



**NERCCS2026**

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

Program Booklet

Location: *University of Rochester, Rochester, NY, Venue TBD* · Dates: *March 11–13, 2026*

**DRAFT 2-3-26**

### 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

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#### The Physics and Chemistry of Synthesizing Abiotic Life in a Test Tube

Juan Perez-Mercader (Harvard University)

Break 2:30 - 2:45

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

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#### Room A: 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**  
Sriniwas Pandey (Binghamton University, SUNY)

**Room B: Adaptive Social Networks and Belief Dynamics**

Session Chair: TBD

**2:45 Information-mediated homophily in adaptive networks**

Joshua Rosen (Northeastern University)

**3:05 Bridging Simple and Complex Contagions in Belief Dynamics: A Voter Model Extension**

João Franco (Vermont Complex Systems Center, University of Vermont)

**3:25 Identifying brain network features that drive opinion formation and changes in humans**

Brian L. Clary (Penn State University)

**Break**

3:45 - 4:00

**Parallel Sessions 2****4:00 - 5:00****Room A: 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)

**Room B: Media, Platforms, and Field Mapping****4:00 How News Connects: Mapping the Semantic Topology of a Digital Newspaper**

Sofia Sciangula (Carlo Cattaneo University LIUC)

**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****Title TBA**

Filippo Radicchi (Indiana University)

**Break**

10:15 - 10:30

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

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**Room A: 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)

- 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)

- 11:10 Uncovering simultaneous breakthroughs with a robust measure of disruptiveness**  
Sadamori Kojaku (Binghamton University, SUNY)

**Room B: 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)

- 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)

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

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*Lunch on your own, see website for closeby options*

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**Parallel Sessions 4****1:30 - 2:30**

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**Room A: Graph Methods and Applied Dynamics**

- 1:30 distanceclosure: A Python Package for Network Sparsification Based on Their 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)

**Room B: 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

**Title TBA**

Adilson Motter ( Northwestern University )

Break

3:45 - 4:00

**Parallel Sessions 5**

4:00 - 5:00

**Room A: 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 )

**Room B: 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 )

- 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 )

## Day 3 (March 13)

**Keynote** 9:15 - 10:15

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**Title TBA**

Krishnan Padmanabhan (University of Rochester)

**Parallel Sessions 6** 10:30 - 11:30

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### **Room A: 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)

**10:50 Evolutionary System-Prompt Optimization for LLM Agents in Competitive Market Simulations**  
Ossama Zaroual (Carlo Cattaneo University LIUC)

**11:10 Cooperation or Defection? The Decay of Alignment Instructions in Complex LLM Systems**  
Andrea Monoli (Carlo Cattaneo University LIUC)

### **Room B: LLM Agents in Social Systems (80 min session)**

Session Chair: TBD

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

**11:10 An Extension of the Sugarscape Model with LLM-based Agents**  
Luca Moroni (Carlo Cattaneo University LIUC)

**11:30 Why We Experience Society Differently: Intrinsic Dispositions as Drivers of Ideological Complexity in Adaptive Social Networks**  
Akshay Gangadhar (Binghamton University)

**NERCCS Business Meeting** 11:50 - 12:30

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