

# DCOMP NEWSLETTER

DIVISION OF COMPUTATION PHYSICS

Exploring the use of computers in physics research and education, as well as the role of physics in the development of computer technology.



Photonic Art  
Visualized Results  
from Chaos Theory  
by Erika Thorpe



## WHO IS DCOMP?

**We are!** The **Division of Computational Physics (DCOMP)** involves **has more than 2000 physicists engaged in all areas of physics that utilize computational methods and computers in education and research**, such as condensed-matter, astrophysics, high-energy, fluid and shock dynamics, atomic or molecular physics, and particle physics.

## WHY SHOULD I JOIN?

**Impact.** DCOMP seeks APS members in computational physics to join and help promote the division's goals, chart new directions (including at the APS March and April Meetings), engage more people and students worldwide (e.g., the annual CCP conference, see inside), inform the news media of the impact of computational sciences on society, and advise the agencies and Congress on critical areas for future investments. Also, you can avail yourself of **Travel Programs for DCOMP**, inside.

## DOES IT MATTER IF I JOIN?

**Numbers.** Membership dictates the number of symposia and invited talks at APS meetings, operating budgets, and number of APS Fellows inducted. As DCOMP spans all areas of physics, have more impact: **Be in more than one unit! Join DCOMP.**

**NEEDED BY: 15 July 2009**

Your suggestions for *Invited Symposia at the 2010 March Mtg.* Send to DCOMP. How? See pg. 5.

News and Info from the DCOMP Chair (Duane Johnson, Illinois) and the Executive Committee.

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## DCOMP Officers and Volunteers

Each year (or for several years) DCOMP members stand for office or volunteer to serve on various committees appointed by the Executive Committee.

*DCOMP would like to thank those who have served, are serving, are planning to serve and continue to serve.* The Executive Committee is provided in the table at right. A link to the other committees and their volunteers is then provided.

In 2008, we were privileged to have Mei-Yin Chou (GaTech) and Jim Belak (LLNL) help oversee DCOMP and to serve as March and April Meeting Chairs.

## Extending DCOMP's Breadth and Reach

As computational physics is pervasive in many other units, we have officers and membership from all areas of physics, especially to represent the membership and to help guiding the March and April Programs. We participate in programs that help student and group research activities, such as the APS International Travel Grant (see below).

## How can YOU help?

**First and foremost, join DCOMP.**

**Then, consider a run for office.**

**Faculty, get your Ph.D students to join, as there is reduced rate. Take advantage of the programs to help students and group research activities, such as the APS International Travel Grant, see next.**



## DCOMP Officers (3/09-2/10)

**Chair:** Duane Johnson, Illinois

**Chair-Elect:** Richard Scalettar  
U. of California, Davis

**Past-Chair:** Mei-Yin Chou  
Georgia Institute of Tech.

**Vice-Chair:** Amy Bug, Swarthmore

**Secretary/Treasurer:**  
Bernd Berg, Florida State U.

**Councillor:**  
David Landau, U. of Georgia

**Members-at-Large:**

Tiziana Di Matteo, CMU

Ronald Levy, Rutgers U.

Mark Pederson, DOE

Manuela Campanelli,

Rochester Inst. of Tech.

Angela Wilson, U. North Texas

Massimo Boninsegni, U. of Alberta

**Past-Divisional Councillor:**

Richard Martin, U. of Illinois

**Honorary Past-Chair:**

Guilia Galli, U. of Cal., Davis

**See all Committees and Elected or Appointed Members at**

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

## APS INTERNATIONAL TRAVEL GRANT AWARD PROGRAM

The DCOMP Executive approved contribution to and participation in the yearly **APS International Travel Grant Award Program (ITGAP)**.

The ITGAP was established to promote international scientific collaborations between members of "participating" APS Divisions and physicists in developing countries. Grant recipients receive up to US \$2,000 for travel and lodging expenses for international travel while visiting a collaborator for at least one month.

Details about the ITGAP are available at:

<http://www.aps.org/programs/international/programs/travel-grants.cfm>

## DCOMP Prizes 2009

See <http://www.aps.org/units/dcomp/awards>

Nominated by APS members and chosen by DCOMP committees.



### Nicholas Metropolis Award for Outstanding Doctoral Thesis Work in Computational Physics

The award recognizes doctoral thesis research of outstanding quality and achievement in computational physics and to encourage effective written and oral presentation of research results.

**Chao Cao, University of Florida**, for his work on "First-Principles and Multi-Scale Modeling of Nano-Scale Systems" 2008 Ph.D. with Professor Hai-Ping Cheng.



Chao Cao

### Aneesur Rahman Prize for Computational Physics

To recognize and encourage outstanding achievement in computational physics research.

**A. Peter Young, University of California, Santa Cruz**, "For his innovative and definitive numerical studies of spin glasses and the vortex glass state of High Temperature superconductors."



A. Peter Young

To nominate a person for APS Fellow or Computational Awards, visit the website for required material

APS FELLOW <http://www.aps.org/units/dcomp/fellowship/>

Rahman Prize <http://www.aps.org/programs/honors/prizes/rahman.cfm>

Student Metropolis Award <http://www.aps.org/units/dcomp/awards/metropolis.cfm>

## INDIA-U.S. TRAVEL PROGRAM FOR STUDENTS



**The Physics Student Visitation Program** allows U.S. and Indian graduate students to apply for travel funds of \$3,000 to pursue opportunities in physics. The travel funds could be used to attend a short-course or summer institute, to work temporarily in a laboratory, or for another opportunity that the student and the host professor believes is worthy of support. The program aims to mostly support graduate student travel to India by U.S. citizens, while enabling some students of Indian citizenship to travel to the United States. Recipients will be selected by a joint APS-IUSSTF Review Committee.

**For further details visit**

<http://www.aps.org/programs/international/us-india-travel.cfm>

**SEE ALSO FOR FACULTY: INDIA-U.S. PROFESSORSHIP AWARD IN PHYSICS**

See details at [HTTP://WWW.APS.ORG/PROGRAMS/INTERNATIONAL/US-INDIA-TRAVEL.CFM](http://www.aps.org/programs/international/us-india-travel.cfm)

# TRAVEL AWARD PROGRAM FOR YOUNG SCIENTISTS



Travel thwarted to educational meeting to due insufficient funds? See other opportunities below.

**The Materials Computation Center (University of Illinois) and the International Center for Materials Research (UC Santa Barbara) are offering awards to assist with travel to CECAM, Psi-K, and international MRS workshops.**

Eligible workshops in 2009 include:

- XVIII Inter. Materials Research Congress (Cancun, Mexico).
- Coarse-Graining Biological Systems (Lausanne, Switzerland).
- Computer simulation of oxides: dopants, defects and surfaces (Dublin, Ireland).
- Fall E-MRS (Warsaw, Poland)
- Quantum Transport on Molecular Scale (Bremen, Germany).

For a complete list of eligible events, and to apply, visit

<http://www.mcc.illinois.edu/travel/>



## APS Fellows Nominated by DCOMP

See <http://www.aps.org/units/dcomp/fellowship>

Fellowship in the American Physical Society is a great honor, for those elected "... who have contributed to the advancement of physics by independent, original research or who have rendered some other special service to the cause of the sciences".

### DCOMP congratulates its 2008 APS Fellows

**Albers, Robert** (Los Alamos National Lab)

Citation: For his pioneering work on the theory of f-electron elements and materials, and its implementation into robust computational methods for use by experimentalists to interpret Extended X-ray Absorption Fine Structure spectra.

**Goedecker, Stefan** (U. of Basel)

Citation: For his pioneering development of efficient linear scaling and low complexity algorithms for electronic structure calculations and atomistic simulations.

**Hansmann, Ulrich H.** (Michigan Tech.)

Citation: For pioneering protein simulations, innovative contributions to computational algorithms and their applications to Biological Physics.

**Selloni, Annabella** (Princeton University)

Citation: For her pioneering first-principles computational studies of surfaces and interfaces, which made possible the interpretation of complex experiments, and successfully predicted the physical, and chemical properties of broad classes of materials, including materials for photovoltaic applications.

**Svistunov, Boris** (U. of Massachusetts)

Citation: For pioneering contributions to the theory and practice of Monte Carlo simulations for strongly correlated quantum and classical systems, the invention of the worm algorithm and diagrammatic Monte Carlo techniques, and fundamental theoretical results on superfluid phenomena in quantum gases, liquids, and solids.

# CONFERENCE ON COMPUTATIONAL PHYSICS (CCP) 2009, 2010, AND 2011

Each year DCOMP contributes funds to the [Conference on Computational Physics \(CCP\)](#), with venues that revolve each year from Europe, the Americas, and Asia.

The CCP aims to advance computational physics and engage the entire computational physics community, including in education. The fields of focus vary each year.

Through the APS an email announcement was sent to DCOMP in May on upcoming meetings, see DCOMP website <http://www.aps.org/units/dcomp/>. Here are the latest meetings:

## Upcoming CCP events:

**CCP 2010 Trondheim, Norway** (23-26 June).

**CCP 2009 Taipei, Taiwan** (15-19 December)

see <http://www.ccp2009.tw/>.

## Recent past CCP events:

**CCP 2008 Ouro Preto, Brasil** (5-9 August),

see website <http://www.ccp2008.ufop.br/site/welcome.php>.

**CCP 2007 Brussels** (5-8 September)

see <http://ccp2007.ulb.ac.be/> with list of previous venues.



**PLANNING FOR CCP 2011** in a U.S. venue is underway. News will be forthcoming on DCOMP website.

## DCOMP Special Thanks To:

**Jim Gubernatis (LANL)** and **David Landau (U. of Georgia)** for their lengthy service to the CCP International Programs Committee and DCOMP support.

## DCOMP NEWS

Send important news items or APS symposium ideas to Prof. Bernd Berg

[bberg@fsu.edu](mailto:bberg@fsu.edu)

DCOMP Secretary/Treasurer

DCOMP Award Nominations

<http://www.aps.org/units/dcomp/awards>

DCOMP Fellows Nomination

<http://www.aps.org/units/dcomp/fellowship>

Keep up-to-date by visiting the DCOMP website

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

Newsletter will also be archived at DCOMP URL.