



GSNP Newsletter

Topical Group on Statistical and Nonlinear Physics

<http://units.aps.org/units/gsnp>



Letter from the Chair

GSNP's biggest activity is planning for the March Meeting, bridging the fields of statistical physics, soft matter, nonlinear dynamics, biological physics, with connections to many other areas of science. Accordingly, GSNP members proposed a variety of fascinating focus sessions and invited speakers. This year's planning was led by GSNP Chair Elect Katja Lindenberg. Here's a list of the invited sessions GSNP will sponsor or co-sponsor this year:

- B51: Frontiers of Soft Matter I
- D44: Mechanical Metamaterials
- J44: Self-assembly in the Macroworld
- J51: Irwin Oppenheim Memorial Session: Non-Equilibrium Statistical Mechanics of Liquids, Glasses and Biomolecules
- S18: Statistical Physics for Electric Grids
- T3: Network and Grid Resilience
- W46: Collective Behavior and Jamming in Multi-cellular Systems
- Y46: Novel Approaches to understanding the Behavior of Self-Propelled Particles
- Z3: Thermodynamics of Information Processing

The focus sessions hosted by GSNP include topics such as Extreme Mechanics, Jamming and Shear Thickening, Glasses, Systems Far from Equilibrium and Wave Chaos.

Our annual GSNP Student Speaker Award Session will feature five student finalists (session J42, Tuesday 2:30pm, room 214B.) These are always outstanding talks and represent the broad variety of work being done by GSNP student members, and I urge you to attend. More details below.

Next year's March Meeting GSNP organization will be led by Adilson Motter. He will send out information soon about planning for the 2016 meeting, and I encourage everybody to think of potential topics for invited and focus sessions for next year. We rely on your high-quality proposals for these topics.

The GSNP Business Meeting will be Tuesday evening March 3rd, from 5:45 – 6:45 pm in room 214D of the Convention Center. We'll enjoy tasty refreshments, and celebrate the six newest GSNP APS fellows (listed below). The number of APS fellows that GSNP can sponsor is directly linked to our membership size, which has been around 2.0% of the APS total membership over the past few years (we're one of the largest topical groups). APS fellows need to be nominated by members. Information about the nominations process for next year is below; the deadline is May 29.

GSNP is also soliciting proposals for small grants supporting conferences and workshops on GSNP-related research topics. Application deadline is Feb 27, 2015, so submit your applications as soon as possible. (See p. 2 for application details.)

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Any comments or suggestions for the GSNP are most welcome, and both Katja Lindenberg (klindenberg@ucsd.edu) and I (bulbul@brandeis) would be happy to hear from you about new ideas you may have for the GSNP. Also, please send announcements of relevant meetings to our secretary/treasurer Robin Selinger (rselinge@kent.edu); we will post events of GSNP interest on our website and distribute via email to our members.

Thanks are due to Katia Bertoldi and Francis Starr, GSNP members-at-large whose terms are ending.

Finally, a special thanks to outgoing GSNP Past Chair Eric Weeks! He did great work organizing the 2013 March Meeting GSNP sessions, and actively participated in the formation of the new topical group on Soft Matter: GSOFT (see below).

Best wishes,

- Bulbul Chakraborty

Student Speaker Award

GSNP sponsors a Student Speaker Award at the APS March Meeting. From 19 nominations, the GSNP chose 5 finalists to speak in the award session. Members of the GSNP executive committee select a winner at the meeting. The winner will receive a cash prize of \$1000 and each finalist receives \$300. Each finalist also receives up to \$500 for March meeting travel support. This year's finalists are:

- Hatem Nuri Barghathi (Missouri University of Science and Technology): *Phase Transitions on Random Lattices: How Random is Topological Disorder?*
- Thibault Bertrand (Yale University): *Shear Jamming in Frictionless Particulate Media*
- David Meichle (University of Maryland): *Three Dimensional Characterization of Quantum Vortex Dynamics in Superfluid Helium*
- Gabriel Redner (Brandeis University): *Defect-Stabilized Phases in Extensile Active Nematics*
- Eyal Teomy (Tel Aviv University): *Jamming Percolation in Three Dimensions*

Hear them at the **Student Prize Session J42, Tuesday 2:30pm**, in room **402** of the Convention Center. Congratulations and good luck to all of the finalists!

Student Lunch with the Experts

Student Lunch with the Experts will be held Tuesday, March 3, 12:30 – 2 pm in Ballroom A at the Convention Center. GSNP is sponsoring three tables: Michael Falk, John Hopkins University, will discuss "Computational Materials Science," Oleg Lavrentovich, Kent State University, will discuss "Liquid Crystals: New Frontiers," and Daniel M. Abrams, Northwestern University, will discuss "Network Dynamics." Students can sign up to join one of the experts and enjoy a complimentary box-lunch while participating in an informal discussion. Sign-up will open Monday, March 2 near the APS Registration Desk.

Attendance is limited to eight students per table. A complete list of experts/topics is available at:

<http://meeting.aps.org/Meeting/MAR15/Session/H2.1>.

Soft Matter Update

A new topical group GSOFT has been formed, and has garnered tremendous interest. GSNP is still a distinct entity and will, as always, be the home for Statistical and Nonlinear Physics, which encompasses a diversity of fields, not just Soft Matter. Half of the executive committee of GSOFT are long-time GSNP members. We welcome the opportunity to work together with GSOFT to increase the visibility of the areas of interest to both units.

Conference/Workshop Support

Proposals are due Feb 27 for GSNP grants of up to \$1500 to support conferences/workshops on topics related to statistical and nonlinear physics. To submit a proposal, you must be (1) a primary organizer of the conference and (2) a member of GSNP.

GSNP funding should be acknowledged on the conference/workshop website and speaker/participant invitations.

See <http://www.aps.org/units/gsnp/support/index.cfm> for complete application details. Email completed applications as a single PDF to gsnpmail@gmail.com.

GSNP Fall 2014 Election Results

Congratulations to the newly elected officers of GSNP!

Vice-Chair:

David Egolf (Georgetown University)

Members-At-Large:

Cynthia Reichardt (Los Alamos)

Uwe Tauber (Virginia Tech)

New 2014 APS Fellows in GSNP

Each year, the GSNP Fellowship Committee reviews nominations for APS Fellows and makes recommendations to APS. The total number of APS Fellows who may be elected in a given year is limited to one-half of one percent of total APS membership. In 2014, six candidates were recommended by GSNP and selected for Fellowship in the American Physical Society:

Bassler, Kevin E. [2014]

University of Houston

For seminal and sustained contributions to the understanding of the dynamics of complex systems, particularly concerning non-equilibrium phase transitions, emergent behavior, and dynamics in adaptive networks.

Chate, Hugues [2014]

CEA – Saclay

For numerous contributions to nonequilibrium critical phenomena and to the characterization of complex spatiotemporal patterns and fluctuations, in particular for his seminal role in exploring the physics of active matter.

Kevrekidis, Panayotis [2014]

University of Massachusetts, Amherst

For fundamental contributions to the understanding of localized solutions, of their stability in nonlinear wave equations, and of their relevance to applications from atomic physics, nonlinear optics, and granular crystals.

Moore, Cristopher [2014]

Santa Fe Institute

For fundamental contributions at the interface between nonlinear physics, statistical physics and computer science, including complex network analysis, phase transitions in NP-complete problems, and the computational complexity of physical simulation.

Pikovsky, Arkady [2014]

University of Potsdam

For many fundamental contributions to the statistical theory of chaos, pattern formation, and synchronization.

Strogatz, Steven [2014]

Cornell University

For seminal work on complex networks, nonlinear oscillators, and synchronization phenomena.

2015 Fellow Nominations

Nominators must ensure that the case they prepare for the Fellowship Committee is well-documented, following the guidelines and requirements outlined at <http://aps.org/programs/honors/fellowships/nominations.cfm>. The Fellowship Committee generally looks for sustained contributions to the field over a period of time rather than a single, even brilliant, piece of research. Supporting letters that provide specific details about the candidate's work, its impact, and the breadth of her/his contributions are particularly useful. Nominations may be made at any time during the year, but only those received by the GSNP deadline, currently May 29, 2015, are considered for action in the same year. Nominations are submitted online at:

<http://www.aps.org/programs/honors/fellowships/>.

Uwe Tauber is chairing the committee this year. Nominations on which no favorable action is taken are generally reconsidered the following year. Sponsors may, however, resubmit the nomination with updated supporting material prior to the deadline for the following year.

Special thanks to Adilson Motter for chairing the 2014 Fellowship Committee.

Visit the GSNP Meetings page at <http://www.aps.org/units/gsnp/meetings/index.cfm>. This webpage contains links to upcoming events and conferences of interest to the statistical and nonlinear physics community. Send suggestion for meetings to be listed there to Robin Selinger at gsnpmail@gmail.com.

Join the GSNP discussion group at LinkedIn here: <http://www.linkedin.com/groups?gid=5105028>

Considering that GSNP members analyze properties of social networks, we need one of our own. This LinkedIn group allows easy one-to-many communication among members of GSNP, e.g. to announce an upcoming event, post a link to a video of a new experiment, simulation, or online talk, or just discuss research issues. The group currently has 388 members and is growing. All GSNP members are welcome to come and join the conversation.

GSNP Executive Committee 2014-2015**Chair:****Bulbul Chakraborty**Email: bulbul@brandeis.edu**Chair Elect:****Katja Lindenberg**Email: klindenberg@ucsd.edu**Vice Chair:****Adilson Motter**Email: motter@northwestern.edu**Secretary-Treasurer:****Robin Selinger**Email: rselinge@kent.edu**Past Chair:****Eric Weeks**Email: erweeks@emory.edu**2015 March Meeting Program Committee Chair**

Katja Lindenberg

2014 Fellowship Committee Chair

Adilson Motter

Members-at-Large:**Michelle Girvan (term ending 2-17)**Email: girvan@umd.edu**Ben Vollmayr-Lee (term ending 2-17)**Email: bvollmay@bucknell.edu**Luis A. Nunes Amaral (term ending 2-16)**Email: amaral@northwestern.edu**Eli Ben-Naim (term ending 2-16)**Email: ebn@lanl.gov**Katia Bertoldi (term ending 2-15)**Email: bertoldi@seas.harvard.edu**Francis Starr (term ending 2-15)**Email: fstarr@wesleyan.edu**GSNP Executive Committee 2015-2016****Chair:****Katja Lindenberg**Email: klindenberg@ucsd.edu**Chair Elect:****Adilson Motter**Email: motter@northwestern.edu**Vice Chair:****David Egolf**Email: daegolf@gmail.com**Secretary-Treasurer:****Robin Selinger**Email: rselinge@kent.edu**Past Chair:****Bulbul Chakraborty**Email: bulbul@brandeis.edu**2016 March Meeting Program Committee Chair**

Adilson Motter

2015 Fellowship Committee Chair

Uwe Tauber

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