

A Division of the American Physical Society



**Boston, MA**  
**November 22-24, 2015**

The 68th Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD) will be held in Boston, Massachusetts, November 22-24, 2015. The meeting is being hosted by the Massachusetts Institute of Technology (MIT), along with Boston College, Boston University, Brown University, Harvard University/School of Engineering and Applied Sciences, Northeastern University, Tufts University, the University of Massachusetts Amherst, and Woods Hole Oceanographic Institution. The meeting will be held at the Hynes Convention Center, centrally located in the heart of Boston.

**Meeting Venue**

John B. Hynes Veterans Memorial Convention Center is located in Boston's historic Back Bay neighborhood.

Between sessions, the impressive Boylston Street hallway offers attendees one-of-a-kind views of the Back Bay, the Charles River, and

Cambridge. With so many amenities nearby, attendees won't need to travel far to experience both the benefits of the event and the attractions of Boston.

A short ride from Logan International Airport, and accessible to major roadways and public transportation, the Hynes is perfectly situated for both local and out-of-town guests.

**Boston**

Boston is a wonderful blend of stylish sophistication and historic New England charm. You can easily uncover the city's past while enjoying its distinctly modern edge.

A walk through the Public Garden is simply delightful. Boston shops and galleries are inviting any time of year whether you're a serious and seasoned shopper, a bona-fide bargain hunter or a whimsical window shopper. You can browse glass-enclosed arcades, meander open-air marketplaces and stroll among independent brownstone boutiques.

**IN THIS ISSUE**

- 1** 68th Annual DFD Meeting: Boston, MA
- 3** Annual Meeting Scientific Program
- 5** APS/DFD Newly Elected Officers

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.



**Trinity Church**

There's history to be enjoyed as well as the freshest local seafood. The Freedom Trail takes you by 16 historically significant sites. Enjoy a Boston tradition with ice skating around the Frog Pond.

Explore the hidden gardens of Beacon Hill, the inner courtyard of the Isabella Stewart Gardner Museum and the enclosed garden at Trinity Church. Sample award-winning cuisine at four-star restaurants or neighborhood bistros.

The country's first public library with more than 6 million volumes is equally a museum masterpiece filled with murals, frescoes, paintings and sculptures. Take a culinary tour of Boston's Little Italy or Jewish Brookline or enter the vividly colored Mapparium, a stunning 30 foot stained-glass globe.

For more information on Boston go to:  
[www.bostonusa.com/visit/bostoneveryday/whattodo](http://www.bostonusa.com/visit/bostoneveryday/whattodo)  
[www.massvacation.com/search/?stern=Boston](http://www.massvacation.com/search/?stern=Boston)

### Housing

Housing information is available through the meeting web site: <http://apsdfd2015.mit.edu/hotel-information>

APS/DFD has negotiated discounted hotel rates for meeting attendees next to the convention center. You should make your hotel reservation after completing your on-line registration for the meeting or by going to the hotel section of the website. Hotel reservations are taken on a first-come space-available basis. Submit your request as soon as possible for the best opportunity of receiving your hotel choice.

### 2015 DFD Contracted Hotels

At this time, many of our contracted hotels with reduced rates are full. Please check the meeting website for updates and direct links to the hotels. Rooms are still available at the Sheraton, which is the closest hotel to

the Hynes Convention Center.

### Sheraton Boston Hotel (AAA rating: 3 Diamond)

0.1 mi/ 0.16 km from Convention Center

#### Rates:

\$199 + tax per night one or two people in the room; add \$10 for each additional person over two.

### Registration

Registration is now open!

<http://apsdfd2015.mit.edu/registration>

Registration Type	Received between 9/26 - 10/22	Received between 10/23 - 11/24
<b>Member</b>	\$530	\$710
<b>Reciprocal Society Member</b>	\$530	\$710
<b>Non-Member</b>	\$775	\$855
<b>Retired Member</b> (with APS Senior Membership)	\$270	\$355
<b>Graduate Student Member**</b>	\$270	\$355
<b>Undergraduate***</b>	\$95	\$130
<b>Additional Reception Ticket</b>	\$120	\$120

\*\*Graduate Students who are not APS Members must pay the nonmember rate unless joining at the time of registration. 1st year is free for first time members in the U.S., Canada, or Mexico. Includes (2) free Divisions or Topical Groups for all students.

\*\*\*Undergraduate registrations do not include a ticket to the Sunday night reception. Additional reception tickets may be purchased for \$120.

### Key Dates

#### Registration Deadlines

#### Regular Registration Rate

Sept 26 – Oct 22, 2015

#### On-Site Registration Rate

Oct 23 – Nov 24, 2015

Please note, you will still be able to register on-line until Friday, Nov 20, however after Oct. 22th it will be at the on-site rate

#### Cancellation Deadline

(no registration refunds past this date)

Nov 7, 2015

### Hotel Reduced Rate Ends

Limited space still available

Check meeting website:

<http://apsdfd2015.mit.edu/hotel-information>

### Gallery of Fluid Motion (GFM)

**GFM Poster and Video Submission: PAST**

**Video Submission Deadline: PAST**

**GFM Poster - Bring to meeting**

### Scientific Program

The scientific program will include four award lectures, eight invited lectures, minisymposia and focus sessions. This year, we received a record number of abstracts. For 2015, our technical program includes a record of more than 3100 submitted abstracts in up to 40 parallel sessions. We look forward to 139 technical posters and 30 student posters will be judged. Best poster prizes will be awarded during the meeting.

### Awards Program

Each year the APS Division of Fluid Dynamics presents the Fluid Dynamics Prize, the Francois N. Frenkiel Award, the Andreas Acrivos Dissertation Award and the Stanley Corrsin Award. The 2015 award winners are listed below and each awardee will give a lecture at the meeting.

#### 2015 Fluid Dynamics Prize Recipient

Morteza Gharib, California Institute of Technology  
*In Light of Fluid Mechanics*

#### 2015 Stanley Corrsin Award Recipient

Michael Graham, University of Wisconsin-Madison  
*Collide and Conquer: Flow-Induced Segregation in Blood and Other Multicomponent Suspensions*

#### 2015 François N. Frenkiel Award Recipients:

Diego Lopez, LMFA, INSA de Lyon  
Eric Lauga, University of Cambridge  
for their paper *Dynamics of Swimming Bacteria at Complex Interfaces. Physics of Fluids Volume 26, 071902 (2014)*

#### 2015 Andreas Acrivos Dissertation Award Recipient

Sujit Datta, California Institute of Technology  
*Getting Out of a Tight Spot: Physics of Flow Through Porous Materials*

### Invited Lectures

Eight invited lectures on topics of broad interest to the DFD community will be given by experts in each field.

Keith Moffatt, DAMTP, University of Cambridge  
*Soap Film Dynamics and Topological Jumps Under Continuous Deformation*

George Lauder, Harvard University  
*Fish Locomotion: Insights from Both Simple and Complex Mechanical Models*

Petia Vlahovska, Brown University  
*Microhydrodynamics of Deformable Particles: Surprising Responses of Drops and Vesicles to Uniform Electric Field or Shear Flow*

Richard Kerswell, Bristol University  
*Using Optimisation to Identify the "Best" Way to Trigger Flow Transition*

Jacco Snoeijer, University of Twente and Eindhoven University of Technology  
*Flow Near Singular Elastic Interfaces: Lubrication, Wetting and Cusps*

Sivaramakrishnan Balachander, University of Florida  
*Instability and Turbulence of Propagating Particulate Flows*

Michael Le Bars, IRPHE, CNRS and Aix-Marseille University, France  
*Flows Driven by Libration, Precession and Tides in Planetary Cores*

Thomas Bewley, UCSD Flow Control & Coordinated Robotics Labs  
*New Methods for State Estimation and Adaptive Observation of Environmental Flow Systems Leveraging Coordinated Swarms of Sensor Vehicles*

### Minisymposia

The 2015 annual meeting will feature the following minisymposia. Some presentations are 13 minutes and others are 26 minutes long.

**Minisymposium: Hydraulic Fracturing**  
**Minisymposium: Cavitation in Soft Tissue**  
**Russell Donnelly Minisymposium**  
**Minisymposium on Turbulence in Honor of John L. Lumley**

### Focus Sessions

This year's program includes four Focus Sessions on two topics. Unlike Minisymposia, they consist of presentations of normal length, only some of which are solicited by the organizers.

**Electro-Hydro-Dynamics of Drops, Vesicles and Membranes I**  
**Electro-Hydro-Dynamics of Drops, Vesicles and Membranes II**  
**Reconfiguration I**  
**Reconfiguration II**

### Posters

The number of poster research contributions to the Annual DFD Meeting has been growing over the past few years



with over 169 posters submitted this year of which 30 are entered into a Student Poster Competition.

The Poster Session will be held on Monday, November 23rd during the afternoon refreshment break. Student posters will be judged and awarded 1st and 2nd Prize for “Best Poster” in several categories. Winners in each category will receive award certificates during the meeting reception and will be highlighted in the DFD Newsletter. While the Technical Poster Session of the DFD Meeting is open to all participants, the Poster Competition will constitute a specific opportunity for graduate and undergraduate students to enhance their presentation skills and to build their professional network.

### Gallery of Fluid Motion

The 33rd 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, and will be displayed at the Annual APS meeting in March, 2016. Please note that the posters and videos will be accessible on-line at [gfm.aps.org](http://gfm.aps.org).

### 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. We suggest all presenters visit the Speaker Ready Room in advance of their presentation.

### Exhibitor and Sponsorship Opportunities

Exhibits will be centrally located in Hall C of the Convention Center.

For more information on exhibits or sponsorship, please email Margaret McDonald at:

[margaret2@meetingsandmore.net](mailto:margaret2@meetingsandmore.net)

### Conference Reception

This year the DFD Conference Reception will be at the Museum of Fine Arts, Boston. This will be a very special evening due to the spectacular venue. Come visit with your colleagues and explore one of the most comprehensive museums in the world with art from ancient Egyptian to contemporary.

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 \$120 each.

Please note that we encourage you not to bring backpacks to the museum.

### Meeting Chairs

#### Triantaphyllos R. Akylas

Meeting Chair  
Department of Mechanical Engineering  
Massachusetts Institute of Technology  
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#### Thomas Peacock

Meeting Co-Chair  
Department of Mechanical Engineering  
Massachusetts Institute of Technology  
(617) 258-0736  
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### Abstract Submissions

#### Donald Mewha

Scientific Program Coordinator  
APS  
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### Meeting Logistics

#### Peggy Holland

Meetings and More  
Phone: (301) 641-4150  
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#### Monica Malouf

Meetings and More  
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[monica@meetingsandmore.net](mailto:monica@meetingsandmore.net)

### Registration

#### Katie McLaughlin

Orchid Solutions  
Phone: (801) 505-4102  
[katie@orchideventsolutions.com](mailto:katie@orchideventsolutions.com)

### Exhibiting and Sponsorship Information

#### Margaret McDonald

Meetings and More  
Phone: (240) 355-5608  
[margaret2@meetingsandmore.net](mailto:margaret2@meetingsandmore.net)  
**2015 Meeting Website**  
<http://apsdfd2015.mit.edu>

### Future APS/DFD Meetings

#### 2016: Portland, OR

Professor Raul Cal, Meeting Chair  
Portland State University

**2017: Denver, CO**

Professor Jean Hertzberg, Meeting Chair  
University of Colorado, Boulder

**2018: Atlanta, GA**

Professor P.K. Yeung, Meeting Chair  
Georgia Institute of Technology

Professor Donald Webster, Co-Chair  
Georgia Institute of Technology

## Newly Elected Executive Committee Members

The following are the newly elected members of the DFD Executive Committee. Their terms will begin immediately after the close of the 2015 APS DFD meeting.



**Vice-Chair**  
Robert Moser,  
University of Texas



**Secretary/Treasurer**  
Jonathan Freund,  
University of Illinois



**Member at Large**  
Anette Hosoi,  
MIT



**Member at Large**  
Detlef Lohse,  
University of Twente

# APS/DFD 2014-2015 Leadership & Contact Information

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

## EXECUTIVE COMMITTEE

**Chair:**  
**James Duncan**  
(11/14 - 10/15)  
*Univ of Maryland-College Park*

**Chair-Elect:**  
**Ellen Longmire**  
(11/14 - 10/15)  
*Univ of Minn - Minneapolis*

**Vice Chair:**  
**Lance Collins**  
(11/14 - 10/15)  
*Cornell Univ*

**Past Chair:**  
**Nadine Aubry**  
(11/14 - 10/15)  
*Northeastern Univ*

**Councillor:**  
**Ann Karagozian**  
(01/15 - 12/18)  
*Univ of California - Los Angeles*

**Secretary/Treasurer:**  
**Karen Flack**  
(11/12 - 10/15)  
*US Naval Academy*

**Member-at-Large:**  
**Jonathan Freund**  
(11/12 - 10/15)  
*Univ of Illinois - Urbana*

**Member-at-Large:**  
**Beverley McKeon**  
(11/12 - 10/15)  
*Caltech*

**Member-at-Large:**  
**Paul Linden**  
(11/13 - 10/16)  
*Univ of Cambridge*

**Member-at-Large:**  
**Robert Moser**  
(11/13 - 10/16)  
*Univ of Texas - Austin*

**Member-at-Large:**  
**Shelley Anna**  
(01/15 - 12/17)  
*Carnegie Mellon Univ*

**Member-at-Large:**  
**John Dabiri**  
(01/15 - 12/17)  
*Stanford*

## COMMITTEES

**NOMINATING COMMITTEE**  
8 MEMBERS, STAGGERED  
2-YEAR TERMS

**Said Elghobashi**  
(12/15)  
Chair

**Michael Schultz**  
(12/15)  
Vice Chair

**John Foss**  
(12/15)

**Gareth McKinley**  
(12/15)

**Samuel Paolucci**  
(12/15)

**Peter Schmid**  
(12/16)

**Yukio Kaneda**  
(12/16)

**Alison Marsden**  
(12/16)

**PROGRAM COMMITTEE**  
8 MEMBERS, STAGGERED  
3-YEAR TERMS

**Ellen Longmire**  
Chair

**Lance Collins**  
Vice Chair

**Jonathan Posner**  
(12/15)

**Lian-Ping Wang**  
(12/15)

**Ranganathan Narayanan**  
(12/15)

**Patrice Le Gal**  
(12/17)

**Petia Vlahovska**  
(12/17)

**Roseanna Zia**  
(12/17)

**FELLOWSHIP COMMITTEE**  
8 FELLOWS, STAGGERED  
2-YEAR TERMS

**Lance Collins**  
Chair

**Ellen Longmire**  
Vice Chair

**Hyung Jin Sung**  
(12/15)

**P. K. Yeung**  
(12/15)

**Arne Pearlstein**  
(12/16)

**Jim Wallace**  
(12/16)

**Z. Jane Wang**  
(12/16)

**Serafim Kalliadas**  
(12/16)

**EXTERNAL AFFAIRS COMMITTEE**  
8 MEMBERS, STAGGERED  
3-YEAR TERMS

**Beverley McKeon**  
(2016)  
Chair

**Ken Christensen**  
(2016)  
Vice Chair

**Oleg V. Vasilyev**  
(12/15)

**Anne Staples**  
(12/15)

**Jun Sakakibara**  
(12/15)

**Anya Jones**  
(12/17)

**Mihailo Jovanovic**  
(12/17)

**Jens Fransson**  
(12/17)

**FLUID DYNAMICS PRIZE SELECTION COMMITTEE**  
8 MEMBERS, STAGGERED  
2-YEAR TERMS

**Mike Plesniak**  
(12/15)  
Chair

**Kenny Breuer**  
(12/16)  
Vice Chair

**Jimmy Feng**  
(12/15)

**Ron Adrian**  
(12/16)

**Jose Wesfreid**  
(12/15)

**Harindra "Joe" Fernando**  
(12/16)

**Genevieve Comte-Bellot**  
2014 Award Winner

**Shelley Anna**  
(12/16)

**CORRSIN AWARD SELECTION COMMITTEE**  
8 MEMBERS, STAGGERED  
2-YEAR TERMS

**Paul Neitzel**  
(12/15)  
Chair

**Ugo Piomelli**  
(12/16)  
Vice Chair

**Demetrios Papageorgiou**  
(12/15)

**Yuriko Renardy**  
(12/15)

**Steven Wereley**  
(12/15)

**Eberhard Bodenschatz**  
2014 Award Winner

**Kate Stebe**  
(12/16)

**Gary Leal**  
(12/16)

**ACRIVOS AWARD SELECTION COMMITTEE**  
7 MEMBERS, STAGGERED  
2-YEAR TERMS

**"Bala" Balachandar**  
(12/15)  
Chair

**John Dabiri**  
(12/16)  
Vice Chair

**Arezoo Ardekani**  
(12/15)

**Daniel Haworth**  
(12/15)

**Pavlos Vlachos**  
(12/15)

**Eva Kanso**  
(12/16)

**Ching-Long Lin**  
(12/16)

**FRENKIEL AWARD SELECTION COMMITTEE**  
7 MEMBERS, STAGGERED  
2-YEAR TERMS

**Sutanu Sarkar**  
(12/15)  
Chair

**Emmanuel Villermaux**  
(12/16)  
Vice Chair

**Peyman Givi**  
(12/15)

**Arne Johansson**  
(12/15)

**Rama Govindarajan**  
(12/16)

**Jonathan Freund**  
(12/16)

**Subhas Venayagamoorthy**  
2014 Award Winner

**COMMITTEE ON MEDIA & SCIENCE RELATIONS**  
6 MEMBERS, STAGGERED  
2-YEAR TERMS

**Bud Homys**  
(12/15)  
Chair

**Phil Marcus**  
(12/16)  
Vice Chair

**Tadd Truscott**  
(12/16)

**Nicole Sharp**  
(12/16)

**Andrew Belmonte**  
(12/16)

**Sandip Ghosal**  
(12/16)

**COMMITTEE ON EDUCATIONAL & CAREER OUTREACH**  
6 MEMBERS, STAGGERED  
2-YEAR TERMS

**Hao Lin**  
(12/15)

**Carlos Hidrovo**  
(12/16)

**Frank G. Jacobitz**  
(12/15)

**Carolyn Ren**  
(12/15)

**Reza Sheikhi**  
(12/15)

**Shuhuai Yao**  
(12/16)

**DIVISION WEBSITE DEVELOPMENT OFFICER**

**Jeff Eldredge**

**GALLERY OF FLUID MOTION COORDINATOR**

**Ken Kiger**