The American Mathematical Society presents

Lattice Models of Statistical Mechanics

A Special Session in Four Acts

AMS Fall Western Sectional Meeting · Arizona State University, Tempe
Saturday & Sunday, November 7–8, 2026 · Durham Hall, Room L1 35

★ ★ ★

At a Glance

Act I	Saturday, November 7 · morning	9:00 – 10:55 AM	Marek Biskup, Pranav Chinmay, Xiaoran Li
★	Saturday, November 7	11:00 AM – 12:00 PM	Invited Address by Tom Hutchcroft (Bateman PSC F-Wing 166)
Act II	Saturday, November 7 · afternoon	3:00 – 5:55 PM	Asaf Nachmias, Reza Gheissari, Christian Serio
★	Saturday, November 7	evening	Session dinner (details by email)
Act III	Sunday, November 8 · morning	9:00 – 10:55 AM	Erik Bates, Christopher Hoffman
Act IV	Sunday, November 8 · afternoon	2:00 – 4:25 PM	Ben Schweinhart, Seoyeon Yang, Maciej Głuchowski, Tejas Oke

All four acts take place in **Durham Hall, Room L1 35.** Associated with the Invited Address by Tom Hutchcroft (SS 46A–D).

The Cast

in order of appearance

Act I Saturday, November 7 · morning

9:00 – 10:55 AM · Durham Hall, Room L1 35

> We start at **9:00**. The official AMS program still lists 8:00; please go by the times here.

9:00
45 min



Marek Biskup *UCLA*

Professor of Mathematics at UCLA, working where probability meets statistical mechanics: random walks in random environments, long-range percolation and log-correlated fields. *(Pictured off-stage, at the accordion.)*

"Renormalization Group Approach to Hierarchical Integer-Valued Gaussian and Coulomb Gas Models"

A renormalization-group analysis of the hierarchical integer-valued Gaussian free field uncovers a roughening transition and computes the covariance explicitly below, at, and just above criticality (joint with Haiyu Huang).

10:00
20 min

PC

Pranav Chinmay *Georgia Tech*

Studies critical percolation in high dimensions, in a long-running collaboration with Chatterjee, Hanson and Sosoe.

"Scaling Limits of Critical Clusters in High-Dimensional Percolation"

A geometric alternative to the lace expansion, built on a robust construction of the incipient infinite cluster, yields the limiting law of the chemical distance and sharp asymptotics for k-point functions.

10:30
20 min

XL

Xiaoran Li *Caltech*

PhD student at Caltech, advised by Tom Hutchcroft.

"Critical Exponent of Diffusivity on High-Dimensional Bernoulli Percolation"

How fast does a random walk spread on a slightly supercritical cluster? In high dimensions the diffusivity satisfies $\sigma(p)^2 \geq c(p - p_c)^2$ (joint with Chenlin Gu and Tom Hutchcroft).

INTERMISSION · THE HEADLINE ACT

Invited Address by Tom Hutchcroft

"The Effect of Geometry on Phase Transitions and Critical Phenomena"

Saturday, November 7 · 11:00 AM – 12:00 PM · Bateman Physical Sciences Center, F-Wing, Room 166

Introduced by Asaf Nachmias. Act I ends at 10:55, just in time to walk over.

Act II Saturday, November 7 · afternoon

3:00 – 5:55 PM · Durham Hall, Room L1 35

3:00
45 min



Asaf Nachmias *Tel Aviv University*

Professor at Tel Aviv University (on sabbatical in Berkeley this year) and Tom's PhD advisor; works on percolation, random walks, uniform spanning trees and random planar maps.

"Brownian Excursions and Critical Percolation on the Discrete Torus"

On a high-dimensional torus, the sizes of critical percolation clusters converge to the excursion lengths of Brownian motion with parabolic drift, the same law as for the critical Erdős–Rényi graph (joint with Arthur Blanc-Renaudie).

4:00
45 min



Reza Gheissari *Northwestern University*

Associate Professor at Northwestern, known for sharp results on Ising, Potts and random-cluster models, their dynamics, and random surfaces.

"Rigidity of Families of Low-Temperature Surfaces Conditioned to Not Cross"

A single low-temperature surface pushed above a hard wall drifts away, but a whole family of surfaces conditioned not to cross one another localizes when packed at constant density.

5:00
45 min



Christian Serio *UC Berkeley*

NSF Postdoctoral Fellow at UC Berkeley (PhD Stanford, 2026), specializing in Gibbsian line ensembles and random interfaces.

"The 1:2:3 Scaling Relation for SOS Level Lines"

The level lines of the (2+1)D SOS surface above a hard wall obey the predicted 1:2:3 scaling, and a random-walk approximation converges to area-tilted Brownian curves (joint with Joe Chen, Milind Hegde and Yujin Kim).

SATURDAY NIGHT · THE CAST PARTY

Session dinner

Saturday evening, November 7

Speakers and organizers receive the details by email.

Act III Sunday, November 8 · morning

9:00 – 10:55 AM · Durham Hall, Room L1 35

9:00
45 min · board talk



Erik Bates *NC State University*

Assistant Professor at NC State, working on spin glasses, directed polymers, and first- and last-passage percolation.

"Negative Association of Busemann Functions in Exponential Last-Passage Percolation"

Busemann increments in exponential last-passage percolation are independent along any single direction. Across different directions they are not, but the dependence goes only one way: they are negatively associated.

10:00
45 min

CH

Christopher Hoffman *University of Washington*

Professor at the University of Washington, with landmark work on first-passage percolation and, more recently, activated random walk.

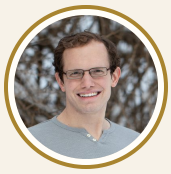
"Models of Self-Organized Criticality"

A tour of self-organized criticality, Bak, Tang and Wiesenfeld's mechanism for complexity in nature, through activated random walk, ballistic aggregation, and oil and water.

Act IV Sunday, November 8 · afternoon

2:00 – 4:25 PM · Durham Hall, Room L1 35

2:00
45 min



Ben Schweinhart *George Mason University*

Assistant Professor at George Mason, working where stochastic topology meets statistical mechanics: percolation in higher dimensions.

"A Cellular Representation of Potts Lattice Gauge Theory"

Coupling Potts lattice gauge theory with a plaquette random-cluster model turns Wilson loop expectations into topological events, giving a sharp area-law to perimeter-law transition in three dimensions (joint with Paul Duncan).

3:00
20 min



Seoyeon Yang *Princeton University*

PhD candidate at Princeton, advised by Allan Sly; studies mixing times and cutoff for spin-system dynamics.

"Information Percolation and Cutoff for Potts Glauber Dynamics"

At high temperature, Glauber dynamics for the q-state Potts model on the torus has cutoff in an optimal O(1) window: the first use of information percolation to prove cutoff for a non-monotone spin system.

3:30
20 min



Maciej Głuchowski *UCLA*

PhD student at UCLA, advised by Georg Menz; works on interacting particle systems and lattice spin models.

"Patch Positivity and Applications to Kinetically Constrained Spin Models"

A new comparison tool, patch positivity, proves exponential convergence to equilibrium for perturbed Fredrickson–Andersen models, settling the high-vacancy regime $p \le 1/2$ (joint with Georg Menz).

4:00
20 min



Tejas Oke *Caltech*

PhD student at Caltech, advised by Tom Hutchcroft; works on percolation and the random-cluster model.

"Critical Long-Range Percolation on the Discrete Torus"

Long-range percolation on the high-dimensional torus: scaling limits of the largest critical clusters and the plateau of the two-point function (joint with Yujin Kim and Tom Hutchcroft).

The Company

organizers



Tom Hutchcroft
Princeton & Caltech
Professor of Mathematics at Princeton and Gordon and Betty Moore Professor at Caltech (on leave); probability and mathematical physics. Giving this meeting's Invited Address.



Georg Menz
UCLA
Associate Professor of Mathematics at UCLA; studies how many interacting random components produce reliable collective behaviour.



Yujin H. Kim
Princeton
NSF Postdoctoral Research Fellow at Princeton (previously Caltech); random interfaces and percolation. Also in charge of dinner.

Notes for the Audience

Running times. Long talks are 45 minutes plus 10 for questions; short talks are 20 plus 5. Every talk starts on the hour or half hour.

Stage equipment. Projector and screen (bring a laptop and an HDMI adapter) plus whiteboards with markers.

Saturday curtain. Act I begins at 9:00 AM, not 8:00 as the official AMS program says.

Box office. Pick up your badge at the AMS registration desk. Full meeting program: ams.org/meetings/sectional/fall2026w.

Photos from the speakers' public homepages. Talk summaries condensed from the submitted abstracts. Questions? Write to Georg Menz (UCLA).