



# 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**

Srinivas 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****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***Lunch on your own, see website for closeby options***Parallel Sessions 4****1:30 - 2:30****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 &amp; Indiana University )

**2:10 Robust Video Anomaly Detection under Partial Observation via Patch-Motion Graph Smoothing**

Neda Amirad ( 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

Title TBA

Krishnan Padmanabhan ( University of Rochester )

### Parallel Sessions 6

10:30 - 11:30

#### 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