

A Division of the American Physical Society

THE 64TH ANNUAL DFD MEETING

November 20-22, 2011 Baltimore, Maryland



Photo courtesy of Visit Baltimore

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The articles in this issue represent the views of the Division of Fluid Dynamics (DFD) publication committee and are not necessarily those of individual DFD members or the APS.

The 64th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD) will be held in Baltimore, Maryland, from November 20th to 22nd, 2011. The meeting will be hosted by the Johns Hopkins University, the University of Maryland, and the University of Delaware, with participation by the George Washington University, Howard University, and the US Naval Academy.

Meeting Venue

The meeting will be held at the Baltimore Convention Center within very easy walking distance from all the conference hotels and many Baltimore attractions. Oral presentations will be held in rooms on the 3rd and 4th levels of the Convention Center. Exhibits, the Gallery of Fluid Motion, and refreshment breaks will be on the 4th level.

Baltimore

With a total population in excess of 2.7 million, Baltimore ranks 20th among the US urban areas. It is located 100 miles SW of Philadelphia and 40 miles NNE of Washington DC, to which it is connected by two freeways and a rail line used by both local commuter and Amtrak trains. In addition to the two Washington airports, the city is served by the Thurgood Marshall International Airport (also known as the Baltimore-Washington International Airport, BWI). The Baltimore

Convention Center is within walking distance of the famous National Aquarium, the inner harbor area with shops and restaurants, and many attractions: the 1854 USS Constellation, the 1945 submarine Torsk, the Baltimore & Ohio Railroad Museum, the Walters Art Museum, the Visionary Art Museum, the Edgard Allan Poe tomb and others. The historic Fort McHenry and the Baltimore Museum of Art are also within easy reach.

Visit http://baltimore.org/ for further information.

Housing and Meeting Registration

Registration for the meeting and housing information are available through the meeting web site http://www.dfd2011.jhu.edu (also accessible from http://www.aps.org/units/dfd/ meetings/). Links to registration and the conference hotels (Hyatt Regency Baltimore the Inner Harbor, \$151 per night; Sheraton Inner Harbor, \$139; Days Inn Inner Harbor, \$129; Holiday Inn Inner Harbor, \$129) are provided together with instructions on how to make reservations at the discounted conference rate. Participants are urged to stay at one of these hotels as this helps considerably contain the registration fees for the meeting. Rooms can be reserved at the reduced rate, as long as space is available, or until October 17th.

Key Dates and Registration fees:

Registration opens mid-June, check http://www.dfd2011.jhu.edu

| | Early (before Oct 11) | Regular * (Oct 12-28) | On-Site |
|--------------------------|--------------------------|--------------------------|---------|
| APS Member | \$380 | \$445 | \$525 |
| Non-APS Member | \$625 | \$685 | \$765 |
| Graduate Student | \$185 | \$205 | \$295 |
| Undergraduate Student | \$35 | \$35 | \$75 |
| Retired | \$185 | \$205 | \$295 |
| Minisymposia | \$205 | | |

*After Oct 28th, you will no longer be able to register on-line and will have to register on-site at the increased rate

NOTE: The cost of APS/DFD Membership is \$136. (http://aps.org)

Cancellation deadline (no refunds after this date): November 7

Deadline for abstract submission:

August 5

Deadline for applications for financial support (Jon Freund, jbfreund@uiuc.edu):

August 5

Notice of intent to submit poster or video entries for the Gallery of Fluid Motion:

September 16

Video submission deadline:

October 14

Scientific Program

The scientific program will include four award lectures, invited lectures, minisymposia and focused sessions, contributed papers, poster sessions, exhibits and the Gallery of Fluid Motion poster and video entries. Well over 1700 contributed abstracts, divided into up to 24 concurrent sessions, are anticipated.

Awards Program

Each year the APS Division of Fluid Dynamics presents the Fluid Dynamics Prize, the Francois Frenkiel Award, and the Andreas Acrivos Dissertation Award. This year a new award, the Stanley Corrsin Award, instituted "To recognize and encourage a particularly influential contribution to fundamental fluid dynamics" will also be awarded for the first time. The 2011 award winners, each one of whom will give a lecture at the meeting, will be announced in the Fall.

Invited Lectures, Minisymposia, and Focused Sessions

Approximately eight invited lectures on topics of broad interest to the DFD community will be given by experts in each field. The program also includes minisymposia and focus sessions dealing with exciting current research. The specific minisymposia/focus sessions and speakers will be announced on the conference web site closer to the meeting.

Gallery of Fluid Motion

The 29th Annual Gallery of Fluid Motion will be held as part of the meeting. The Gallery consists of posters or videos submitted by attendees illustrating the science - and very often also the beauty - of fluid motion. Both computational and experimental entries are encouraged. Poster and video entries must not duplicate one another. Outstanding posters, selected by a panel of referees, will be recognized during the meeting, will be displayed at the Annual APS meeting in March, 2012 and will appear in the September 2012 issue of the Physics of Fluids. Please see the meeting web site for information on how to submit Gallery of Fluid Motion entries.

Audiovisual Equipment

All rooms will be equipped with an LCD projector, screen, microphone, and pointer. Speakers must provide their own laptop computer to use with the projector. A Speaker Ready Room with technicians will be available to help attendees ensure that their presentations work smoothly with the LCD projection equipment.

Exhibitor and Sponsorship Opportunities

Exhibits will be centrally located near the refreshments area on the 4th floor of the Baltimore Convention Center in a large foyer outside the session rooms. Sponsorship opportunities are listed on the meeting website: http://www.dfd2011.jhu.edu/exhibitsponsor.html/. For more information on exhibits or sponsorship, please contact Professor Andrea Prosperetti (prosperetti@jhu.edu) or Meetings and More (301 641-4150, peggy@meetingsandmore.net).

Conference Reception

The Conference Reception will be held at the Baltimore Convention Center on Sunday evening, November 20, 2011. The reception is included in the registration fee for those who register as APS Members, Nonmembers, Graduate Students, and Retired Members. Additional tickets may be purchased for \$ 75 each.

Registration

Joe Nanna, APS Units Registrar

Phone: (301) 209-3226 Fax: (301) 209-3136 Email: nanna@aps.org

Accompanying Persons Program

If there is sufficient interest, the organizers plan to offer a day trip for accompanying persons on Sunday, Nov. 20 to the National Gallery of Art in Washington.

Meeting Hosts

The meeting is hosted by: Johns Hopkins University University of Maryland University of Delaware

with participation from: United States Naval Academy George Washington University Howard University

Meeting Chair

Andrea Prosperetti, Johns Hopkins University prosperetti@jhu.edu

Meeting Information

Meetings and More

General Information Monica Malouf

Phone: (301) 526-8129

Exhibiting and Sponsorship Information

Peggy Holland

Phone: (301) 641-4150

Email: peggy@meetingsandmore.net

2011 Meeting Website

http://www.dfd2011.jhu.edu

Future APS/DFD Meetings:

2012 San Diego, CA

Prof. Juan Lasheras, Meeting Chair University of California San Diego

2013 Pittsburgh, PA

Prof. Nadine Aubry, Co-Meeting Chair Carnegie Mellon University, Peyman Givi, Co-Meeting Chair University of Pittsburgh

Call for APS/DFD Officers and Executive Committee Candidates

The Nominating Committee of the APS Division of Fluid Dynamics invites suggestions for candidates for Vice-Chair, Councillor, and two Member-at-Large positions for the Executive Committee of the DFD. Please send the names of potential candidates to the Chair of the DFD Nominating Committee by June 20, 2011:

Ronald J. Adrian School for Engineering of Matter, Transport and Energy Arizona State University P.O. Box 876106 Tempe, AZ 85287-6106 480-965-6469 rjadrian@asu.edu

Officers and Members-at-Large of the Executive Committee must have been members of the Division for at least two years prior to nomination. The member elected as Vice-Chair shall serve in that office for one year, then for one year as Chair-Elect, then for one year as Chair of the Division and Executive Committee, and finally, one year as Past Chair. Members-at-Large of the Executive Committee serve for three years. More information on these positions can be found at the governance section of the APS DFD website: http://units.aps.org/units/dfd/.

The Nominating Committee will select two nominees for each position.

APS/DFD 2010 Awards, Prizes, New Fellows, and Gallery Winners



2010 Fluid Dynamics Prize

John Hinch of the Department of Applied Mathematics and Theoretical Phyiscs at Cambridge University was was the recipient of the 2010 Fluid Dynamics Prize that recognizes major contributions to fundamental fluid dynamics made during a career of outstanding work. The citation reads: "For insightful contributions, including exact results, averaging methods, scaling arguments, and approximate approaches to suspension mechanics, free-surface flows, flow in porous media, evolution of polymers in flows, and other research topics in the flow of complex fluids."



2010 Andreas Acrivos Dissertation Award

Matthew Paoletti, currently at the University of Texas in Austin, received the Andreas Acrivos Dissertation Award for his thesis entitled, "Quantum Mechanics meets Fluid Dynamics: Visualization of Vortex Reconnection in Superfluid Helium." The award recognizes an exceptional young scientist for original, outstanding doctoral thesis work in fluid dynamics done in the United States. Dr. Paoletti did his doctoral thesis work at the University of Maryland under the direction of Prof. Daniel Lathrop.



Haecheon Choi Seoul National University, Korea

"For his contributions to the fundamental physics and control of turbulent boundary layers and bluff-body flows through numerical simulations and laboratory experiments"



Timothy Colonius
California Institute of Technology

"For the development of accurate and robust numerical methods for fluid dynamics and creative numerical experiments that expose the fundamental mechanics and control of instabilities, flow generated sound, and cavitation bubbles"



2010 Francois Frenkiel Award

Edwin F. Greco and Roman O. Grigoriev of the Georgia institute of technology were the recipients of the François Frenkiel Award, which recognizes significant contributions to fluid mechanics that have been published in the *Physics of Fluids* during the preceding year by young investigators. Their citation reads: "For insightful studies of thermocapillary migration of interfacial droplets."



Genevieve Comte-Bellot Ecole Centrale de Leon France

"For seminal contributions to the understanding and measurement of turbulent and aeroacoustic phenomena"



New APS/DFD Fellows

Each year the number of new Fellows is limited to be no more than $\frac{1}{2}$ of 1% of the membership. The new 2010 Fellows are:



Leonhard Kleiser ETH Zurich, Switzerland

"For pioneering contributions to the development of accurate numerical methods for computational fluid dynamics, and for their application to elucidate phenomena of transition and turbulence in wall-bounded flows, compressible turbulence, and gravity-driven and particle-laden flows"



Triantaphyllos Akylas Massachusetts Institute of Technology

"For elegant and insightful theoretical investigations of nonlinear surface and internal gravity wave phenomena"



Li-Shi Luo Old Dominion University

'For his seminal contributions to the theoretical understanding and applications of the lattice Boltzmann equation and other kinetic methods"



Kenny Breuer Brown University

"For innovative studies of active flow control, the mechanics of flight, and micro- and nano-scale fluid mechanics, and for educational leadership via Multimedia Fluid Mechanics"



Ivan Marusic University of Melbourne Australia

"For fundamental and original experiments and modeling concepts leading to improved understanding of turbulent boundary layers and high Reynolds number turbulence"



Samuel Paolucci University of Notre Dame

"For major theoretical contributions to the theory of hydrodynamic stability of natural convection flows, development of novel adaptive computational methods based on wavelets and fundamental contributions to the theory of low-dimensional manifolds as applied to complex kinetics for chemically reacting flows"



Juan Santiago Stanford University

"Insightful and manifold contributions to microfluidics, including novel measurement methods, characterization and explanation of electrically driven flow instabilities, and studies and engineering applications of electrically driven flows for pumps, separations, and sample preparation"



Peter Simpkins
Syracuse University

"For incisive analytical and experimental studies of two-phase flows, natural convection, and various aspects of electro-optical materials processing"



Geoffrey Spedding
University of Southern California

"For contributions to our understanding of unsteady animal flight and stratified turbulence, obtained using innovative diagnostic techniques"



Kathleen Stebe University of Pennsylvania

"For lasting contributions to the physics of fluid-fluid interfaces, and in particular the discovery of surface re-mobilization and other surfactant phenomena, to the dynamics of drops and bubbles and to nano-particle self-assembly"



John Christos Vassilicos Imperial College, UK

"For his contributions to advance the understanding turbulence decay, mixing and particle motions, especially by recognizing and exploiting the use of fractals in theory and experiment"



Emmanuel Villermaux Université de Provence, France

"For insightful contributions, both qualitative and quantitative, to the fluid dynamical and statistical characterizations of mixing, and for understanding the dynamics and fragmentation of jets and sheets"



Keqing Xia The Chinese University of Hong Kong

"For his tremendous contributions to our present experimental knowledge and understanding of turbulent Rayleigh-Benard convection"



Khairul B. M. Zaman NASA Glenn Research Center

"For advancing the understanding of vortex generating tab technology for mixing enhancement and noise reduction in jets, and for discovering and explaining 'transonic tones' in overexpanded jets"



As has long been our tradition, the best poster and best videos were chosen from amongst the entries at the 2010 DFD meeting in Long Beach. This year for the first time, the top three from each category were awarded the *Milton Van Dyke prize for fluid flow visualization*.

For 2010, the poster awardees were:

Global modes in a swirling jet undergoing vortex breakdown. Kilian Oberleithner, Moritz Sieber, Christian Navid Nayeri and Christian Oliver Paschereit, Technical University Berlin; Christoph Petz and Hans Christian Hege, Zuse Institut Berlin; Bernd Noack, Institut Prime, CNRS; Israel Wygnanski, University of Arizona

Singular jets in viscous bubbles. Thomas Seon and Arnaud Antkowiak, CNRS & UPMC Univ. Paris, Institut d'Alembert

And the inaugural Milton Van Dyke Award winners (for poster entries) are:

Visualization of flow patterns behind various static objects in two-dimensional flow using soap film. Mohamed Fayed, Rocco Portaro and Amy-Lee Gunter, Concordia University; Hamid Ait Abderrahmane, McGill University; Hoi Dick Ng, Concordia University.

Non-coalescence of Jets: Jets rebounding off other jets. Navish Wadhwa and Sunghwan Jung, Virginia Polytechnic Institute and State University

Non-axisymmetric impact creates pineapple-shaped cavity in a liquid. O.R. Enriquez, I.R. Peters, L.E. Schmidt, S. Gekle, D. van der Meer and D. Lohse, University of Twente

The 2010 video awardees were:

Electro-worming: The Behaviors of C. elegans in DC and AC electric fields. Han-Sheng Chuang, David Raizen, Nooreen Dabbish, Annesia Lamb and Haim Bau, University of Pennsylvania http://arxiv.org/abs/1010.3188

Liquid pearls. Bremond, Santanach-Carreras and Bibette, ESPCI ParisTech/LCMD Paris France http://arxiv.org/abs/1010.3166

Primary Atomization of a Liquid Jet in Crossflow. Sandeep Rana and Marcus Herrmann, Arizona State University http://arxiv.org/abs/1010.2820

The Hungry Fly: Hydrodynamics of feeding in the common house fly. Manu Prakash, Harvard Society of Fellows; Miles Steele, Deerfield Academy http://arxiv.org/abs/1010.3084

And the Milton Van Dyke Award winners (for video entries) were:

Avalanche of particles in evaporating coffee drops. Alvaro G. Marin, Hanneke Gelderblom, Jacco Snoeijer and Detlef Lohse, University of Twente http://arxiv.org/abs/1010.3168

Oscillatory Flows Induced by Swimming Microorganisms in 2D. Jeffrey S. Guasto, Karl A. Johnson and Jerry P. Gollub, Haverford College. http://arxiv.org/abs/1010.1787

Instability of a jet in crossflow at a low velocity ratio.
Milos Ilak, Philipp Schlatter, Shervin Bagheri and Dan
Henningson, KTH Mechanics, Stockholm
http://arxiv.org/abs/1010.3766

Highlights of the 63rd Annual DFD Meeting in Long Beach CA

The 2010 DFD meeting was held in November at the Long Beach Convention Center in Long Beach CA. This meeting was the largest in DFD history, with oveer 2,000 submitted abstracts, including 31 invited presentations, 1943 Oral presentations, 43 Poster contributions and participation from 44 different countries.

In addition to the contributed abstracts, there were eleven invited lectures:

John Hinch, Cambridge University, England the winner of the 2010 Fluid Dynamics prize, gave the Otto Laporte lecture: Explaining the flow of elastic liquids

Matthew Paoletti, University of Maryland gave the Andreas Acrivos Dissertation Award Lecture: "Quantum Mechanics meets Fluid Dynamics: Visualization of Vortex Reconnection in Superfluid Helium."

Edwin F. Greco and **Roman O. Grigoriev**, Georgia Institute of Technology gave the Francois Frenkiel Award Lecture: "Thermocapillary migration of interfacial droplets."

Andrea Bertozzi, Mathematics Department, UCLA — Particle Laden Viscous Fluids and the Gulf of Mexico Oil Spill

Jerry Tessendorf, Rhythm and Hues Studios — Fluid Simulation in the Movies: Navier and Stokes Must be Circulating in Their Graves

Ross Griffiths, The Australian National University —Ocean Circulation and Surface Buoyancy Fluxes: Dynamics and Energetics

Minami Yoda, Georgia Institute of Technology — Dynamics of Suspended Colloidal Particles Near a Wall: Electrokinetic Effects and Implications for Particle-Based Velocimetry

Daniele Carati, Universite Libre de Bruxelles, Belgium— Dynamics of Electrically Conducting Fluids

Christophe Clanet, LadHyX, Ecole Polytechnique, France — Splashes

James Riley, University of Washington — Turbulence in Strongly Stratified Flows

Paul Steen, Cornell University — Wetting, Spreading and Capillary Adhesion: Putting Shape-Instability to Purpose

(cont'd from previous page)

There were four Minisymposia:

Biological Perspectives on Locomotion Computational Strategies for the Simulation of Nonlinear Waves and Turbulence in Environmental Flows Optical Effects of Turbulence Microhydrodynamics of Lipid Bi-layer Membranes

Lastly, there were workshops on fluids education, a panel discussion on research funding, and a lunch in which students could meet in small groups with professors representing every corner of the Fluid Dynamics spectrum and talk about research and careers.

New DFD Awards



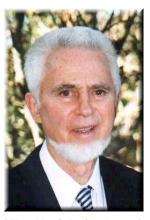
Stanley Corrsin (1920-1986)

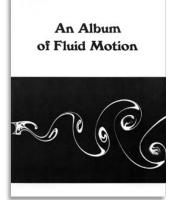
The Division of Fluid Dynamics is very pleased to announce the creation of two new awards. The first of these is Stanley Corrsin Award in Fluid Dynamics. This award will be given in recognition of a particularly influential contribution to fundamental fluid mechanics. It is intended to honor a recent achievement of especially high impact and significance, a particular discovery, or an innovation in the field.

The award shall be made ordinarily to one individual, but may be shared by additional individuals if all recipients have contributed significantly to the same accomplishment.

There are no restrictions on the candidate's citizenship or country of residence.

The award consists of \$5,000 and a certificate citing the contribution made by the recipient(s). The award will be presented annually at the Division of Fluid Dynamics annual meeting and will be accompanied by a Distinguished Lecture from the Award winner. The award is named after Stanley Corrsin, a pioneer in fluid dynamics, in particular turbulent flows and biological fluid dynamics.





Milton Van Dyke (1922–2010)

The second new award is the Milton Van Dyke Award. Since 1983, we have the held the Gallery of Fluid Motion at the annual meeting of the APS Division of Fluid Dynamics. The Gallery has been a showcase for the most creative and dynamic examples of the visual beauty of Fluid Dynamics. It has been our tradition to select the ten best entries (five posters, five videos) and to honor those entries with a certificate and to publish them in an article in the *Physics of Fluids*. Starting in 2010, the top three in each category were chosen and were awarded the Milton Van Dyke Annual Award for the Best entry in the Gallery of Fluid Motion. Each award carries a cash prize of \$250, a certificate, and a copy of the book "An Album of Fluid Motion". This classic volume was published in 1982 by Milton Van Dyke who was instrumental in inspiring the appreciation of the visual elegance of Fluid Mechanics, and after whom the award is named.

APS/DFD 2010-2011 Leadership & Contact Information

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

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