tomography and a Census of Cosmic Dust and Star Formation</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Yi-Kuan Chiang
4:10 p.m.	
4:15 p.m.	<b>Multiphase analytic CGM models</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Yakov Fainman
4:25 p.m.	

## Bridging the Present and the Past: Feedback's Role in Linking Cosmic History to Current Observables

## Tying the Diffuse to the Dense: Connecting Gas Phases and The Role of Turbulence

## Following on themes 1-3.

Fri, August 1

9:00 a.m.	<b>Review Talk: Reconciling the Past and Present IGM/CGM/Galaxy Ecosystems</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Chuck Steidel
9:30 a.m.	
9:35 a.m.	<b>The Lyman-Alpha Tomography IMACS Survey (IMACS)</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Andrew Newman
9:55 a.m.	
10:00 a.m.	<b>Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre
10:30 a.m.	
11:00 a.m.	<b>Probing the Effect of Feedback on the IGM with FRBs</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Khee-Gan Lee
11:20 a.m.	
11:25 a.m.	<b>Probing cosmic plasmas at sub-au scales with fast radio bursts</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Stella Koch Ocker
11:45 a.m.	
11:50 a.m.	<b>Probing Baryonic Feedback and Cosmological Tension with Fast Radio Bursts: Insights from CAMELS</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Isabel Medlock
12:00 p.m.	
12:05 p.m.	<b>A hydrosimulations-based approach to relate the Fast Radio Burst dispersion measure -- redshift relation to the suppression of matter power spectrum</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Kirti Sharma
12:15 p.m.	
12:20 p.m.	<b>Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre
12:30 p.m.	
1:45 p.m.	<b>Mergers, Radio Jets, and Quenching Star Formation in Massive Galaxies: Quantifying Their Synchronized Cosmic Evolution and Assessing the Energetics</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Timothy Heckman
2:05 p.m.	
2:10 p.m.	<b>Panel Discussion</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speakers:</i> Gilbert Holder, Gess Rudie
3:00 p.m.	
3:30 p.m.	<b>Closing Talk: What have we learnt?</b> <i>Contribution</i>   <i>Location:</i> Perimeter Institute for Theoretical Physics, PV1-100 - Theatre   <i>Speaker:</i> Peng Oh
4:00 p.m.	



Thank You!

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