



GSNP Newsletter

Topical Group on Statistical and Nonlinear Physics

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

Letter from the Chair

Statistical and Nonlinear Physics is a versatile and growing field, with strong connections to the life sciences, engineering, and socio-economic developments. Several of the fundamental research questions of our field have been highlighted as critically important in two recent studies. Using slightly different words, both the National Research Council and the DOE Office of Basic Energy Sciences have emphasized the importance of understanding far from equilibrium phenomena and emergent behaviors (see *Condensed Matter and Materials Physics*, http://www.nap.edu/catalog.php?record_id=11967 and *Directing Matter and Energy*, http://www.sc.doe.gov/bes/reports/files/GC_rpt.pdf).

This public emphasis is reflected in the growth of GSNP. With 982 members or 2.05% of the total APS membership, we are one of the largest of the APS Topical Groups. An important mission of the GSNP is to highlight new areas and to make connections between seemingly diverse topics within the GSNP umbrella. As examples, last year the GSNP sponsored fascinating sessions on systems far from equilibrium, complex networks, the elasticity of thin objects, and active soft matter.

All are invited to the GSNP Business Meeting
Tuesday, March 16
5:45 p.m. - 6:45 p.m.
Oregon Convention Center A107-A109
Refreshments Provided

Most of the group’s activities occur at the APS March Meeting, where the GSNP sponsors Focus Sessions and Invited Symposia, often in conjunction with other units. Sincere thanks go to our Chair Elect, Thomas Halsey, who assembled a strong and broad program of GSNP sessions (see p. 2) as our representative on the March Meeting Program Committee. There is also significant GSNP representation at the annual DFD November meeting.

The GSNP sponsors several exciting special events at the March Meeting. The first is the “Gallery of Images”, modeled after a similar exhibition started by the DFD. GSNP members are invited to submit a poster or video with visually striking and informative displays of statistical or nonlinear phenomena. Some of the submissions to the Image Gallery are published in the journal *Chaos*. There is also a \$500 cash prize for the winning entry for the best poster and for the best video.

A second, and more recent, GSNP-sponsored event is the Student Speaker Award Session (Session B12, Monday at 11:15am). Five students are selected annually from nominations submitted by GSNP members to present in this special March Meeting session. The winner receives a cash prize of \$1000 and each of the finalists receives \$300. The talks in these sessions have uniformly been excellent in the past few years, and should again be enjoyable this year. Please consider attending! Finally, the GSNP sponsors a “Lunch with the Experts” that provides students the opportunity to meet with a GSNP expert (Mark Shattuck this year) in an informal and friendly setting.

Any comments or suggestions for the GSNP are most welcome and I would be happy to hear from about new ideas you may have for the GSNP. Also, please send announcements of relevant meetings to our secretary/treasurer Arshad Kudrolli (akudrolli@clarku.edu); we will post events of GSNP interest on our website.

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2010 Student Speaker Award Finalists

The GSNP sponsors the Student Speaker Award at the APS March Meeting. From nominated talks, GSNP chooses 5 finalists to speak in the award session. A committee selects a winner at the meeting. The winner will receive a cash prize of \$1000 and each finalist receives \$300.

The five finalists this year are:

- Jessica Baker, Clark University
- Lucy Colwell, Harvard University
- Oren Elrad, Brandeis University
- Elisabetta Matsumoto, University of Pennsylvania
- Georgios Tsekenis, University of Illinois

They will speak at the **Student Prize Session B12, Monday 11:15AM**, Room B110-B111.

Congratulations and good luck to all the finalists!

2010 Gallery of Images

The GSNP Gallery of Images is now in its seventh year. Submitted posters and video entries will be displayed **Monday– Wednesday in the Exhibition Area**. They can also be viewed at <http://www.aps.org/units/gsnp/gallery/index.cfm>. A committee will select the top three images and an overall winner from each category (posters and videos). The winners will receive a \$500 cash award. All selected images will be published, with a brief commentary, in a special issue of the journal *Chaos*.

Student Lunch with the Experts

Wednesday, March 17, 1:00 pm– 2:30 pm, at the convention center.

GSNP is sponsoring the topic: *Granular Science*, with Prof. Mark Shattuck from CCNY's Levich Institute.

Students can sign up to enjoy a complimentary box-lunch while participating in an informal discussion with Prof. Shattuck. Sign-up will begin on Monday, March 15, at 1pm at the APS registration desk. Attendance is limited to eight students.

GSNP - Sponsored Contributed Sessions

- A13** Convection and Crystal Growth (DFD/GSNP) Monday 8:00am–11:00am (B112)
B12 GSNP Student Prize Session/Liquid Crystals: Smectics (GSNP/DFD) Monday 11:15am–2:15pm (B110-B111)
H12 Statistical and Nonlinear Physics of Social Systems (GSNP) Tuesday 8:00am–11:00am (B110-B111)
J13 Systems Far From Equilibrium (GSNP) Tuesday 11:15am–2:15pm (B112)
Y13 Statistical and Nonlinear Physics I (GSNP) Friday 8:00am–11:00am (B112)
Z13 Statistical and Nonlinear Physics II (GSNP) Friday 11:15am–2:15pm (B112)

GSNP - Sponsored Focus Sessions

- B13** Complex Networks I (GSNP) Monday 11:15am–2:15pm (A. L. Barabasi; B112)
D13 Complex Networks II (GSNP) Monday 2:30pm–5:30pm (B112)
H11 Extreme Mechanics I (GSNP) Tuesday 8:00am–11:00am (C. Santangelo; A107-A109)
H32 Tribophysics - Fracture and Plasticity (GSNP/DMP) Tuesday 8:00am–11:00am (L. Ponsou; E142)
L11 Extreme Mechanics II (GSNP) Tuesday 2:30pm–5:30pm (A. Vaziri; A107-A109)
L32 Tribophysics - Sliding Friction (GSNP/DPOLY) Tuesday 2:30pm–5:30pm (E. Tosatti; E142)
P11 Extreme Mechanics III (GSNP) Wednesday 8:00am–11:00am (A107-A109)
P32 Tribophysics - Adhesion and Friction (DMP/GSNP/DPOLY) Wednesday 8:00am–11:00am (P. Gumbsch; E142)
Q13 Stochastic Processes in Biology I (GSNP/DBP) Wednesday 11:15am–2:15pm (V. Colizza; B112)
T13 Stochastic Processes in Biology II (GSNP/DBP) Wednesday 2:30pm–5:30pm (B112)
V13 Jamming I (GSNP) Thursday 8:00am–11:00am (V. Manoharan; B112)
W13 Jamming II (GSNP) Thursday 11:15am–2:15pm (R. Hoy; B112)
X13 Jamming III (GSNP) Thursday 2:30pm–5:30pm (B112)

GSNP - Sponsored Invited Symposia

- A4** Human Mobility: The Statistical Physics of When, Where, and How (GSNP) Mon 8:00am (Brockmann, Vespignani, Gonzalez, Eagle, Klafter; Oregon Ballroom 204)
B7 Evolutionary Dynamics (DBP/GSNP) Mon 11:15am (Gore, Fisher, Kishony, Tans, Neher; Portland Ballroom 254)
D7 Fluctuations and Critical Phenomena in Population Dynamics (GSNP/DBP) Mon 2:30pm (Goldenfeld, Kamenev, Meerson, Redner, Schmittmann; Portland Ballroom 254)
J7 Biofilms and Multicellularity (GSNP) Tue 11:15am (Vogel, Vermont, Stocker, Vlamakis, Silberzan; Portland Ballroom 254)
Q2 Jamming (DCMP/GSNP) Wed 11:15am (Nagel, Heussinger, Brujic, Zeravcic, Mao; Oregon Ballroom 202)
T7 Avalanches in Condensed Matter (GSNP/DCMP) Wed 2:30pm (Dahmen, Ben-Zion, Santucci, Miguel, Zapperi; Portland Ballroom 254)
V8 Spots, Stripes, and Turbulence (GSNP/DFD) Thu 8:00am (Barkley, Schatz, Burke, Knobloch, Schneider; Portland Ballroom 255)
W7 Biological Networks (DBP/GSNP) Thu 11:15am (Ferrell, Wang, Emonet, Levine, Marder; Portland Ballroom 254)

New 2009 APS Fellows in the GSNP

Each year, the GSNP Fellowship Committee reviews nominations for APS Fellows and makes recommendations to the APS. The total number of APS Fellows who may be elected in a given year is limited to one-half of one percent of the total APS membership. Therefore, the selection process is quite competitive, and sponsors should be aware of this when preparing nominations. In 2009, four candidates were recommended by GSNP and selected for Fellowship in the American Physical Society:

Bechhoefer, John L., Simon Fraser University

For seminal experimental and theoretical contributions to nonlinear dynamics, pattern formation, phase transitions, solidification and biological physics as well as important advances of scientific instrumentation.

Diehl, Hans Werner, Universität Duisburg-Essen

For his seminal and sustained contributions to the understanding of universal critical behavior associated with surfaces and boundaries.

Dufty, James W., University of Florida

For his numerous seminal contributions to non-equilibrium statistical mechanics and its applications to granular fluids, plasmas, strongly coupled Coulomb systems, and materials science.

Jarzynski, Christopher, University of Maryland

For pioneering work in non-equilibrium statistical mechanics, especially his elegant equality relating free energy differences between two equilibrium states to averaged work expended in non-equilibrium transformations between them.

GSNP Fall 2009 Election Results

Congratulations to the newly elected officers of GSNP:

Vice-Chair:

Susan Coppersmith (University of Wisconsin at Madison)

Secretary/Treasurer:

Jon Machta (University of Massachusetts at Amherst)

Members-at-large:

Karin Dahmen (University of Illinois at Urbana-Champaign)

Cynthia Reichhardt (Los Alamos National Lab)

New GSNP officers are elected in the fall of each year, with terms beginning in March of the following year. The duties and terms of service for these positions are detailed in the Bylaws of the GSNP (<http://www.aps.org/units/gsnp/bylaws.cfm>). Balloting is done by e-mail.

2010 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>. In general, the Fellowship Committee looks for sustained contributions to the field over a period of time rather than a single, albeit brilliant, piece of research. Supporting letters which 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 1, 2010 will be considered for action in the same year. Nominations are submitted online at <http://www.aps.org/programs/honors/fellowships/>.

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 go to Sid Redner for chairing the 2009

Please visit the GSNP Events page at <http://units.aps.org/units/gsnp/events.cfm>

This webpage contains a list of upcoming events and conferences of interest to the statistical and nonlinear physics community.

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