

Precision Measurement and Fundamental Constants Group Newsletter

A Topical Group of the American Physical Society

<http://www.aps.org/units/pmfc/>

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The primary purpose of the Data statement is to give names to constants; instead of referring to pi as 3.141592653589793 at every appearance, the variable Pi can be given that value with a Data statement and used instead of the longer form of the constant. This also simplifies modifying the program, should the value of pi change.

-- Fortran manual for Xerox Computers

Do you know anyone who might join GPMFC if only they knew how diverse our interests are? The Executive Committee is considering steps to broaden our membership base to achieve a more balanced representation of the many fields that we encompass. Currently, we are dominated (in both membership and election outcomes) by the Atomic, Molecular, and Optical community. Traditionally, we have served as a focus for research related to investigating and testing the fundamental laws of physics and their underlying connections, determining fundamental constants, and developing and improving basic measurement standards, with special emphasis on the high precision experiments that are characteristic of such research. Some current areas of interest are atomic spectroscopy and metrology, high-precision tests of fundamental symmetries at low and high energies, fundamental physics of neutrons, precision nuclear spectroscopy, tests of gravity and the equivalence principle, and theoretical treatments of the physics which impact these fields. One area of growth could be with physicists engaged in low-background counting experiments which have high-precision experimental goals and require work with sensitive, well-calibrated instruments. The Executive Committee welcomes your ideas and/or willingness to volunteer to help us broaden our membership base by outreach, modification of our Group web site, etc. Contact the Chair and/or Secretary-Treasurer.

Upcoming Program

April Meeting (in February, 2010)

<http://www.aps.org/meetings/april/info/index.cfm>

The GPMFC is one of the sponsoring units of the April Meeting in Washington DC, February 13-16, 2010. Deadlines are looming: the abstract deadline was Oct. 23, 2009, but the post-deadline abstract deadline is December 13, 2009. The early registration deadline is December 11, 2009.

Two GPMFC Nobel Prize winners will speak at the meeting: Professors Theodor W. Hänsch and John L. Hall. Professor Hänsch will give an evening talk (open to the general public) on Monday night, February 15. Professor Hall will be one of three speakers in a special session (X4): “The Laser: Historical Perspectives and Impact on Precision Measurements.” The GPMFC is co-sponsoring this session with the Forum on the History of Physics (FHP).

The GPMFC will host a full session at the meeting on “Precision Measurements on Atomic and Sub-Atomic Systems,” (D10) which promises interesting research updates on precise tests of fundamental symmetries and precise experiments in atomic, nuclear, and neutron physics. Good stuff, we promise.

Several other sessions will focus on gravity and are co-sponsored with the APS Gravity Group (GGR): A11: “Lorentz Symmetry in Gravitation; followed by LISA Developments,” K4: “Earth, Sky & Moon: Gravity Tests Across 13 Orders of Magnitude,” and S10: “Equivalence Principle and Precision Gravity Tests”. Massive stuff. Seriously.

DAMOP 2010

<http://damop2010.rice.edu/>

The annual meeting (including the business meeting) of the Group for 2010 will be at the DAMOP meeting in Houston, Texas, which will be held May 25-29. The deadline for submission of abstracts is January 23, 2010.

One of the main goals of the Group is to present interesting and engaging programs that reflect both the diversity of interests of our membership and the common themes of precision measurement. Our program committee seeks topics for next year’s meetings, and your suggestions are welcome, particularly in interdisciplinary, cross-cutting, or new areas. Members with ideas for future program topics should contact the Program Committee members. The Program Committee includes John Gillaspay and Zheng-Tian Lu (email addresses below).

Student Travel Support

We remind members that we have funds available to support students to travel to meetings to present research findings at our Group's program. This has been a popular program, particularly in years where our main meeting coincides with DAMOP, as it does in 2010. While we cannot cover all travel expenses, we can certainly defray most of the costs for students. Members who supervise and mentor are reminded to share this program with their students and postdocs. We have historically offered an amount in the range \$200-600 per student. Applying for travel support is as simple as contacting the Secretary/Treasurer of the Group (Paul Vetter, pavetter@lbl.gov) **at the time you send in abstracts to the meeting**, and requesting that your abstract be scheduled with the sessions sponsored by the Group. Please see the group website for details: <http://www.aps.org/units/pmfc/meetings/travel.cfm>

Other Conferences, Meetings, Funding Sources of Interest

The Seventh International Conference on Atomic and Molecular Data and Their Applications
Vilnius, Lithuania
September 21 - 24, 2010
<http://www.itpa.lt/icamdata2010/en/>

NIST Precision Measurement Grants
Deadline should be approximately the first week of February, 2010
<http://physics.nist.gov/ResOpp/grants/grants.html>

Available DARPA grants can be found at:
<http://www.darpa.mil/mto/solicitations/index.html>
Several grants to be awarded for R&D which would be of interest to GPMFC researchers, including sensitive electric field detection, sensors, optomechanical cooling, and photonics. N.B. the solicitation for "Casimir Effect Enhancement" research to be applied to nanodevices.

2010 APS Fellowship Nomination

Our Group is entitled to propose candidates for Fellowship in the APS. The Fellowship Committee is chaired by Blayne Heckel and Jun Ye. Please consider nominating a worthy and accomplished colleague for this honor – contact Blayne Heckel or Jun Ye, or see the APS website for nomination details.

Seeking review article topics

An editor of a well-known journal has expressed interest in running one or more invited cover articles on the topic of precision measurements. The treatment would likely be a technical review of a field with its techniques and literature. Members of the GPMFC interested in writing such a review should contact the Chair for this opportunity to highlight our discipline.

Nominations Wanted

We begin the annual process of electing Executive Committee members. The chair of the Nominating Committee is Susan Gardner (gardner@pa.uky.edu), who would be happy to hear from you with suggestions for members who would be willing to serve on the Executive Committee.

Experts Wanted

Each year at the April APS meeting, there is an APS "Graduate Student Lunch with the Experts". This year the lunch will be held on Sunday, February 14, 2010 from 12:30 PM to 2:00 PM at the conference hotel.

If you are interested in serving as an expert and networking with students, please contact Christine Lenihan at APS (lenihan@aps.org) by Friday, December 4. Please include your name, affiliation, and topic before December 4. The event is popular with graduate students.

2009-2010 Executive Committee (Year Term Expires in Parentheses)

Chair: John Gillaspay (2010)
NIST
john.gillaspay@nist.gov

Chair-Elect: Blayne Heckel (2010)
University of Washington
heckel@phys.washington.edu

Vice-Chair: Jun Ye (2010)
NIST - Univ of Colorado/JILA
junye@jilau1.colorado.edu

Past Chair: David DeMille (2010)
Yale University
david.demille@yale.edu

Secretary/Treasurer: Paul Vetter (2010)
Lawrence Berkeley National Lab
pavetter@lbl.gov

Member-at-Large: Mikhail Romalis
(2010)
Princeton University
romalis@princeton.edu

Member-at-Large: Susan Gardner (2010)
University of Kentucky
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Member-at-Large: David Kawall (2011)
University of Massachusetts/
Brookhaven National Lab
kawall@physics.umass.edu

Member-at-Large: Zheng-Tian Lu
(2011)
Argonne National Lab
lu@anl.gov

Member-at-Large: Michael Chapman
(2012)
Georgia Institute of Technology
mchapman@gatech.edu

Member-at-Large: Kristan Corwin
(2012)
Kansas State University
Corwin@phys.ksu.edu

See also the Group's governance page on the web for contact information:
<http://www.aps.org/units/pmfc/governance/officers/index.cfm>