

GSNP Newsletter

Topical Group on Statistical and Nonlinear Physics

September 2003

Letter from the GSNP Chair

With the guidance of David Campbell, the GSNP has had an excellent year. We have seen continued membership growth and exciting new developments. One obvious indicator of our growth is the fact that we can now nominate three candidates for Fellowship in the APS, up from our previous quota of two. David has continued, as part of his role of Past-Chair, to work on membership development. I would like to extend our sincere thanks to him on behalf of all the GSNP and in particular the Executive Committee. I would equally like to thank Eberhard Bodenschatz and Andrea Liu, who recently completed terms on that committee. And I would like to welcome Bulbul Chakraborty of Brandeis University and Josh Socolar of Duke University who have joined that group. I would also personally like to thank the Executive Committee for all their contributions over the past year.

We are now in the process of developing and implementing a new feature, a Gallery of Images, for the March Meeting, which continues to be the main meeting for our group. We expect that it will be initiated at the meeting in Montreal. If the response is positive, we anticipate that it will become a routine part of the March Meeting. The spirit of this activity is similar to what has been done at the annual DFD (Division of Fluid Dynamics) meeting for a number of years. Attendees are invited to submit appealing images which would be exhibited in a special part of the poster area. A panel of experts will evaluate the entries for both their scientific and artistic merit. We are currently searching for a venue in which these images will appear in full and glorious color.

More information concerning the Gallery of Images will be posted on the GSNP web site, so stay tuned.

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We are also in the process of revising our bylaws. A number of changes are in order either to streamline our operating procedures and to bring us up to date, for instance in regard to online elections. These should appear on the GSNP web page as they are approved.

As you have read from recent APS messages, 2005 has been designated the World Year of Physics, and idea that was initiated by the European Physical Society. The APS has decided to focus on the centennial of Einstein's "annus mirabilis". Among the papers from Einstein that year is his work on Brownian diffusion, something that clearly overlaps with interests within the GSNP. We are also looking at the 50th anniversary of the Fermi-Pasta-Ulam study of nonlinear oscillators. These and related topics would make excellent symposia, and the GSNP will be on the lookout for related activities.

Bob Behringer, Chair, GSNP

Balloting for GSNP Officers

Officers of the Topical Group on Statistical and Nonlinear Physics are elected in the fall of each year with terms beginning in March of the following year. Voting instructions and a ballot with brief bios and statements from the candidate will be e-mailed to all GSNP members. The duties and terms of service for these positions are spelled out in the Bylaws of the GSNP (<http://www.aps.org/units/gsnp/bylaws.html>).

Minutes of 2003 GSNP Meeting

March 3, 2003 • Austin, TX

Attendance: Guenter Ahlers, Bob Behringer, David Campbell, Walter Goldberg, Dan Lathrop, Mark Robbins, Josh Socolar, Jeff Urbach
Guests: Judy Franz, APS

Election results: Vice Chair - **Charles Doering** (Univ. of Michigan) Member-at-Large: **Bulbul Chakraborty** (Brandeis Univ.), **Josh Socolar** (Duke Univ.). 180 votes were cast, and all of the elections were very close.

Membership: There are currently 718 members of GSNP, up from 660 last year. This is the second year of robust growth for GSNP, the largest APS topical group. The outgoing chair, David Campbell, will serve as chair of the membership committee.

Program Committee: The GSNP-organized focus sessions were extremely successful, with most being over-subscribed.

Publications Committee: Walter Goldberg agreed to chair the publications committee, with the goal of increasing the presence of Statistical and Nonlinear Physics in the media, along with other educational and outreach activities.

Additional items are described elsewhere in this newsletter.

APS Fellows

Each year, the GSNP Fellowship Committee will review nominations for APS Fellows and make 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.

Nominations may be made at any time during the year, but only those received by the deadline set by APS, currently April 2, will be considered for action in the same year. Nomination forms, as well as tips on preparing an effective nomination, are available at <http://www.aps.org/units/gsnp/nominate.html>. The nomination form was modified for 2001 so get a current version. Completed forms should be returned to the APS Fellowship Program Office at the same address. 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.

In 2002, three candidates were recommended by GSNP and selected for Fellowship in the American Physical Society:

Lou Pecora, Naval Research Laboratory

For stimulating research in analysis and application of nonlinear and chaotic systems regarding synchronization of oscillators, applications of chaos to communication systems, and data analysis using state space reconstructions.

Itamar Procaccia, Weizmann Institute of Science

For major contributions to non-equilibrium physics, chaotic dynamics, turbulence and transport processes.

Robert Ziff, University of Michigan

For his sustained contributions to understanding the kinetics of aggregation and fragmentation, nonequilibrium chemical reactions, kinetic phase transitions, and percolation theory.

March Meeting Sorting Categories

The sorting categories for Statistical and Nonlinear Physics reflect the increasing breadth of GSNP interests. In addition, we are organizing a wide range of Focus Topics, in collaboration with other units. More information about the Focus Sessions can be found by following the links.

12. Statistical and Nonlinear Physics

- 12.1 Low-Dimensional and Quantum Chaos
- 12.2 Noise and Stochastic Resonance
- 12.3 Pattern Formation & Spatio-Temporal Chaos
- 12.4 Coherent Spatial Structures: solitons, intrinsic localized modes, discrete breathers
- 12.5 Granular Media
- 12.6 Equilibrium Statistical Mechanics: fundamentals, exactly solvable models
- 12.7 Systems Far from Equilibrium
- 12.8 Networks and Complex Systems
- 12.9 Disordered nonlinear systems and glassy dynamics

Special Focus Topics

[12.9.1 Deformation, Friction and Fracture \(DMP/GSNP\)](#)

[12.9.2 Electrostatics in Complex and Biological Fluids \(GSNP/DBP/DPOLY\)](#)

[12.9.3 Jamming \(GSNP\)](#)

[12.9.4 Granular phenomena: gases, pattern formation, and flows \(GSNP\)](#)

[12.9.5 Slow Dynamics in Non-Randomly Frustrated Systems \(GSNP\)](#)

[12.9.6 The Nature of Networks: Structure and Dynamics \(GSNP\)](#)

[12.9.7 Structure and Pattern Formation in Fluid Flow \(GSNP,DFD\)](#)

[12.9.8 Interface Driven Flows at the Micro- and Nanoscales \(GSNP, DFD\)](#)

[10.9.7 Pattern Formation in Biology \(DBP,GSNP\)](#)

GSNP Events Page

Links to events of interest to GSNP members such as conferences, workshops, and summer schools are posted on the events page on the website, <http://www.aps.org/units/gsnp/events.html>. If you are organizing or know of an event that you think our members should know about, e-mail the information to the secretary/treasurer, Jeff Urbach, at urbach@physics.georgetown.edu.

GSNP Executive Committee 2003-2004*

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March Meeting Program Committee (2002)

M. Robbins (Chair)

Fellowship Committee (2002)

C. Doering

Nominating Committee (2002)

J. Socolar (Chair)

Publications Committee

W. Goldberg