



**NERCCS2026**

## **Northeast Regional Conference on Complex Systems (NERCCS 2026)**

Program Booklet

Location: *Goergen Hall, University of Rochester, 275 Hutchison Rd, Rochester, NY 14620*

Dates: *March 11–13, 2026*

### **Day 1 (March 11, 2026)**

**Registration** 12:00 - 4:00

**Opening Remarks** **1:00 - 1:30**

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**Keynote** **1:30-2:30**

*Sloan Auditorium*

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**Life Exists Beyond Biochemistry: Making Abiotic (Biochemistry-free) Life in the Computer and the Test-tube**

Juan Perez-Mercader ( Harvard University )

**Break** 2:30 - 2:45

**Parallel Sessions 1** **2:45 - 3:45**

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**Sloan Auditorium (Goergen 101): Network Control, Measurement, and Bias**

Session Chair: TBD

**2:45 Distributed Self-Control of Dynamical Networks by Adaptive Link Weight Adjustments**  
Hiroki Sayama ( Binghamton University, SUNY )

**3:05 Estimating Uncertainty in Network Measures and Structures Arising from Noisy Data**  
James Hartz ( University at Buffalo, SUNY )

- 3:25 A Diagnostic Framework for Sampling-Induced Distortion in Network Metrics**  
 Srinivas Pandey ( Binghamton University, SUNY )

**Fantone Lecture Hall (Goergen 109): Adaptive Social Networks and Belief Dynamics**

Session Chair: TBD

- 2:45 Bridging Simple and Complex Contagions in Belief Dynamics: A Voter Model Extension**  
 João Franco ( Vermont Complex Systems Institute, University of Vermont )

- 3:05 Identifying brain network features that drive opinion formation and changes in humans**  
 Shweta Hatote ( University at Buffalo, SUNY )

- 3:25 Why We Experience Society Differently: Intrinsic Dispositions as Drivers of Ideological Complexity in Adaptive Social Networks**  
 Akshay Gangadhar ( Binghamton University )

**Break**

3:45 - 4:00

**Parallel Sessions 2**

**4:00 - 5:00**

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**Sloan Auditorium (Goergen 101): Information, Entropy, and Behavioral Signals**

- 4:00 On the Uniqueness of the Coupled Entropy and its Applications**  
 Kenric P Nelson ( Photrek, Inc )

- 4:20 A Network Perspective of the Stock Market Using Mutual Information and Transfer Entropy**  
 Shangyi Bi ( Binghamton University, SUNY )

- 4:40 Detecting Dynamic “Fingerprints” in Human Random Keystrokes**  
 Jacqueline Blake ( Binghamton University, SUNY )

**Fantone Lecture Hall (Goergen 109): Media, Platforms, and Field Mapping**

- 4:00 How News Connects: Mapping the Semantic Topology of a Digital Newspaper**  
 Sofia Sciangula ( Carlo Cattaneo University LIUC )  
*Remote*

- 4:20 Tempo-Dependent Emergence in Platform-Mediated Collective Behavior**  
 Shaunette T. Ferguson ( Barnard College, Columbia University )

- 4:40 Interactive Visualization of the Updated Complex Systems Keyword Diagram**  
 Hiroki Sayama ( Binghamton University, SUNY )

**Day 2 (March 12)**

**Keynote**

**9:15-10:15**

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**Optimal Networks in Urban Transport Systems**

Filippo Radicchi ( Indiana University )

*Sloan Auditorium***Break**

10:15 - 10:30

**Parallel Sessions 3****10:30 - 11:30**

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**Sloan Auditorium (Goergen 101): Social / Institutional Simulation and Innovation Dynamics**

Session Chair: TBD

**10:30 A Simulation Model for Historical Evolution of Geopolitical Entities**

Andrea Agosta ( Carlo Cattaneo University LIUC )

*Remote***10:50 Using Agent Based Modeling to explore long-term economic impacts of nurse turnover in health-care**

Kate J. O'Neill ( Binghamton University, SUNY )

*Remote***11:10 Uncovering simultaneous breakthroughs with a robust measure of disruptiveness**

Sadamori Kojaku ( Binghamton University, SUNY )

**Fantone Lecture Hall (Goergen 109): Infrastructure, Risk, and Public/Health Networks**

Session Chair: TBD

**10:30 Graph-Based Analysis of Hurricane Stakeholder and Warning Networks: Structural Roles, Information Flow, and Optimization Diagnostics**

Hayford Adjavor ( Binghamton University, SUNY &amp; CenterPoint Energy )

*Remote***10:50 Inaccessibility in Public Transit Networks**

Katherine Betz ( University at Buffalo, SUNY )

**11:10 Network-Driven Cohort Selection and Adverse Drug Reaction Detection in Epilepsy Social Media**

Ziqi Guo ( Binghamton University, SUNY )

*Remote***Lunch Break****11:30 - 1:30**

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*Lunch on your own, see website for closeby options***Parallel Sessions 4****1:30 - 2:30**

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**Sloan Auditorium (Goergen 101): Graph Methods and Applied Dynamics**

Session Chair: Georgi Yordanov Georgiev, Assumption University &amp; Worcester Polytechnic Institute

- 1:30 distanceclosure: A Python Package for Network Sparsification Based on Its Topology**  
Robert Palermo ( Binghamton University, SUNY )

- 1:50 The Effective Graph improves prediction of network dynamics in biochemical models**  
Xuan Wang ( Binghamton University, SUNY & Indiana University )

- 2:10 Robust Video Anomaly Detection under Partial Observation via Patch-Motion Graph Smoothing**  
Neda Amirirad ( Binghamton University, SUNY )

**Fantone Lecture Hall (Goergen 109): Computational Models and Algorithm Diagnostics**

- 1:30 Diagnostic Evaluation of Conditional Generative Algorithms on Curated Single Cell Reference Data**  
Matthew Jehrio ( University of Rochester )

- 1:50 Spark: Modular Spiking Neural Networks**  
Mario Franco ( Binghamton University, SUNY )

- 2:10 Scalability of Structure-Preserving Simulations in Plasma Physics**  
Sarthak Sharma ( University at Buffalo, SUNY )

**Break** 2:30 - 2:45

**Keynote** 2:45 - 3:45

*Sloan Auditorium*

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**Title TBA**

Adilson Motter ( Northwestern University )

**Break** 3:45 - 4:00

**Parallel Sessions 5** 4:00 - 5:00

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**Sloan Auditorium (Goergen 101): Self-Organization, Robustness, and Epidemic Coupling**

Session Chair: TBD

- 4:00 A Feedback-Driven Lyapunov Principle for Self-Organization in Open Stochastic Systems**  
Georgi Yordanov Georgiev ( Assumption University & Worcester Polytechnic Institute )

- 4:20 Canalization drives Robustness in the Evolution of Collective Intelligence under Noise**  
Srikanth Iyer ( Binghamton University, SUNY )

- 4:40 A symbiotic SIR process**  
Gerardo Palafox-Castillo ( Universidad Autonoma de Nuevo Leon )  
*Remote*

**Fantone Lecture Hall (Goergen 109): Collapse, Inequality, and Sustainability Dynamics**

Session Chair: TBD

**4:00 A Meta-Model of Endogenous Overcrowding-Driven Demographic Collapse**

Federico Carucci (Carlo Cattaneo University LIUC)

*Remote***4:20 Parasites become rich and drive inequality in approach to collapse in a model of evolving networks**

Atiyab Zafar (University of Delhi)

**4:40 Artificial Agents and Ecological Collapse: an LLM-enhanced Agent-Based Model of a Sustainability Game**

Francesco Bertolotti (Carlo Cattaneo University LIUC)

*Remote***Day 3 (March 13)****Keynote****9:15 - 10:15***Sloan Auditorium***Title TBA**

Krishnan Padmanabhan (University of Rochester)

**Parallel Sessions 6****10:30 - 11:30****Sloan Auditorium (Goergen 101): LLM Learning, Optimization, and Alignment**

Session Chair: TBD

**10:30 Prospect Learning in Large Language Models: Quantifying Risk Preferences and Adaptation Dynamics**

Nency Dhameja (Binghamton University, SUNY)

*Remote***10:50 Evolutionary System-Prompt Optimization for LLM Agents in Competitive Market Simulations**

Ossama Zaroual (Carlo Cattaneo University LIUC)

*Remote***11:10 Cooperation or Defection? The Decay of Alignment Instructions in Complex LLM Systems**

Andrea Monoli (Carlo Cattaneo University LIUC)

*Remote***Fantone Lecture Hall (Goergen 109): LLM Agents in Social Systems**

Session Chair: Andreas Duus Pape, Binghamton University

**10:30 Large Language Model Agents Partially Reproduce Real-World Segregation Patterns in the Schelling Model**

Andreas Duus Pape ( Binghamton University, SUNY )

**10:50 Going for the Third: Cooperation between LLM Agents in a Three-Option Setting**

Leonardo Mascagni ( Carlo Cattaneo University LIUC )

*Remote***11:10 An Extension of the Sugarscape Model with LLM-based Agents**

Luca Moroni ( Carlo Cattaneo University LIUC )

*Remote***Closing Remarks****11:50 - 12:00**

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