

# **DFD News – Spring/Summer 2003**

**Division of Fluid Dynamics Newsletter (5/31/2003)**

## **APS-DFD MEETINGS**

### **The 56<sup>th</sup> Annual DFD Meeting-New York/New Jersey Metropolitan Area- November 23-25, 2003**

The 2003 DFD Annual Meeting will be held at the Sheraton Meadowlands Hotel and Conference Center in East Rutherford, New Jersey ([www.sheraton.com/meadowlands](http://www.sheraton.com/meadowlands)). The meeting will be hosted by Syracuse University, Stevens Institute of Technology, Polytechnic University, City College of NY and Rensselaer Polytechnic Institute. Professor Mark Glauser is the Chair of the Organizing Committee. The official web site for the meeting is <http://DFD2003.syr.edu>. The abstract deadline is **August 1, 2003**.

Situated in Northern New Jersey, and just eight miles from Manhattan, the Sheraton Meadowlands offers the opportunity to experience the attractions of both New York City and Northern New Jersey. The site is convenient to several airports: Newark International Airport is located 10 miles from the meeting hotel, New York's La Guardia Airport is 15 miles from the hotel and New York's JFK International Airport is 24 miles away. The Sunday evening reception will be held at New York City's most celebrated restaurant, the world famous **Tavern on the Green**, located in Central Park (<http://web.tavernonthegreen.com>).

#### **New York City and Northern New Jersey**

Information about New York City and the tourist attractions can be found at New York City's Official Tourism web site <http://www.nycvisit.com>. Information about Northern New Jersey and the tourist attractions can be found at New Jersey's Official Tourism web site <http://nj.gov/travel>.

View of the Tavern On The Green in New York City's Central Park



### **Subsequent DFD Meetings**

2004, Seattle, WA, University of Washington, contact: Jim Riley

2005, Chicago, IL (tentative). Contact: Richard Lueptow, Northwestern University

2006, **OPEN Offers welcomed**

### **Division of Fluid Dynamics of the Mexican Physical Society**

The IXth Congress of the DFD-MPS will take place Nov. 17-19, 2003. Information may be obtained (and abstracts submitted by 8/15/2003) at [deptmecmate@maxwell.iimatercu.unam.mx](mailto:deptmecmate@maxwell.iimatercu.unam.mx)

### **Highlights of the 55<sup>th</sup> Annual Meeting, Dallas, Texas (by Peter Raad)**

The November 2002 DFD meeting in Dallas concluded with nearly 1100 registrants, 932 abstracts, and 12 exhibitors. The meeting events began early Sunday morning with the opening sessions of the technical program, and the Awards Ceremony in the afternoon. Dr. Andrea Prosperetti of the Johns Hopkins University was the recipient of the 2002 Otto LaPorte Award and presented his lecture entitled "Bubbles." The 2002 Fluid Dynamics Prize was presented to Dr. L. Gary Leal of UCSB, who presented his lecture entitled "Flow Induced Coalescence of Drops in a Viscous Liquid." Meeting activities on Sunday were topped off with a reception at the renowned Morton H. Meyerson Symphony Center. To witness firsthand why the Meyerson Center has joined the ranks of the world's great symphony halls, attendees were invited to an organ

demonstration and a brief historical review. Nearly 200 members took advantage of this unique treat. The three-day meeting also included invited lectures by Philip Marcus, Sandra Troian, Arne Johansson, Kenny Breuer, Michael Brenner, Geoffrey Spedding, Eberhard Bodenschatz, and Victor Steinberg. Two minisymposia were presented within the technical program: the U.S. Mexican Minisymposium on Dynamics and Interactions of Vortices, and the Minisymposium on Advances in Flow Control.

This year's DFD meeting introduced a special Luncheon on Monday for graduate students and postdocs, who enjoyed a complimentary lunch and discussion with a senior mentor of their choice. Twelve senior investigators (Stanley Berger, C. F. Chen, Robert Ecke, Jerry Gollub, G. M. "Bud" Homsy, Fazle Hussain, Javier Jimenez, Ann Karagozian, Joe Katz, Howard Stone, Sandra Troian, and Steve Pope) hosted seven students each during this noontime event. The feedback from the luncheon hosts was very positive. According to Fazle Hussain, "The session went way beyond the closing time with all the students still there. We were so absorbed in the dialogue..." And, as Howard Stone stated, "The young people are the future of our community, so the more we can do to support them, the better." Jerry Gollub wrote, "An advantage of the small group sessions is that I had time to give each person some attention and a personal response to career issues about which he/she was concerned." It seems desirable to continue this student luncheon in future years.

The Gallery of Fluid Motion included over 70 entries. A panel of experts selected winners from each of the two categories. Poster winners included: "Water Walking," Hu, Chan, and Bush; "Gradient Driven Structures in Surface Active Flows," Darhuber and Troian; "Chain of Bubbles in Polymer Solutions," Kliakhandler; "The Generation of Micro-jets in Spilling Breakers in the Presence of Surfactants," Liu and Duncan; "Drop Pinch-Off Inside a Falling Drop," Sostarecz and Belmonte; "Coherent Structures in a Transitional Flow Around a Backward-Facing Step," Weinkauf, Hege, Noack, Schlegel, and Dillmann; and "Turbulent Flow Past a Sphere at  $Re = 3700$  and  $10000$ ," Yun, Choi, and Kim. Video winners were the following: "Hele-Shaw Ferrohydrodynamics for Rotating and Axial Magnetic Fields," Lorenz and Zahn; "Competitive Clustering in a Granular Gas," Mikkelsen, Ko van der Weele, Devaraj van der Meer, Versluis, and Lohse; "Visualizations of the Dynamics of a Vortical Flow," Miller, Lindstrom, and Cook; "Drop Impact of Newtonian and Elastic Fluids," Roux, Tirtaatmadja, McKinley, and Cooper-White; and "Faraday, Jets, and Sand," Sandtke, Devaraj van der Meer, Versluis, and Lohse. The winning entries will be published in a Gallery of Fluid Motion article in the September 2003 issue of *Physics of Fluids*.

The local organizing committee at SMU and the University of Texas at Austin thanks the participants for their contributions to a very successful meeting.

## **Fellowships, Prizes, and Awards**

## 2002 DFD Fellows

Fellows are elected based on nominations considered by the DFD Fellowship Committee, review by the APS Fellowship Committee, and approval by the APS Council. Only 0.5 % of the APS membership is selected for Fellowship in the Society each year.

**Ramesh K. Agarwal**, Wichita State University

For pioneering development of Computational Fluid Dynamics methods and codes for the aerodynamic analysis and design of all categories of aerospace vehicles and outstanding contributions to aeroacoustics, magneto-hydrodynamics and rarefied gas dynamics.

**Robert William Bilger**, University of Sydney, Australia

For outstanding contributions to knowledge of turbulent reactive flows through insightful experiments, theory and modelling, especially for elucidating the fundamental processes in turbulent combustion and for the development of the conditional moment closure.

**James Bernard Grotberg**, University of Michigan

For the identification and quantification of physical mechanisms in pulmonary fluid mechanics including wheezes, high-frequency ventilation, and aerosol transport.

**Lawrence A. Kennedy**, University of Illinois at Chicago

For significant and sustained contributions to the fluid dynamics of diverse chemically reacting systems and for engineering applications of that work.

**Detlef Lohse**, University of Twente, Netherlands

For his decisive role in unraveling the mystery of single-bubble sonoluminescence and his ingenuity in developing scaling arguments for turbulent natural convection.

**Ugo Piomelli**, University of Maryland

For important and insightful contributions to the development of large eddy simulation techniques and to the understanding of wall-bounded turbulent flows.

**Laurette Stephanie Tuckerman**, CNRS, France

For applying dynamical systems theory to hydrodynamic instabilities, especially to Couette flows, thermal convection, and Faraday and Eckhaus instabilities, and for developing numerical methods that make bifurcation-theoretic computations feasible.

**Forman A. Williams**, University of California, San Diego

For his groundbreaking contributions to advances in the theory of chemically reacting flows and combustion.

**Julian C. R. Hunt**, University College London

For his long-lasting contributions to the understanding and modeling of various fluid flow phenomena in nature and in engineering practice as well as for extensive services to the fluid mechanics community.

## 2002 Fluid Dynamics Prize

The Fluid Dynamics Prize was established in 1979 “to recognize and encourage outstanding achievement in fluid dynamics research.” It is endowed by *Physics of Fluids* and the Division of Fluid Dynamics.

**L. Gary Leal**, *University of California, Santa Barbara*

Citation: "For his extensive use of an exquisite blend of modern analysis, innovative numerical computation, and beautiful experiments to elucidate phenomena in classical and polymer fluid dynamics."

## 2002 Otto Laporte Award

This award, established in 1985, is given “to recognize outstanding research accomplishments pertaining to the physics of fluids”, and was named to honor Otto Laporte. It is endowed by the Friends of Otto Laporte and the Division of Fluid Dynamics.

**Andrea Prosperetti**, Johns Hopkins University

Citation: “For breakthroughs in the theory of multiphase flows, the dynamics of bubble oscillations, underwater sound, and free-surface flows and for providing elegant and insightful explanations of paradoxical phenomena in these fields.”

## 2002 Andreas Acrivos Dissertation Award

This award, established in 1998, provides recognition to exceptional young scientists who have performed original doctoral thesis work of outstanding scientific quality and achievement in the area of fluid dynamics.” The award honors the contributions to fluid mechanics of Andreas Acrivos, particularly his distinguished editorship of *Physics of Fluids*. It is supported by donations from members and friends of the Division of Fluid Dynamics.

**Wade Schoppa**, University of Houston (Advisor: Fazle Hussain)

Dissertation Title: “Studies of Coherent Structure Generation in Near-Wall Turbulence”

## 2002 Frenkiel Award

This Award recognizes significant contributions to fluid mechanics that have been published in *Physics of Fluids* during the preceding year by young investigators.

**Jonathan P. Rothstein and Gareth H. McKinley**, Massachusetts Institute of Technology

“Non-isothermal modification of purely elastic flow instabilities in torsional flows of polymeric fluids”, *Phys. Fluids* 13, 382-396 (2001).

## **Prize, Award, and Fellowship Nominations for 2004.**

For information about the nomination process and requirements, please see the announcements posted at [www.aps.org](http://www.aps.org).

**A. Fluid Dynamics Prize:** Deadline February 10, 2004. Please send nominations to the 2004 Committee Chair, Ronald L. Panton (Mechanical Engineering Department, University of Texas, Austin TX 78712), [rpanton@mail.utexas.edu](mailto:rpanton@mail.utexas.edu).

**B. Otto Laporte Award:** Deadline February 10, 2004. Please send nominations to the 2004 Committee Chair, Marvin Goldstein (NASA/Lewis Research Center, 21000 Brookpark Road, MS 3-17, Cleveland OH 44135), [marvin.e.Goldstein@lerc.nasa.gov](mailto:marvin.e.Goldstein@lerc.nasa.gov).

**C. Acrivos Award:** Deadline April 12, 2004. Please send nominations to the 2004 Committee Chair, Sutanu Sarkar (Mechanical and Aerospace Engineering, UCSD, 9500 Gilman Drive, La Jolla CA 92093), [sarkar@ucsd.edu](mailto:sarkar@ucsd.edu).

**D. APS Fellows:** Deadline February 10, 2004. Nominations from under-represented groups (women, minorities, and international members) are encouraged. Please send nominations directly to the American Physical Society.

## **Report from APS Council (by Harry Swinney)**

Recent procedures and rules implemented to secure US borders have resulted in long delays and denials of visas for some students and visiting foreign scientists. This has been particularly a problem for foreign students with single-entry F-1 visas, who can be delayed or denied re-entry after leaving for a home visit or attendance at a foreign conference. Also, some invited speakers from abroad have not been able to attend US conferences because of visa delays or denial, and some foreign students accepted by US universities have not been able to obtain visas. The visa problem may impact the March 2004 APS meeting, which is to be held in Montreal, because some foreign graduate students studying in the US may choose not to attend rather than risk difficulty in re-entering the US.

The US will re-enter UNESCO (the United Nations Educational, Scientific, and Cultural Organization) on October 1, 2003, after pulling out in 1987. The APS will work actively with UNESCO to promote international scientific cooperation. UNESCO is the governing authority of the International Center for Theoretical Physics (Trieste, Italy), founded in 1964 by Abdus Salam to foster science in developing countries. The new director of this important international center is K. R. Sreenivasan, former chair of the DFD.

The world-wide decline in the number of students studying physics has led to the declaration, led by the European Physical Society, of 2005 as "World Year of Physics".

The year 2005 was chosen because it will be the centennial of Einstein's publication of three landmark papers (photoelectric effect, relativity, and Brownian motion). The goal of the World Year of Physics is to promote public understanding and appreciation of physics both as the basis for other disciplines and as an incubator for technology. APS and physical societies from many other countries are participating in plans for the WYP2005 ([www.wyp2005.org](http://www.wyp2005.org)).

## **Report from Physics of Fluids.**

The editors of Physics of Fluids (L. Gary Leal and John Kim) appreciate this opportunity to communicate with the members of the DFD.

Physics of Fluids was recently reviewed by a distinguished panel of fluid dynamicists (all members of the DFD) as part of the standard policy of the AIP to carry out an external review of all of its journals on a periodic basis. The committee was chaired by Prof. Steve Pope, and included as members Eric Shaqfeh, Robert Ecke, Robert Behringer, Ellen Longmire, and Joseph Fernando. Among the numerical measures noted by the committee were: the increased internationalization of the journal over the past decade (more than 60% of the submitted papers are now from outside North America); the decreased percentage of papers accepted for publication (51% of those submitted during the last full year for which complete data was available at the time of the review, 2001); and the average time from initial submittal to acceptance by the editorial office, which stood at 31 weeks for the first 6 months of 2002. An additional trend that was less clearly evident at the time of the review (mid-2002) is a substantial increase in the numbers of papers being submitted to Physics of Fluids. We believe that this growth is a reflection both of the health of Physics of Fluids and of the field of fluid mechanics!

One recommendation from the committee, which we believe is important for both Physics of Fluids and for the field as a whole, is that the editors should be pro-active in seeking to expand the range of the journal to encompass new and emerging fields of fluid dynamics research. We are pursuing this recommendation in several ways: one is to publish selected papers based on the invited lectures from the annual DFD meetings; a second is to ask members of the associate editors group to organize and edit special sections of the journal on new and emerging fields (or at least fields that are not currently well represented in Physics of Fluids) to be published on something like a yearly basis. We would welcome input on important topical areas, as well as other ideas for responding to this important recommendation of the review committee.

Another item of potential interest to DFD members is that we are currently in the final "beta" stage of testing the new on-line paper submittal and handling system ("Peer-X-Press") that has been adopted by AIP for all of its journals. We believe that it will facilitate the paper submission process and shorten the time for handling papers, especially those papers that are still being submitted completely in hard copy form (Physics of Fluids has accepted papers submitted electronically in PDF format for some

time, but only as a supplement to the basic hard copy submission process). With the new Peer-X system, authors will be able to track papers as they are being processed. Referees will also receive papers to review electronically, and reviews will also be submitted electronically. There will still be the possibility of submitting papers in hard copy form, but we strongly encourage everyone to use the electronic format as soon as it is available, as it will facilitate and thus speed up both the editorial and AIP-production stages of the publication process.

Accepted papers are now being posted on-line as soon as they are received back from authors with approved “proofs”. This means that papers are currently available, with a publication date and a complete reference including page numbers, as much as 6 weeks before the hard copy journal is actually printed.

Finally, readers of Physics of Fluids may notice a gradual increase in the number of Letters that are being published. This is a result of the fact that many more papers are being submitted in the Letter format, and that there is now an Associate Editor for Letters who is handling papers for this section of the journal, Andrea Prosperetti. The criterion for consideration as a Letter is that the research has to be a contribution to the field of sufficient importance and timeliness as to merit accelerated processing and publication. If a submitted Letter does not rise to this criterion in the judgment of the editors, its authors are given the option of resubmitting the work in an expanded form for consideration as a regular paper. Alternatively, the original manuscript may be considered as a Brief Communication with the agreement of both authors and the editors.

## **Personal Notes regarding DFD Members**

William R. Sears died October 12, 2002 at the age of 89. He had been one of Theodore von Karman's earliest Ph.D. students. Sears spent most of WW II as chief of aerodynamics and flight testing for Northrup Aircraft, being involved in the design of the first flying wing and the P-61 Black Widow fighter. In 1946 Cornell invited him to create and direct the Graduate School of Aeronautical Engineering. The school achieved a worldwide reputation for excellence, attracting honors and awards to Sears and the school. Sears also founded and directed the Center for Applied Mathematics. In 1974 Sears joined the department of Aerospace and Mechanical Engineering at the University of Arizona, and became emeritus there in 1978. He was a winner of the APS-DFD Fluid Dynamics Prize and a member of both the National Academy of Sciences and the National Academy of Engineering, as well as the American Academy of Arts and Sciences and Mexico's Academia Nacional de Ingenieria.

*Compressible-Fluid Dynamics* by Philip A. Thompson has been reprinted professionally as a hardbound edition and can be purchased (prepaid, credit cards accepted) through the RPI Bookstore for \$53.50 plus \$8.95 for handling (UPS ground). To order, contact: Bookstore, Rensselaer Union, Rensselaer Polytechnic Institute, 110 8th St, Troy, NY 12180-3590, TEL 518 276 6555, FAX 518 276 3198.

Please send additional Notes to Jerry Gollub ([jgollub@haverford.edu](mailto:jgollub@haverford.edu)) for the Fall Newsletter.

## **APS/DFD 2003 Leadership and Contact Information**

DFD members are invited to contact the DFD Leadership with suggestions and concerns.

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 Gary Leal, ex officio as editor of Phys. Fluids  
 Michael Brenner, ex officio as associate editor of Phys. Rev E  
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