

ANTONINO FERRANTE

Curriculum Vitae

William E. Boeing Dept. of Aeronautics & Astronautics Phone: 206-616-0109
316F Guggenheim Hall Fax: 206-543-0217
Box: 352400 Email: ferrante@aa.washington.edu
Seattle, WA 98195

EDUCATIONAL HISTORY

University of California, Irvine, CA

Ph.D. in Mechanical and Aerospace Engineering

February 2004

Dissertation: *Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate*

von Kármán Institute for Fluid Dynamics, Rhode-St-Genèse, Belgium

M.S. in Aeronautics and Aerospace (with honors)

June 1997

Thesis: *Solution of the unsteady Euler equations using residual distribution and flux corrected transport*

Università di Napoli 'Federico II', Napoli, Italy

Laurea in Ingegneria Aeronautica (summa cum laude)

July 1996

Thesis: *On the theoretical prediction of airfoils buffeting phenomenon*

EMPLOYMENT HISTORY

University of Washington Seattle, WA Associate Professor, Aeronautics & Astronautics	2015-Present
University of Washington Seattle, WA Assistant Professor, Aeronautics & Astronautics	2009-2015
California Institute of Technology Pasadena, CA Postdoctoral Scholar, Graduate Aeronautical Laboratories (GALCIT)	3/2007-6/2009
University of California, Irvine Irvine, CA Postdoctoral Scholar, Mechanical & Aerospace Engineering	3/2004-2/2007
University of California, Irvine Irvine, CA Graduate Research Assistant, Mechanical & Aerospace Engineering	9/1998-2/2004

Università di Napoli ‘Federico II’

Napoli, Italy
Research Assistant, Aeronautics

8/1997-8/1998

von Kármán Institute for Fluid Dynamics

Rhode-St-Genese, Belgium
Graduate Research Assistant, Aeronautics & Aerospace

9/1996-6/1997

AWARDS AND HONORS

AIAA Associate Fellow, 2022, American Institute of Aeronautics & Astronautics (AIAA)

Faculty Appreciation for Career Education & Training (FACET) Award, 2020, CoE, UW

ICTAM Travel Fellowship Grant Award, 2012, U.S. National Academies of Science (NAS)

Royalty Research Fund Award, 2012, University of Washington (UW)

NSF CAREER Award, 2011, National Science Foundation (Office of CyberInfrastructure, Fluid Dynamics, Particulate and Multiphase Processes)

Capability Application Project on IBM Power4+, 2004, High-Performance Computing Modernization Program, Department of Defense (HPCMP/DoD)

Gallery of Fluid Motion, Video Entry Award, 2003, American Physical Society, Division of Fluid Dynamics (APS-DFD)

Dissertation Fellowship Award, 2003, Henry Samueli School of Engineering, University of California, Irvine

Study Abroad Fellowship Award, 1998, Università di Napoli ‘Federico II’, Italy

Belgian Government Prize & Diploma with Honors, 1997, von Kármán Institute for Fluid Dynamics, Belgium

AFFILIATIONS AND OTHER APPOINTMENTS

University of Washington, Seattle

Adjunct Associate Professor, Applied Mathematics

6/2020 – Present

University of Washington, Seattle

Affiliate, eScience Institute

6/2020 – Present

Stanford University

Palo Alto, CA
Visiting Professor, Center for Turbulence Research

Winter 2019

University of Washington

Seattle, WA
Affiliate Assistant Professor, Aeronautics & Astronautics
Temporary appointment pending arrival at the UW

8/2008– 6/2009

PUBLICATIONS ^{1, 2}

Refereed archival journal publications

Published

- J23. Aithal A.* , Tipirneni M.* & Ferrante A.
"Temporal accuracy of FastRK3"
Journal of Computational Physics, Vol. 475, 111853, pp. 1-18 (2023)
- J22. Ferrante A.
"From DNS to MANN-LES of droplet-laden isotropic turbulence"
Science Talks, 5, 100110, pp. 1-12 (2023)
*International Journal of Multiphase Flow Spotlight V-Seminar Series*³
- J21. Huang S.* , Aithal A.* & Ferrante A.
"Law of incipient separation over airfoils as inferred by Reynolds Averaged Navier Stokes"
Special topic on *Centennial of the Kármán-Pohlhausen momentum-integral approach*
Physics of Fluids, Vol. 34, 085117, pp. 1-20 (2022)
- J20. Freund A.* & Ferrante A.
"Large-eddy simulation of droplet-laden decaying isotropic turbulence using artificial neural networks"
International Journal of Multiphase Flows, Vol. 142, pp. 1-25 (2021)
- J19. Dodd M.* , Khorassani D.M.† , Ferrante A. & Ihme M.†
"Analysis of droplet evaporation in isotropic turbulence through droplet-resolved DNS"
International Journal of Heat & Mass Transfer, Vol. 172, pp. 1-10 (2021)
- J18. Lu D.* , Aithal A.* & Ferrante A.
"Law of incipient separation over curved ramps as inferred by Reynolds-Averaged Navier-Stokes"
AIAA Journal, Vol. 59, No. 1, pp. 196-214 (2021)
- J17. Aithal A.* & Ferrante A.
"A fast pressure-correction method for incompressible flows over curved walls"
Journal of Computational Physics, Vol. 421, pp. 1-28 (2020)
- J16. Freund A.* & Ferrante A.
"Wavelet-spectral analysis of droplet-laden isotropic turbulence"
Journal of Fluid Mechanics, Vol. 875, pp.914-928 (2019)

¹ [Google Scholar Citations of A. Ferrante](#)

² ^ denotes undergraduate students; * denotes graduate students (present and past); ** denotes postdoctoral scholars; † denotes professional collaborators

³ <https://www.sciencedirect.com/journal/science-talks/special-issue/10QNG7TSPB0>

- J15. Dodd M.* & Ferrante A.
"On the interaction of Taylor lengthscale size droplets and isotropic turbulence"
Journal of Fluid Mechanics, Vol. 806, pp. 356-412 (2016)
Featured article in *Focus on Fluids* of J. Fluid Mechanics, Vol. 816 (2017)⁴
"Droplets in turbulence: a new perspective" by Prof. M. Maxey
- J14. Dodd M.* & Ferrante A.
"A fast pressure-correction method for incompressible two-fluid flows"
Journal of Computational Physics, Vol. 273, pp. 416-434 (2014)
- J13. Baraldi A.*, Dodd M.* & Ferrante A.
"A mass-conserving volume-of-fluid method: volume tracking and droplet surface-tension in isotropic turbulence"
Computers and Fluids, Vol. 96, pp. 322-337 (2014)
Invited paper for the Special Issue of Computers & Fluids from the
7th International Conference of Computational Fluid Dynamics (2012)
- J12. Lucci F.*, L'Vov V.†, Ferrante A., Rosso M.* & Elghobashi S.†
"Eulerian-Lagrangian bridge for the energy and dissipation spectra in isotropic turbulence"
Theoretical and Computational Fluid Dynamics, Vol.28, pp.197-213 (2014)
- J11. Lucci F.*, Ferrante A. & Elghobashi S.†
"Is Stokes number an appropriate indicator for turbulence modulation by particles of Taylor-length-scale size?"
Physics of Fluids, Vol. 23, 025101, pp. 1-7 (2011)
- J10. Ferrante A., Matheou G.** & Dimotakis P.E.†
"LES of an inclined sonic jet into a supersonic turbulent crossflow at Mach 3.6"
Journal of Turbulence, Vol. 12, n. 2, pp. 1-32 (2011)
- J09. Lucci F.*, Ferrante A. & Elghobashi S.†
"Modulation of isotropic turbulence by particles of Taylor-lengthscale size"
Journal of Fluid Mechanics, Vol. 650, pp. 5-55 (2010)
Featured article in *Focus on Fluids* of J. Fluid Mechanics, Vol. 650 (2010)³
"Virtual motion of real particles" by Prof. G. Tryggvason
- J08. L'vov V.S.†, Pomyalov A.†, Ferrante A. & Elghobashi S.†
"Analytical model for temporally-developing turbulent boundary layers"
J. of Experimental and Theoretical Physics Letters, Vol. 86, pp.102-107 (2007)
- J07. Ferrante A. & Elghobashi S.†
"On the accuracy of the two-fluid formulation in DNS of bubble-laden turbulent boundary layers"
Physics of Fluids, Vol.19, 045105, pp.1-8 (2007)

⁴ [Focus on Fluids](#): Every month one particularly interesting article published in Journal of Fluid Mechanics is selected to be the subject of an extended review and discussion by an acknowledged and invited expert in the field. This Focus on Fluids article will explain the context, importance and implications of the paper...

- J06. Ferrante A. & Elghobashi S.†
"On the effects of microbubbles on the Taylor-Green vortex flow"
Journal of Fluid Mechanics, Vol.572, pp.145-177 (2007)
- J05. Ferrante A. & Elghobashi S.†
"Reynolds number effect on drag reduction in a microbubble-laden spatially developing turbulent boundary layer"
Journal of Fluid Mechanics, Vol.543, pp.93-106 (2005)
- J04. Ferrante A., Elghobashi S.†, Adams P.†, Valenciano M.†, Longmire D.†
"Evolution of Quasi-Streamwise Vortex Tubes and Wall-Streaks in a Bubble-Laden Turbulent Boundary Layer over a Flat Plate"
Physics of Fluids, Vol. 16, n. 9, S2 (2004)
- J03. Ferrante A. & Elghobashi S.†
"On the physical mechanisms of drag reduction in a spatially developing turbulent boundary layer laden with microbubbles"
Journal of Fluid Mechanics, Vol. 503, pp. 345-355 (2004)
- J02. Ferrante A. & Elghobashi S.†
"A robust method for generating inflow conditions for direct simulations of spatially developing turbulent boundary layers"
Journal of Computational Physics, Vol. 198, pp. 372-387 (2004)
- J01. Ferrante A. & Elghobashi S.†
"On the physical mechanisms of two-way coupling in particle-laden isotropic turbulence"
Physics of Fluids, Vol. 15, n. 2, pp. 315-329 (2003)

Parts of books (chapters in edited books)

- B01. Ferrante A. & Elghobashi S.†
Book Chapter:
*"Physics of two-way coupling in particle-laden turbulent flows"*⁵
Part of the Book titled:
"Modelling approaches and computational methods for particle-laden turbulent flows"
Edited by S. Subramaniam and S. Balachandar
This book is part of a Book Series entitled
"Computation and Analysis of Turbulent Flows" curated by Paul Durbin
Publisher Elsevier (2022)

⁵ [Book link](#)

Conference proceedings⁶ and other non-journal articles

a) Fully refereed publications

- CP15. Dodd M.* & Ferrante A. (2016)
"Effects of viscosity ratio on droplet-laden isotropic turbulence"
24th International Congress of Theoretical and Applied Mechanics (ICTAM)
Montreal, Canada, August 21-26, 2016
- CP14. Adams D.†, Dodd M.* & Ferrante A. (2016)
"Petascale DNS using the fast Poisson solver PSH3D"
24th International Congress of Theoretical and Applied Mechanics (ICTAM)
Montreal, Canada August 21-26, 2016
- CP13. Adams D.†, Dodd M.* & Ferrante A.
"PSH3D: PetaScale Solver of the Helmholtz Equation in 3D"
27th International Conference on Parallel Computational Fluid Dynamics (PCFD)
Montreal, Canada, May 17-20, 2015
- CP12. Dodd M.* & Ferrante A.
"A fast pressure-correction method for incompressible two-fluid flows"
2nd International Conference on Numerical Methods in Multiphase Flows (ICNMMF)
Darmstadt, Germany, June 30 – July 2, 2014
- CP11. Dodd M.* & Ferrante A.
"Modulation of isotropic turbulence by deformable droplets of Taylor length-scale size"
17th U.S. National Congress on Theoretical & Applied Mechanics
Michigan State University, East Lansing, Michigan, June 15-20, 2014
- CP10. Dodd M.* & Ferrante A.
"Effects of gravity on particle dispersion in a spatially developing turbulent boundary layer"
17th U.S. National Congress on Theoretical & Applied Mechanics
Michigan State University, East Lansing, Michigan, June 15-20, 2014
- CP09. Dodd M.* & Ferrante A.
"Direct numerical simulation of particle dispersion in a spatially developing turbulent boundary layer"
8th International Conference on Multiphase Flow (ICMF 2013)
Jeju, Korea, May 26-31, 2013
- CP08. Dodd M.* & Ferrante A.
"A coupled pressure-correction/volume of fluid method for DNS of droplet-laden isotropic turbulence"
8th International Conference on Multiphase Flow (ICMF 2013)
Jeju, Korea, May 26-31, 2013

⁶ The conference presenter is underlined.

- CP07. Baraldi A.* & Ferrante A.
"DNS of fully-resolved droplet-laden isotropic turbulence: a mass-conserving volume of fluid method"
23rd International Congress of Theoretical and Applied Mechanics (ICTAM 2012)
Beijing, China, August 19-24, 2012
- CP06. Baraldi A.* & Ferrante A.
"A mass-conserving volume of fluid method for fully-resolved DNS of droplet-laden isotropic turbulence"
1st International Conference on Numerical Methods in Multiphase Flows (2012)
Pennsylvania State University, June 12-14, 2012
- CP05. Lucci F.*, Ferrante A. & Elghobashi S.†
"Turbulence modulation by particles of the Taylor-lengthscale size: is Stokes number an appropriate indicator?"
7th International Conference on Multiphase Flow (ICMF 2010)
Tampa, Florida, May 30 - June 4, 2010
- CP04. Ferrante A. & Elghobashi S.†
"On the effects of finite-size particles on decaying isotropic turbulence"
6th International Conference on Multiphase Flow (ICMF 2007)
Leipzig, Germany, July 9-13, 2007
- CP03. Ferrante A. & Elghobashi S.†
"Drag reduction in a microbubble-laden turbulent boundary layer: DNS using the two-fluid approach"
26th Symposium on Naval Hydrodynamics
Rome, Italy, September 17-22, 2006
- CP02. Ferrante A. & Elghobashi S.†
"Reynolds number effects on drag reduction in a bubble-laden spatially developing turbulent boundary layer over a flat plate"
2nd International Symposium on Seawater Drag Reduction (ISSDR)
Busan, Korea, May 23-26, 2005
- CP01. Elghobashi S.† & Ferrante A.
"On the physical mechanisms of drag reduction in a microbubble-laden turbulent boundary layer"
5th International Conference on Multiphase Flows (ICMF 2004)
Yokohama, Japan, May 31-June 3, 2004

b) Conference papers refereed by abstract only

- CA15. Trefftz-Posada P.* & Ferrante A.
"Direct numerical simulation of droplet laden homogeneous shear turbulence"
11th International Conference on Multiphase Flow (ICMF)
Kobe, Japan April 2-7, 2023 (Submitted)
- CA14. Aithal A.* & Ferrante A.
"Direct numerical simulation of a turbulent boundary layer separating over a curved wall using FastRK3"
11th International Conference on Computational Fluid Dynamics (ICCFD)
Maui, Hawaii, July 11-15, 2022

- CA13. Trefftz-Posada P.* & Ferrante A.
"Direct numerical simulation of droplet laden homogeneous shear turbulence: numerical method and flow physics"
11th International Conference on Computational Fluid Dynamics (ICCFD)
Maui, Hawaii, July 11-15, 2022
- CA12. Williams O.†, Samuell M.*, Robbins M.* & Ferrante A.
"Characterization of separated flowfield over Gaussian speed-bump CFD validation geometry"
AIAA Scitech Forum 2021, AIAA Paper 2021-1671
Virtual Format, January 19-21, 2021
- CA11. Aithal A.* & Ferrante A.
"Direct numerical simulation of a turbulent boundary layer separating over a curved wall using FastRK3"
11th International Conference on Computational Fluid Dynamics (ICCFD)
Maui, Hawaii, July 13-17, 2020 (Submitted – canceled because of Covid)
- CA10. Lu D.*, Aithal A.* & Ferrante A.
"The law of incipient separation for turbulent flows as inferred by RANS"
11th International Conference on Computational Fluid Dynamics (ICCFD)
Maui, Hawaii, July 13-17, 2020 (Submitted- canceled because of Covid)
- CA09. Trefftz-Posada P. & Ferrante A.
"On the interaction of Taylor lengthscale droplets with homogeneous shear-turbulence"
11th International Conference on Computational Fluid Dynamics (ICCFD)
Maui, Hawaii, July 13-17, 2020 (Submitted)
- CA08. Williams O., Samuell M., Sarwas S., Robbins M. & Ferrante A.
"Experimental study of a CFD validation test case for turbulent separated flows"
AIAA Scitech 2020 Forum, AIAA Paper 2020-0092
Orlando, Florida, January 6-10, 2020
- CA07. Ferrante A. & Dodd M.*
"A mass-conserving volume-of-fluid method for incompressible gas-liquid flows with phase change"
10th International Conference on Multiphase Flow (ICMF)
Rio de Janeiro, Brazil, May 19 - 24, 2019
- CA06. Dodd M.* & Ferrante A.
"DNS of evaporating droplets in decaying isotropic turbulence"
9th International Conference on Multiphase Flow (ICMF)
Firenze, Italy, May 22 - 27, 2016
- CA05. Baraldi A.* & Ferrante A.
"A VoF method for DNS of droplet-laden incompressible turbulence"
7th International Conference on Computational Fluid Dynamics (ICCFD)
Big Island, Hawaii, July 9-13, 2012
Selected paper for a Special Issue of *Computers & Fluids* (refereed journal)

- CA04. Dodd M.*, Webster K.* & Ferrante A.
"DNS of particle dispersion in a spatially developing turbulent boundary layer"
7th International Conference on Computational Fluid Dynamics (ICCFD)
Big Island, Hawaii, July 9-13, 2012
- CA03. Ferrante A. & Baraldi A.*
"A mass-conserving volume of fluid method for DNS of two-phase incompressible isotropic turbulence"
20th AIAA Computational Fluid Dynamics Conference
Honolulu, Hawaii, June 27-30, 2011
- CA02. Ferrante A., Matheou G.** & Dimotakis P.E.†
"LES of an inclined jet into a supersonic turbulent crossflow: synthetic inflow conditions"
48th AIAA Aerospace Science Meeting, AIAA Paper 2010-1287
Orlando, Florida, January 4-7, 2010
- CA01. Ferrante A., Pantano C.†, Matheou G.** & Dimotakis P.E.†
"On the effects of the upstream conditions on the transition of an inclined jet into a supersonic cross-flow"
47th AIAA Aerospace Science Meeting, AIAA Paper 2009-1511
Orlando, Florida, January 5-8, 2009

Patents submitted and/or awarded

- Ferrante A., Lu D.* & Aithal A.*
"Predicting incipient separation in turbulent flows"
Record of Innovation (ROI- 48805) – CoMotion UW
US Provisional Application filed in May 2020
US Final Application filed in November 2022
- Maddalena L.**, Bonanos A. M.**, Dimotakis P. E.† & Ferrante A.
"A High-spatial-resolution probe, with a simplified calibration technique for simultaneous total and static pressure measurements in supersonic flow with moderate flow angularity and swirl" *US Provisional Application N. 29,373 (Filed in 2008)*

Abstracts, letters, non-refereed papers, technical reports

a) Abstract-only

- A71. Treffitz-Posada P.* & Ferrante A.
"DNS of droplet-laden homogeneous shear turbulence"
75th American Physical Society Meeting, Division of Fluid Dynamics
Indianapolis, IN, November 2022
- A70. Aithal A.* & Ferrante, A.
"Reynolds stress budgets in Cartesian and orthogonal curvilinear coordinates for a turbulent flow over a curved ramp via DNS"
75th American Physical Society Meeting, Division of Fluid Dynamics
Indianapolis, IN, November 2022

- A69. Huang S.*, Aithal A.* & Ferrante, A.
"Law of incipient separation for turbulent flows over airfoils as inferred by RANS"
75th American Physical Society Meeting, Division of Fluid Dynamics
Indianapolis, IN, November 2022
- A68. Trefftz-Posada P.* & Ferrante A.
"FastRK3P*: a fast and stable pressure-correction method for two-fluid incompressible homogeneous shear turbulence"
4th International Conference on Numerical Methods in Multiphase Flows (ICNMMF)
Venice, Italy, September 28-30, 2022
- A67. Ferrante A. (Invited Speaker)⁷
"Droplet-laden isotropic turbulence: from DNS to LES with a mixed artificial neural network approach (MANN-LES)"
625 – Advances in LES of Turbulent Multiphase Flows (EUROMECH Colloquium)
Udine, Italy, June 22-24, 2022
- A66. Aithal A.* & Ferrante, A.
"Reynolds stress budgets in orthogonal curvilinear coordinates for a turbulent flow over a curved ramp via DNS"
74th American Physical Society Meeting, Division of Fluid Dynamics
Phoenix, AZ, November 2021
- A65. Tipirneni M.*, Aithal A.* & Ferrante, A.
"Temporal accuracy of FastRK3"
74th American Physical Society Meeting, Division of Fluid Dynamics
Phoenix, AZ, November 2021
- A64. Huang S.*, Aithal A.* & Ferrante, A.
"Law of incipient separation for turbulent flows over airfoils as inferred by RANS"
74th American Physical Society Meeting, Division of Fluid Dynamics
Phoenix, AZ, November 2021
- A62. Aithal A.* & Ferrante, A.
"Direct numerical simulation of a turbulent flow over a curved ramp using FastRK3"
73rd American Physical Society Meeting, Division of Fluid Dynamics
Chicago, IL, November 2020
- A61. Freund A.* & Ferrante, A.
"LES of droplet-laden isotropic turbulence using artificial neural networks"
73rd American Physical Society Meeting, Division of Fluid Dynamics
Chicago, IL, November 2020
- A60. Robbins M.*, Samuel M.*, Ferrante A. & Williams O.†
"Large-field PIV measurements of turbulent separation zone of Gaussian Bump validation geometry"
73rd American Physical Society Meeting, Division of Fluid Dynamics
Chicago, IL, November 2020

⁷ <https://625.euromech.org/speakers/>

- A59. Ferrante, A. & Trefftz-Posada, P.*
"Effects of droplet deformation and breakup/coalescence on turbulence kinetic energy"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A58. Freund, A.* & Ferrante, A.
"Wavelet-spectral analysis of droplet-laden isotropic turbulence"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A57. Trefftz-Posada, P.* & Ferrante, A.
"Direct numerical simulation of droplet-laden homogeneous shear turbulence"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A56. Lu, D.*, Aithal, A.* & Ferrante, A.
"The law of incipient separation for turbulent flows as inferred by RANS"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A55. Aithal, A.* & Ferrante, A.
"Direct numerical simulation of turbulent flows over curved walls with adverse pressure gradient"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A54. Samuell, M.*, Williams, O.† & Ferrante, A.
"RANS simulations of a turbulent separated flow validation test-case"
72nd American Physical Society Meeting, Division of Fluid Dynamics
Seattle, WA, November 2019
- A53. Aithal, A.* & Ferrante, A.
"A fast pressure-correction method for incompressible flows over curved surfaces"
71st American Physical Society Meeting, Division of Fluid Dynamics
Atlanta, GA, November 2018
- A52. Freund, A.* & Ferrante, A.
"Decomposing the wavelet spectrum of droplet-laden isotropic turbulence"
71st American Physical Society Meeting, Division of Fluid Dynamics
Atlanta, GA, November 2018
- A51. Trefftz-Posada, P.* & Ferrante, A.
"On the interaction of homogeneous shear turbulence and droplets of Taylor length-scale size"
71st American Physical Society Meeting, Division of Fluid Dynamics
Atlanta, GA, November 2018
- A50. Ferrante, A. & Dodd, M.*
"Towards a mass-conserving volume-of-fluid method for incompressible gas-liquid flows with phase change"
71st American Physical Society Meeting, Division of Fluid Dynamics
Atlanta, GA, November 2018

- A49. Aithal, A.* & Ferrante, A.
"Fast pressure-correction method for incompressible Navier-Stokes equations in curvilinear coordinates"
70th American Physical Society Meeting, Division of Fluid Dynamics
Denver, CO, November 19-21, 2017
- A48. Ferrante, A. & Dodd, M.*
"Effects of droplet size on droplet evaporation rate in isotropic turbulence"
70th American Physical Society Meeting, Division of Fluid Dynamics
Denver, CO, November 19-21, 2017
- A47. Dodd, M.* & Ferrante, A.
"A combined volume-of-fluid method and low-Mach-number approach for DNS of evaporating droplets in turbulence"
70th American Physical Society Meeting, Division of Fluid Dynamics
Denver, CO, November 19-21, 2017
- A46. Freund, A.* & Ferrante, A.
"Wavelet energy spectra of multiphase flows"
70th American Physical Society Meeting, Division of Fluid Dynamics
Denver, CO, November 19-21, 2017
- A45. Dodd M.*, Hedges T.^ & Ferrante A.⁸
"Droplet evaporation in a turbulent flow"
70th American Physical Society Meeting, Division of Fluid Dynamics
Video entry to the Gallery of Fluid Motion
Denver, CO, November 19-21, 2017
- A44. Dodd M.* & Ferrante A.
"On the effects of isotropic turbulence on the evaporation rate of a liquid droplet"
69th American Physical Society Meeting, Division of Fluid Dynamics
Portland, OR, November 20-22, 2016
- A43. Ferrante A. & Dodd, M.*
"On the effects of density ratio on droplet-laden isotropic turbulence"
69th American Physical Society Meeting, Division of Fluid Dynamics
Portland, OR, November 20-22, 2016
- A42. Adams D., Dodd M.* & Ferrante, A.
"PSH3D fast Poisson solver for petascale DNS"
69th American Physical Society Meeting, Division of Fluid Dynamics
Portland, OR, November 20-22, 2016
- A41. Uyeda C.M.*, Kurosaka M.† & Ferrante A.
"On the quasi-one dimensional structure of the cellular detonation in a two-dimensional duct"
68th American Physical Society Meeting, Division of Fluid Dynamics
Boston, MA, November 22-24, 2015

⁸ <https://vimeo.com/238200190>

- A40. Dodd M.*, Aleem M.[^] & Ferrante A.⁹
"Interaction of Taylor lengthscale size droplets and isotropic turbulence"
68th American Physical Society Meeting, Division of Fluid Dynamics
Video entry to the Gallery of Fluid Motion
Boston, MA, November 22-24, 2015
- A39. McCann B.* & Ferrante A.
"A Wall Model for Large-Eddy Simulation of Compressible Channel Flows"
67th American Physical Society Meeting, Division of Fluid Dynamics
San Francisco, CA, November 23-25, 2014
- A38. Dodd M.* & Ferrante A.
"Modulation of isotropic turbulence by deformable droplets of Taylor lengthscale size"
67th American Physical Society Meeting, Division of Fluid Dynamics
San Francisco, CA, November 23-25, 2014
- A37. Ferrante A. & Dodd M.*
"DNS of fully-resolved droplet-laden decaying isotropic turbulence"
66th American Physical Society Meeting, Division of Fluid Dynamics
Pittsburgh, PA, November 24-27, 2013
- A36. Dodd M.* & Ferrante A.
"An efficient pressure-correction method for incompressible multifluid flows"
66th American Physical Society Meeting, Division of Fluid Dynamics
Pittsburgh, PA, November 24-27, 2013
- A35. Bock D.†, Webster K.* Adams D.† & Ferrante A.
"Visualization of vortical structures from DNS of spatially developing turbulent boundary layers"
XSEDE13 (Extreme Science and Discovery Environment)
San Diego, CA, July 22-25, 2013
- A34. Ferrante A. & Dodd M.*
"Direct numerical simulation of particle dispersion in a spatially developing turbulent boundary layer"
American Geophysical Union, Fall Meeting
San Francisco, CA, December 3-7, 2012
- A33. Dodd M.*, Webster K. & Ferrante A.
"DNS of particle dispersion in a spatially developing turbulent boundary layer"
65th American Physical Society Meeting, Division of Fluid Dynamics
San Diego, CA, November 18-21, 2012
- A32. Ferrante A. & Dodd M.*
"A mass-conserving volume of fluid method for DNS of droplet-laden isotropic turbulence"
65th American Physical Society Meeting, Division of Fluid Dynamics
San Diego, CA, November 18-21, 2012
- A31. Baraldi A.* & Ferrante A.
"DNS of droplet-laden incompressible turbulence: surface tension in a VoF method"
64th American Physical Society Meeting, Division of Fluid Dynamics
Baltimore, MD, November 20-22, 2011

⁹ <https://vimeo.com/142559292>

- A30. Lucci F.**, L'Vov V.†, Ferrante A. & Elghobashi S.†
"On the Lagrangian power spectrum of turbulence energy in isotropic turbulence"
64th American Physical Society Meeting, Division of Fluid Dynamics
Baltimore, MD, November 20-22, 2011
- A29. Amah E.^ & Ferrante A.
"Flow simulation over a flat plate"
20th Annual National McNair Research Conference and Graduate Fair
Milwaukee, WI, November 11-13, 2011
- A28. Baraldi A.* & Ferrante A.
"A mass-conserving volume of fluid method for two-phase incompressible isotropic turbulence"
63rd American Physical Society Meeting, Division of Fluid Dynamics
Long Beach, CA, November 21-23, 2010
- A27. Ferrante A. & Webster K.*
"DNS of turbulent boundary layer over a flat plate at $Re_0=5200$ "
63rd American Physical Society Meeting, Division of Fluid Dynamics
Long Beach, CA, November 21-23, 2010
- A26. Lucci F.*, Ferrante A. & Elghobashi S.†
"Is Stokes number an appropriate indicator for turbulence modulation by particles of Taylor-length-scale size?"
63rd American Physical Society Meeting, Division of Fluid Dynamics
Long Beach, CA, November 21-23, 2010
- A25. Ferrante A., Matheou G.** & Dimotakis P.E.†
"LES of an inclined jet into a supersonic turbulent cross-flow: synthetic inflow conditions"
62nd American Physical Society Meeting, Division of Fluid Dynamics
Minneapolis MN, November 22-24, 2009
- A24. Lucci F.*, Ferrante A. & Elghobashi S.†
"On the effects of Taylor-lengthscale size particles on isotropic turbulence"
62nd American Physical Society Meeting, Division of Fluid Dynamics
Minneapolis MN, November 22-24, 2009
- A23. Ferrante A., Matheou G.** & Dimotakis P.E.†
"LES of an inclined jet into a supersonic turbulent cross-flow: synthetic turbulent inflow conditions"
3rd Southern California Symposium on Flow Physics
University of California, San Diego, April 18, 2009
- A22. Lucci F.*, Elghobashi S.† & Ferrante A.
"Decaying isotropic turbulence laden with finite-size particles: frequency spectrum"
3rd Southern California Symposium on Flow Physics
University of California, San Diego, April 18, 2009
- A21. Ferrante A., Pantano C.†, Matheou G.** & Dimotakis P.E.†
"LES of an inclined jet into a supersonic cross-flow at Mach 3.6"
61th American Physical Society Meeting, Division of Fluid Dynamics
San Antonio TX, November 23-25, 2008

- A20. Lucci F.*, Ferrante A. & Elghobashi S.†
"DNS of isotropic turbulence laden with fully-resolved finite-size particles"
61th American Physical Society Meeting, Division of Fluid Dynamics
San Antonio TX, November 23-25, 2008
- A19. Ferrante A., Pantano C.†, Matheou G.** & Dimotakis P.E.†
"On the effects of the upstream conditions on the transition of an inclined jet into a supersonic cross-flow"
2nd Southern California Symposium on Flow Physics
University of California, Los Angeles, April 12, 2008
- A18. Lucci F.*, Elghobashi S.† & Ferrante A.
"DNS of isotropic turbulence laden with fully-resolved finite-size particles"
2nd Southern California Symposium on Flow Physics
University of California, Los Angeles, April 12, 2008
- A17. Elghobashi S.† & Ferrante A.
"Fully resolved DNS of freely moving finite-size particles in decaying isotropic turbulence"
60th American Physical Society Meeting, Division of Fluid Dynamics
Salt Lake City UT, November 18-20, 2007
- A16. Ferrante A. & Elghobashi S.†
"On the accuracy of the two-fluid formulation in DNS of bubble-laden turbulent boundary layers"
59th American Physical Society Meeting, Division of Fluid Dynamics
Tampa FL, November 19-21, 2006
- A15. Ferrante A. & Elghobashi S.†
"Effects of microbubbles on the Taylor-Green vortex flow"
58th American Physical Society Meeting, Division of Fluid Dynamics
Chicago IL, November 20-22, 2005
- A14. Elghobashi S.† & Ferrante A.
"Reynolds number effect on drag reduction in a microbubble-laden spatially-developing turbulent boundary layer"
58th American Physical Society Meeting, Division of Fluid Dynamics
Chicago IL, November 20-22, 2005
- A13. Elghobashi S.† & Ferrante A.
"On drag reduction in a microbubble-laden spatially developing turbulent boundary layer"
13th IUTAM Advanced School & Workshop
Particle Dispersion in Turbulent Flows
CISM, Udine, Italy, September 12-16, 2005
- A12. Elghobashi S.† & Ferrante A.
"Reynolds number effect on drag reduction in a microbubble-laden spatially developing turbulent boundary layer"
13th IUTAM Advanced School & Workshop, Particle Dispersion in Turbulent Flows
CISM, Udine, Italy, September 12-16, 2005

- A11. Elghobashi S.† & Ferrante A.
"On drag reduction in a microbubble-laden spatially developing turbulent boundary layer"
**European Science Foundation (ESF) Workshop
Challenging Turbulent Lagrangian Dynamics**
Castel Gandolfo, Rome, Italy, September 1-4, 2005
- A10. Elghobashi S.† & Ferrante A.
"Reynolds number effect on drag reduction in a bubble-laden spatially developing turbulent boundary layer"
Hydrodynamics of Bubbly Flows
Lorentz Center, Leiden, The Netherlands, June 6-10, 2005
- A09. Ferrante A. & Elghobashi S.†
"Effects of bubble diameter on drag reduction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
57th American Physical Society Meeting, Division of Fluid Dynamics
Seattle WA, November 21-23, 2004
- A08. Elghobashi S.† & Ferrante A.
"On the drag reduction in a microbubble-laden spatially developing turbulent boundary layer"
IUTAM Symposium on Recent Advances in Disperse Multiphase Flow Simulations
Argonne National Laboratory, Illinois, October 4-7, 2004
- A07. Ferrante A., Elghobashi S.†, Adams P*.†, Valenciano M.†, Longmire D.†
"Evolution of Quasi-Streamwise Vortex Tubes and Wall-Streaks in a Bubble-Laden Turbulent Boundary Layer over a Flat Plate"
Annual American Physical Society (APS) March Meeting
Montreal, Canada, March 22-26, 2004
- A06. Ferrante A., Elghobashi S.†, Adams P.†, Valenciano M.†, Longmire D.†¹⁰
"Evolution of Quasi-Streamwise Vortex Tubes and Wall-Streaks in a Bubble-Laden Turbulent Boundary Layer over a Flat Plate"
21st Gallery of Fluid Motion (Winning Video Entry)
56th American Physical Society Meeting, Division of Fluid Dynamics,
East Rutherford NJ, November 23-25, 2003
- A05. Elghobashi S.† & Ferrante A.
"Drag reduction in a bubble-laden spatially developing turbulent boundary layer over a flat plate"
56th American Physical Society Meeting, Division of Fluid Dynamics
East Rutherford NJ, November 23-25, 2003
- A04. Ferrante A. & Elghobashi S.†
"A method for generating inflow conditions for direct simulations of spatially developing turbulent boundary layers"
56th American Physical Society Meeting, Division of Fluid Dynamics
East Rutherford NJ, November 23-25, 2003

¹⁰ <https://vimeo.com/142559247>

- A03. Ferrante A. & Elghobashi S.†
"DNS of a spatially developing turbulent boundary layer laden with bubbles"
5th EUROMECH, Fluid Dynamics Conference
Toulouse France, August 24-28, 2003
- A02. Ferrante A. & Elghobashi S.†
"Dispersion of bubbles in a spatially developing turbulent boundary layer"
55th American Physical Society Meeting, Division of Fluid Dynamics
Dallas TX, November 24-26, 2002
- A01. Ferrante A. & Elghobashi S.†
"On the decay rate of particle-laden isotropic turbulence"
54th American Physical Society Meeting, Division of Fluid Dynamics
San Diego CA, November 18-20, 2001

b) Invited Poster

Ferrante A.
"MultiFlow a Petascale solver for DNS of Multiphase Flows" and "DNS of aft-body flow"
AOS UW/Tohoku University Workshop
University of Washington, Seattle, November 15, 2017

Aithal A.* & Ferrante A.
"DNS of aft-body flow"
JCATI Symposium (JCATI 2016 Awardees)
University of Washington, Seattle, April 4, 2017

Ferrante A.
"MultiFlow a Petascale solver for DNS of Multiphase Flows"
Sustainable Research Pathways Workshop
Lawrence Berkeley National Lab
Berkeley, CA, December 6-7, 2016

Ferrante A.
"Petascale DNS of evaporating droplet-laden homogeneous turbulence"
<http://www.ccs.msstate.edu/conferences/NSFcyberbridges2013/>
NSF CyberBridges (NSF workshop for NSF Career Awardees)
NSF, Arlington, VA, July 15-16, 2013

c) Contractors technical reports

Williams O. & Ferrante A.
"Development and experimental study of a CFD validation test case – Phase 2"
The Boeing Co. 2020, December 2020

Williams O. & Ferrante A.
"Development and experimental study of a CFD validation test case – Phase 2"
The Boeing Co. 2019, February 2020

Williams O. & Ferrante A.
"Development and experimental study of a CFD validation test case – Phase 1"
The Boeing Co. 2018-19, May 2019

Ferrante A.

"NSF CAREER: Petascale DNS of evaporating drop-laden homogeneous turbulence"
National Science Foundation (NSF), Annual Report 2011-2018 (Final Report)

Ferrante A.
"DNS of aft-body flow"
JCATI Awards 2016-17, June 2017

Ferrante A.
"High-fidelity simulation of the continuous detonation engine"
Royalty Research Funds, Summary Report 2013

d) Contribution to contractor's technical reports

Dimotakis P.E. *et al.*
"Dispersion, mixing and combustion in turbulent and high-speed flows, air-breathing propulsion, and hypersonic flight"
Air Force Office of Scientific Research (AFOSR), Annual Performance Report 2009

Dimotakis P.E. *et al.*
"Design, Performance, and Operation of Efficient Ramjet-Scramjet Combined-Cycle Hypersonic Propulsion"
Air Force Office of Scientific Research (AFOSR-MURI), Annual Performance Report 2009

Dimotakis P.E. *et al.*
"Dispersion, mixing and combustion in turbulent and high-speed flows, air-breathing propulsion, and hypersonic flight"
Air Force Office of Scientific Research (AFOSR), Annual Performance Report 2008

Dimotakis P.E. *et al.*
"Design, Performance, and Operation of Efficient Ramjet-Scramjet Combined-Cycle Hypersonic Propulsion"
Air Force Office of Scientific Research (AFOSR-MURI), Annual Performance Report 2008

Dimotakis P.E. *et al.*
"Design, Performance, and Operation of Efficient Ramjet-Scramjet Combined-Cycle Hypersonic Propulsion"
Air Force Office of Scientific Research (AFOSR-MURI), Annual Performance Report 2007

Elghobashi S.
"On the accuracy of the two-fluid formulation for DNS of a spatially developing turbulent boundary layer laden with microbubbles"
Office of Naval Research (ONR), Annual Report 2006

Elghobashi S.
"Reynolds number effect on drag reduction in a microbubble-laden turbulent boundary layer"
Office of Naval Research (ONR), Annual Report 2005

Elghobashi S.
"On the physical mechanisms of drag reduction with microbubbles"
Office of Naval Research (ONR), Annual Report 2004

Elghobashi S.
"Dispersion of microbubbles in a spatially developing turbulent boundary layer"
Office of Naval Research (ONR), Annual Report 2003

e) On-line journal papers (non-refereed)

- OJ04. Elfring G.J.†, A Ferrante
"Introduction to the 37th Annual Gallery of Fluid Motion (Seattle, WA, 2019)"
Physical Review Fluids, Vol. 5 (11), 2020
- OJ03. Ferrante A., Matheou G.**., Dimotakis P.†, Stephens M.†, Adams P.†, & Walters R.†
"LES of an inclined jet into a supersonic turbulent crossflow"
arXiv:0910.3018v1, <http://arxiv.org/abs/0910.3018v1>, 2009
- OJ02. Ferrante A., Pantano C.†, Matheou G.**., Dimotakis P.†, Stephens M.†, Adams P.†,
Walters R.† & Hand R.†
"LES of an inclined jet into a supersonic cross-flow"
arXiv:0810.1957v1, <http://arxiv.org/abs/0810.1957v1>, 2008
- OJ01. Ferrante A. & Elghobashi S.† (invited article)
"Drag reduction by microbubbles in a spatially-developing turbulent boundary layer:
Reynolds number effect (HPCMP/CAP)"
Navigator, Spring 2006, http://www.navo.hpc.mil/Navigator/sp06_Feature2.html

f) Featured articles in magazines and websites regarding A. Ferrante's research

- FA05. **Prism Magazine (ASEE)**
"Go with the Flow" (2021)
- FA04. **The Daily (UW)**
"[UW researchers discover a new law of physics](#)" by Niv Joshi (2021)
- FA03. **Department of Aeronautics & Astronautics (UW)**
"[New law of physics finds a sweet spot for aircraft efficiency](#)" by Amy Sprague (2021)
- FA02. **National Center for Supercomputing Applications (NCSA at UIUC)**
"Flowing" (2013)
<http://www.ncsa.illinois.edu/news/stories/flowing/>
- FA01. **National Institute for Computational Science (NICS at the Univ. of Tennessee)**
"Experiencing some turbulence" (2013)
<http://www.nics.tennessee.edu/ferrante-4-2013>

g) Other significant research dissemination (web sites, software, Wikis, etc.)

- RD10. **Computational Fluid Mechanics (CFM) Lab Website**
Amy Sprague, CFM Lab students & Ferrante A. (2021)
<https://sites.uw.edu/cfm/lab/>

- RD09. **Computational Fluid Mechanics (CFM) Lab - Facebook Page**
Ferrante A. (2020)
<https://www.facebook.com/cfmlab> (> 2k Followers)
- RD08. Dodd M.*, Hedges T.^ & Ferrante A.
"Droplet evaporation in a turbulent flow"
70th American Physical Society Meeting, Division of Fluid Dynamics
Video entry to the Gallery of Fluid Motion
Denver, CO, November 19-21, 2017
<https://vimeo.com/238200190>
- RD07. Dodd M.*, Aleem M.^ & Ferrante A.
"Interaction of Taylor lengthscale size droplets and isotropic turbulence"
68th American Physical Society Meeting, Division of Fluid Dynamics
Video entry to the Gallery of Fluid Motion
Boston, MA, November 22-24, 2015
<https://vimeo.com/142559292>
- RD06. **Multi-Media Fluid Mechanics-II (DVD), Cambridge University Press 2008**
Edited by Prof. G. M. Homsy (UBC & UW) et al.
"Evolution of Quasi-Streamwise Vortex Tubes and Wall-Streaks in a Bubble-Laden Turbulent Boundary Layer over a Flat Plate"
Video by Ferrante A. et al. included in this Educational DVD.
<http://media.efluids.com/galleries/turbulence?medium=6>
- RD05. **e-fluids media gallery**
"LES of an Inclined Jet into a Supersonic Turbulent Cross-Flow" (2009)
Video by Ferrante A. et al.
<http://media.efluids.com/galleries/all?medium=699>
- RD04. **Videos of the computational fluid mechanics (CFM) research group**
<http://www.aa.washington.edu/research/cfm/videos.html>
- RD03. **Direct Numerical Simulation (DNS) database**
Ferrante, A.
"DNS of a spatially-developing turbulent boundary layer over a flat plate"
<http://cfmdatabase.aa.washington.edu/>
- RD02. **Direct Numerical Simulation (DNS) database**
Ferrante, A. & Elghobashi, S.†
"DNS of a spatially-developing turbulent boundary layer over a flat plate"
CFD Database, CINECA, Italy, <http://cfd.cineca.it/cfd>
- RD01. **UW Fluid Mechanics website**
Kent B.△, Webster K.*, Posner J.†, Ferrante A.
<http://fluidmechanics.uw.edu/>

Workshops attended

- "High Performance Computing – Artificial Intelligence – Advisory Council Conference"
Stanford University, Palo Alto CA, February 14-15 2019
- "Center for Turbulence Research Summer Program – Final Presentations"
Center for Turbulence Research, Stanford University, Palo Alto CA, August 1 2014
- "Tutorials on Advanced MPI/OpenMP/CUDA/OpenCL/VisIt"
Supercomputing 2010, New Orleans, November 14-15, 2010
- "Hypersonic entry and cruise vehicles"
Stanford University / NASA / VKI, Stanford CA, June 30 - July 3, 2008
- "Parallel Computing at NPACI"
San Diego Supercomputer Center, University of California, San Diego, Jan. 26-28, 2000
- "Multiphase Fluid Flow and Heat Transfer"
Université Catholique de Louvain, Belgium, August 4-17, 1996
- "Short Course on Aerothermodynamics"
Centro Italiano Ricerche Aerospaziali (CIRA), Capua Italy, May 8-10, 1996

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars

- S35. ***International Journal of Multiphase Flow Spotlight V-Seminar***¹¹
Science Talks – IJMF Spotlight V-Seminar Series
"From DNS to MANN-LES of droplet-laden isotropic turbulence"
Virtual Seminar on October 18, 2022 and will be published in Science Talks
- S34. ***University of California, Irvine, CA***¹²
Department of Mechanical and Aerospace Engineering
Symposium in Honor of Professor Said Elghobashi
"On the physics of droplet-laden homogeneous turbulence"
September 15, 2022
- S33. ***EUROMECH Colloquium 625 – Advances in LES of Turbulent Multiphase Flows***¹³
Udine, Italy
"Droplet-laden isotropic turbulence: from DNS to LES with a mixed artificial neural network approach (MANN-LES)"
June 22-24, 2022
- S32. ***California Institute of Technology, Pasadena, CA***¹⁴
Graduate Aeronautical Laboratories Colloquium (GALCIT)
"Droplet-laden isotropic turbulence: from DNS to LES with a mixed artificial neural network approach (MANN-LES)"
April 29, 2022
- S31. ***AIAA Turbulence Model Benchmarking Discussion Group***
Virtual Meeting
"Law of incipient separation & FastRK3"
December 1, 2020
- S30. ***ILASS Americas 2019 – Keynote Lecture***¹⁵
Institute of Liquid Atomization and Spray Systems for the Americas
Arizona State University, Tempe, AZ
"Physical mechanisms of droplet/turbulence interaction"
May 14, 2019
- S29. ***Lawrence Livermore National Laboratory, Livermore, CA***
"Physical mechanisms of droplet/turbulence interaction"
February 25, 2019

¹¹ <https://www.sciencedirect.com/journal/science-talks/special-issue/10QNG7TSPB0>

¹² <https://sites.uci.edu/symposium/>

¹³ <https://625.euromech.org/speakers/>

¹⁴ <https://galcit.caltech.edu/events/91936>

¹⁵ Details on Ferrante's plenary lecture and abstract can be found at
http://www.ilass.org/2019/Keynote_Presentations.html

- S28. **NASA Ames, Mountain View, CA**¹⁶
Advanced Modeling & Simulation Seminar Series
"A fast pressure-correction method for incompressible flows over curved walls"
February 22, 2019
- S27. **Stanford University, Palo Alto, CA**
Institute of Computational Mathematics
"A fast pressure-correction method for incompressible flows over curved walls"
February 12, 2019
- S26. **Stanford University, Palo Alto, CA**¹⁷
Center for Turbulence Research
"A fast pressure-correction method for incompressible flows over curved walls"
January 25, 2019
- S25. **Stanford University, Palo Alto, CA**
Fluid Mechanics Seminar Series CoE
"Physical mechanisms of droplet/turbulence interaction"
May 1, 2018
- S22. **University of Washington, Seattle, WA**
AOS UW/Tohoku University Workshop
"Fast DNS of wall-bounded and multiphase turbulent flows"
November 16, 2017
- S21. **University of California, Irvine, CA**
Dept. of Mechanical and Aerospace Engineering
"On the physical mechanisms of droplet/turbulence interaction"
November 2, 2017
- S20. **University of Southern California, Los Angeles, CA**
Dept. of Aerospace and Mechanical Engineering
"On the physical mechanisms of droplet/turbulence interaction"
November 1, 2017
- S19. **University of California, Los Angeles, CA**
Dept. of Mechanical and Aerospace Engineering
"A fast pressure-correction method for simulating two-fluid flows and DNS of droplet-laden isotropic turbulence"
May 23, 2014
- S18. **California Institute of Technology, Pasadena, CA**
Dept. of Mechanical and Civil Engineering
"A fast pressure-correction method for simulating two-fluid flows and DNS of droplet-laden isotropic turbulence"
May 22, 2014

¹⁶ The NASA Ames Advanced Modeling & Simulation Seminar Series are prestigious public seminars. Details can be found at <https://www.nas.nasa.gov/publications/ams/2019/02-21-19.html>

¹⁷ <https://ctr.stanford.edu/fast-pressure-correction-method-incompressible-flows-over-curved-walls>

- S17. **University of Washington, Seattle, WA**
Willaim E. Boeing Dept. of Aeronautics & Astronautics
"A fast pressure-correction method for simulating two-fluid flows and DNS of droplet-laden isotropic turbulence"
May 12, 2014
- S16. **Stanford University, Stanford, CA**
Center for Turbulence Research
"A fast pressure-correction method for simulating two-fluid flows and DNS of droplet-laden isotropic turbulence"
May 9, 2014
- S15. **University of Washington, Seattle, WA**
Department of Material Science Engineering
"DNS of droplet-laden incompressible turbulent flows: surface tension in a mass conserving, split advection VoF method"
April 9, 2012
- S14. **University of California, San Diego, CA**
Department of Mechanical and Aerospace Engineering
"A mass-conserving volume of fluid method: volume tracking in incompressible isotropic turbulence"
November 7, 2011
- S13. **University of Washington, Seattle, WA**
Department of Applied Math
"Towards petascale DNS of spatially developing turbulent boundary layers at high Reynolds number"
December 1, 2009
- S12. **Lawrence Livermore National Laboratory, Livermore, CA**
"Towards petascale DNS of spatially developing turbulent boundary layers at high Reynolds number"
November 10, 2009
- S11. **University of Washington, Seattle, WA**
Department of Aeronautics & Astronautics
"Reduction of skin-friction drag with microbubbles & Large-eddy simulation of an inclined jet in supersonic cross-flows"
March 13, 2008
- S10. **University of Washington, Seattle, WA**
Department of Aeronautics & Astronautics
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
February 25, 2008
- S09. **California Institute of Technology, Pasadena, CA**
Department of Mechanical Engineering
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
October 23, 2007

- S08. **Yale University, New Haven, CT**
Dept. of Mechanical Engineering
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
October 9, 2007
- S07. **California Institute of Technology, Pasadena, CA**
Compressible Turbulence Lunch (ASC)
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
April 10, 2007
- S06. **University of Michigan, Ann Arbor, MI**
Department of Aerospace Engineering
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
January 11, 2007
- S05. **University of California, Santa Barbara, CA**
Center for Risk Studies and Safety
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
August 15, 2006
- S04. **Lawrence Livermore National Laboratory, Livermore, CA**
"Dispersion of solid particles in a turbulent backward facing step"
October 28, 2004
- S03. **University of California, Irvine, CA**
Dept. of Mechanical and Aerospace Engineering
"Reduction of skin-friction in a microbubble-laden spatially developing turbulent boundary layer over a flat plate"
February 26, 2004
- S02. **University of California, Irvine, CA**
Dept. of Mechanical and Aerospace Engineering
"Drag reduction in a bubble-laden spatially developing turbulent boundary layer over a flat plate"
October 2, 2003
- S01. **Università di Napoli 'Federico II', Italy**
Dipartimento di Progettazione Aeronautica
"On the physical mechanisms of two-way coupling in particle-laden isotropic turbulence"
January 4, 2002

GRADUATE STUDENTS

Postdoc

- **TBD**

Current Doctoral Students (Ph.D.)

- **Pablo Trefftz-Posada**, Chair
Qualifying Exam passed in Fall 2018, General Exam passed in Summer 2022
Currently Lead TA for A&A (2022-23)
- **Mira Tipirneni**, Chair
Qualifying Exam passed in Fall 2021
Supported by the Boeing Co.

Chaired Doctoral Degrees (Ph.D.)

- **Abhiram Aithal**, Chair, 2022
Thesis title: Direct numerical simulation of turbulent boundary layer separating over a curved wall
Recipient of the *Condit Distinguished Dissertation Fellowship 2021 & Excellence in Research Award 2022*
- **Andreas Freund**, Chair, 2020
Thesis title: Wavelet-spectral analysis and large-eddy simulation using neural networks of droplet-laden decaying isotropic turbulence
Continued as Data Scientist at PACCAR, WA
- **Michael Dodd**, Chair, 2017
Thesis title: Direct numerical simulation of droplet-laden isotropic turbulence
Continued as Postdoctoral Scholar, Center for Turbulence Research, Stanford University
- **Barrett McCann**, Chair, 2014
Thesis title: A wall model for large-eddy simulation of compressible channel flows
Continued as Faculty, U.S. Air Force Academy, Colorado Springs, Colorado

Chaired Masters Degrees (M.S.)

- **Mira Tipirneni**, Chair, 2021
Thesis title: Temporal accuracy of FastRK3
Employer: Continued Ph.D. in AA with A. Ferrante in the CFM lab
- **Shao-Chi (George) Huang**, Chair, 2021
Thesis title: Law of incipient separation for turbulent flows over airfoils as inferred by RANS
Employer: Continued as Quality Assurance Engineer, Converge Solutions (CFD Co.)
- **Maddeline Samuel**, Co-Chair, 2020
Thesis title: Development of a turbulent separated flow validation test case: experimental and computational (RANS) studies
Employer: Continued as CFD Analyst position at Johns Hopkins Applied Physics Lab

- **Dawei Lu**, Chair, Spring 2019
Thesis title: The law of incipient separation for turbulent flows
- **Alex Le**, Chair, Spring 2016
Project Title: A new shock capturing scheme based on the volume of fluid method
Employer: Flight Sciences Engineer at Aerotec
- **Irfan Syahdan**, co-Chair (Prof. J. Hermanson Chair), Summer 2015
Thesis title: Numerical modeling of droplet disruption under supersonic conditions
Employer: Flight Test Engineer at Bhimasena Research and Development
- **Chris Uyeda**, Chair, Spring 2015
Thesis title: High fidelity simulation of spinning detonation waves
Employer: The Boeing Company
- **Sean McMahon**, Chair, Spring 2014
Thesis title: Parallel adaptive simulation of detonation waves using a weighted essentially non-oscillatory scheme
Employer: The Boeing Company
- **Zhengcheng Gu**, Chair, Spring 2014
Project title: Fast transpose operation for petascale Poisson solver
Employer: R&D position for Synopsys
- **Keegan Webster**, Chair, Fall 2013
Thesis title: Towards petascale DNS of high Reynolds-number turbulent boundary layer
Employer: U.S. Army at Picatinny Arsenal, NJ
- **Hezky Varon**, Chair, Fall 2011
Project title: Adaptive mesh refinement framework for simulating high-speed flows,
Employer: Federal Home Loan Bank of Seattle

Other significant student supervision

1) Undergraduate research supervision

- **Qiyang Hu**, 1/2021 – 9/22, B.S. in AA in Spring 2022
Successfully admitted into Stanford, Northwestern, UCLA, and several other top graduate programs in Mechanical engineering.
Continued as M.S. student at Stanford University in Aeronautics & Astronautics
- **Yaffet Bedru**, 3/2021 – 6/2021, Freshman
- **FNU Vinsensius**, 1/2020 – 6/2020, B.S. in AA Spring 2021
- **Trevor Hedges**, 9/2016 – 6/2018, B.S. in AA 2018
Recipient of CoE Dean's Medal for Academic Excellence 2018
Funded through NSF CAREER REU
Continued as Ph.D. student in Aeronautics at Stanford University
- **Mishaal Aleem**, 9/2014 – 6/2015, B.S. in AA 2015
Funded through NSF CAREER REU
Continued: Aerodynamics Engineer, Boeing Co. & M.S. from USC in Computer Science
Current employer: The Boeing Co as Satellite Software Engineer

- **Daniel Hnatovic**, 12/2013 – 12/2014, B.S. in AA 2014
Funded through NSF CAREER REU
Continued to work for Carrier in Syracuse, NY as an Air Management Systems Intern
then started M.S. in Aerospace Engineering at NC State University in 2016
- **Hanna Culvert**, 9/12 – 6/13, B.S. in AA 2013
Continued as 2nd Lt in the Air Force, Vandenberg AFB, CA as developmental engineer
in the 1st Air and Space Test Squadron, will start M.S. in Aeronautics at Georgia Tech in
Fall 2014
- **Chris Schweikhardt**, 9/12 – 6/13, B.S. in AA 2013
Continued as M.S. student in Aeronautics at Stanford University
- **Christopher Uyeda**, 9/12 – 6/13, B.S. in AA 2013
Continued as M.S. student in A&A at the UW with A. Ferrante
- **Edison Amah**, 7/11-6/12, URM student, B.S. AA 2012
Funded through NSF CAREER REU & PNW-LSAMP
Continued as Ph.D. student at the New Jersey Institute of Technology (NJIT), recipient of
the NSF Bridge-to-Doctorate Fellowship
- **Kent Benedict** (1/12-6/12, B.S. in AA 2012)
Current position: Engineer at Stark Aerospace's Engineering/AMI Division, Redmond,
WA
- **Christopher Mair**, Fall 2012, visiting student from U. of Bristol, U.K.
- **Zhengcheng Gu**, 3/10-6/12, B.S. AA 2012
Funded from NSF CAREER REU
Continued as M.S. student in AA at the UW with A. Ferrante
- **Sean McMahon**, 3/11-6/11, URM student, B.S. AA 2011
Continued as M.S. student in AA at the UW with A. Ferrante
Current position: Flight Test group at the Boeing Co.
- **Alexandria Western**, Summer 2010
Visiting undergrad student from the Department of Aeronautics at the U. of Michigan
- **Keegan Webster**, 9/09-6/10, B.S. AA 2010
Continued as M.S. student in AA at the UW with A. Ferrante

Thesis Committee Member

- i) Ph.D. thesis defense or final exam
 - Theodore Zhao, 2022, AA
 - Joseph Williams, 2022, AMATH (GSR)
 - Chung Sun, 2021. AMATH (GSR)
 - Brandon Blakeley, 2022, ME
 - Xiaotian Shi, 2022, AA
 - Chung Sun, 2021, Applied Math
 - Nima Moallemi, 2018, Applied Science, School of Engineering,
University of British Columbia, Canada
 - Rajesh Chaunsali, 2018, AA
 - Jens von der Linden, 2017, AA
 - Chin Ng, 2016, ME

- Robert Vets, 2015, AA
- Chris Hansen, 2014, AA
- Eder Sousa, 2014, AA

ii) General doctoral exam

- Nicolette Lewis, 2022, C&EE
- Yasuhiro Miyazawa, 2022, AA
- Joseph Williams, 2022, AMATH (GSR)
- Chung Sun, 2021, AMATH (GSR)
- Theodore Zhao, 2020, AA
- Xiaotian Shi, 2019, AA
- Brandon Blakely, 2019, ME
- Hyunryung Kim, 2017, AA
- Rajesh Chaunsali, 2016, AA
- Jens von der Linden, 2015, AA
- Robert Vets, 2014, AA
- Chin Ng, 2013, ME
- Chris Hansen, 2013, AA
- Eder Sousa, 2013, AA
- Anders Hansen, 2011, Physics (GSR)

iii) Qualifying exam

- Yasuhiro Miyazawa, 2020, AA
- Shiyao Lin, 2017, AA
- Avin Vijay, 2017, AA
- Peter Norgaard, 2014, AA
- Chris Hansen, 2011, AA
- Jens von der Linden, 2011, AA
- Dejian Nikic, 2010, AA

iv) M.S. thesis defense

- Hariprasad Annamalai, 2022, AA
- Matt Robbins, 2021, AA
- Sage Sarwas, 2019, AA
- Jon Frydman, 2018, AA
- Amir Mehmedagic, 2013, AA
- Micah Paul, 2012, AA

Awards of Advisees

Abhiram Aithal (Ph.D. 2022)

- 2022 Excellence in Research Award, A&A, UW
- 2021 Condit Distinguished Dissertation Fellowship, A&A, CoE, UW

Mira Tipirneni (Ph.D. student, M.S. 2021)

- 2019 Gordon C. Oates Endowed Fellowship, CoE, UW

Trevor Hedges (B.S. 2018)

- 2018 Dean's Medal for Academic Excellence
<https://www.engr.washington.edu/mycoe/awards/deanmedal>

Pablo Trefftz-Posada (Ph.D. student)

- 2017 SIAM CSE17 Broader Engagement Selected Participant, Sustainable Horizons Institute
- 2016 20 Twenties Award, Aviation Week and the AIAA
- 2015 Paul A. Carlstedt Endowed Fellowship in AA, UW
- 2015 Ruth C. Hertzberg Fellowship, CoE, UW
- 2015 Theodore H. and Marie M. Sarchin Endowed Fellowship in Engineering, CoE

Andreas Freund (Ph.D. 2020)

- 2015 Boeing Endowment for Excellence Fellowship in Applied Math

Michael Dodd (Ph.D. 2017)

- 2016 Postdoctoral Fellowship, Center for Turbulence Research, Stanford University
- 2016 ICTAM U.S. Early Career Travel Fellowship, National Academy of Sciences
- 2015 ICTAM U.S. Early Career Travel Fellowship, National Academy of Sciences
- 2014 65th Annual Lindau Nobel Laureate Meeting, Germany
- 2014 Graduate School Fund for Excellence and Innovation Travel Award
- 2013 Marsh Fellowship, College of Engineering, University of Washington
- 2011 Egtvedt Fellowship, College of Engineering, University of Washington
- 2011 Paul A. Carlstedt Endowed Fellowship in Aeronautics and Astronautics, UW

Mishaal Aleem (B.S. 2015)

- 2015 Outstanding Female Undergraduate Aeronautics & Astronautics
- 2015 Rudolph H. Reichel Memorial Scholarship
- 2015 Joseph F. Sutter Endowment Scholarship
- 2015 University of Washington Dean's List
- 2015 American Association of University Women Math Award
- 2015 Hazen Outstanding Senior - Math, Science, and Business Departments
- 2014 Wind Tunnel Crew of the Quarter (Autumn)

Barrett McCann (Ph.D. 2014)

- 2010 National Science Foundation Graduate Research Fellowship

TEACHING

- **Courses taught**
 - **Undergraduate courses**
 - AA311 Atmospheric Flight Mechanics
 - AA402 Viscous Fluid Mechanics
[AA402 was on the List of Highly Rated Courses for the CoE UW in 2015]
 - **Graduate courses**
 - AA507 Incompressible Fluid Mechanics
 - AA543 Computational Fluid Dynamics of Compressible Flows
 - AA544 Computational Fluid Dynamics of Incompressible Flows
 - **Master of Aerospace Engineering**
 - AE520 Introduction to Fluid Dynamics
 - AE524 Computational Aerodynamics
- **Instructor for UW STEM Bridge Program**
 - Introduction to Aircraft Design (short course), *Sep 2010*
- **Workshops/Courses attended**
 - "Applied Leadership Teams' Facilitating Effective Meeting"
University of Washington, Seattle, October 13 & 27, 2020
 - "Conflict Management"
University of Washington, Seattle, September 10, 2020
 - "Technology Teaching Fellows Institute"
University of Washington, Seattle, July 13-17 & December 16, 2020
 - "Compassionate Leadership Summit"
University of Washington, Seattle, November 7-8, 2019
 - "Reflections on Teaching: Where We Were, Where We Are and Where We could Be" by Jim Borgford-Parnell
University of Washington, Seattle, April 29, 2019
 - "Faculty Fellow Teaching Workshop"
University of Washington, Seattle, September 12-16, 2011
 - "National Effective Teaching Institute" (NETI)
ASEE, Louisville KY, June 17-19, 2010
Instructors: Richard Felder, Michael Prince and Rebecca Brent
Sponsored by the American Society for Engineering Education (ASEE)
Nominated by Dean O'Donnell to attend this workshop

SERVICE

Departmental service

- Chair of the Graduate Committee (2021-2022)
- Chair of the Undergraduate Committee (2017-2021)
- Faculty Lead for Task Force Holistic Education (2021-2022)
- Faculty Lead of interviews on DEI with CTOs of private companies (2020-21)
- Graduate Committee Member (9/22-Present)
- Diversity Committee Member (2018-Present)
- Space & Safety Committee (2017-Present)
- Faculty Search Committee Member (2020-21)
- Search Committee Member for the Sr. Computer Specialist position that resulted in hiring David Wilson (2019-2020)
- Search Committee Member for the Sr. Computer Specialist position that resulted in hiring Stephen Scheier (2017)
- Computer Committee Member (2011-2018)
- Undergraduate Committee Member (2013-2017)
- Department Chair Search Committee Member (2013-2014)
- Graduate Committee Member (2010-2013)
- Strategic Planning Committee Member (2012-2015)
- Faculty MAE Colloquium Organizer for Autumn 2015
- Provided support/feedback to Senior Computer Specialist, Brian Levenson, for the Student Technology Fee (STF) proposal entitled “High-Performance Student Computing” to enhance the computational capabilities of AA graduate and undergraduate classes (Total requested funds \$94,881) in 2011 and 2012. In 2012, the proposal has been recommended for funding by the STF.

University service

- Hyak Governance Board (HGB) Committee Member (2020-Present)
- College of Educational Policy (CEP) Committee Member (2017-2018)
- Refereed proposals for Royalty Research Fund in 2009, 2013, 2015, 2016, 2017
- Created the UW Fluid Mechanics website in collaboration with J. Posner (ME) <http://fluidmechanics.uw.edu/> (2012)
- Hosted at the UW the short course offered by NCSA entitled “VSCSE Big Data for Science 2010” (Summer 2010)
- Invited and hosted at the UW the following speakers:

- Prof. Gianluca Iaccarino (Stanford Univ.), February 2019
- Prof. Krishnan Mahesh (U. of Minnesota), April 2017
- Dr. Philippe Spalart, Senior Technical Fellow, The Boeing Co., January 28, 2013, May 15, 2014, May 2015, December 2015, May 2016, May 2016
- Ed Tinoco, The Boeing Co., March 12, 2013 and May 22, 2014, May 2015
- Prof. Olbricht, Program director of the NSF (CBET), December 2015
- Prof, Dale Pullin, Caltech, April 8, 2013
- Prof. Madjid Birouk, University of Manitoba, Canada, April 22, 2013
- Prof. Ellen Longmire, University of Minnesota, May 13, 2013
- Robert Robey, Research Staff Member, Los Alamos National Laboratory, September 27, 2011
- Jay Alameda, Research Staff Member, UIUC/NCSA for workshop on Eclipse IDE, November 14, 2011
- Prof. Henning Winter, Program Director of the Fluid Dynamics Program (CBET), National Science Foundation, March 19, 2010

Professional society memberships

- High-Performance Computing – Artificial Intelligence Advisory Council, 2019-Present
- American Physical Society, Division of Fluid Dynamics, since 2001, life membership
- American Institute of Aeronautics & Astronautics (AIAA), since 2007, life membership
 - **AIAA Associate Fellow 2022**
“For the discovery of the law of incipient separation for turbulent flows and the development of efficient computational methodologies for wall-bounded and multiphase flows”
- Institute of Electrical and Electronics Engineers (IEEE), 2011
- von Kármán Institute Alumni Association (VKI), since 1997

Editor

- **Theoretical & Computational Fluid Dynamics**
Associate Editor 2020-Present
- **International Journal of Multiphase Flows**
Editorial Advisory Board Member 2019-Present

Reviewer for top journals

Professional society and other service

- **Scientific Committee Member**
European Mechanics Society (EUROMECH)
COLLOQUIUM 625: Advances in LES of turbulent multiphase flows
Udine, Italy, June 2022
- **APS Division of Fluid Dynamics**
Chair of the Gallery of Fluid Motion Award Committee¹⁸
Seattle, WA, November 2019
- **APS Division of Fluid Dynamics**
Chair/Organizer of the Focus Session “Direct Numerical Simulations of Fluid Interfaces, Deformation and Break-Up in Turbulence”
Seattle, WA, November 2019
- **APS Division of Fluid Dynamics**
APS-DFD meeting Member of the local Organizing Committee
Seattle, WA, November 2019
- **Scientific Committee Member**
Institute of Liquid Atomization and Spray System (Europe), ILASS 2019
29th European Conference Liquid Atomization & Spray Systems
Paris, France, 2019
- **Scientific Committee Member**
International Conference on Multiphase Flows
Rio de Janeiro, Brazil 2019
http://www.icmf2019.com.br/scientific_committee.html
- **Scientific Committee Member**
International Conference on Multiphase Flows
Firenze, Italy, May 2016
<http://www.aidic.it/icmf2016/scientific-committee.html>
- **APS Division of Fluid Dynamics**
Andreas Acrivos Dissertation Award Committee (2016 & 2017)
<https://www.aps.org/programs/honors/dissertation/acrivoss.cfm>
- **APS Division of Fluid Dynamics**
APS-DFD meeting local organizing committee member
Portland, OR, November 2017
- **APS Division of Fluid Dynamics**
Host of the Young Investigators Workshop
Portland, OR, November 2017

¹⁸ <https://gfm.aps.org/>

▪ **Conference sessions chaired**

"Advances in LES of Turbulent Multiphase Flows"

EUROMECH Colloquium 625

Udine, Italy, June 2022

"Focus Session: Direct Numerical Simulations of Fluid Interfaces, Deformation and Break-Up in Turbulence"

72nd American Physical Society Meeting, Division of Fluid Dynamics

Seattle, WA, November 2019

"Multiphase Flows: Turbulence"

72nd American Physical Society Meeting, Division of Fluid Dynamics

Seattle, WA, November 2019

"Turbulent Boundary Layers: Curvature and Pressure Gradients"

72nd American Physical Society Meeting, Division of Fluid Dynamics

Seattle, WA, November 2019

"Modeling of Multiphase Flow"

International Conference on Multiphase Flows

Firenze, Italy, May 2016

"Multiphase Flows: Turbulence"

69th American Physical Society Meeting, Division of Fluid Dynamics

Portland, OR, November 2016

"CFD: High-Performance Computing"

69th American Physical Society Meeting, Division of Fluid Dynamics

Portland, OR, November 2016

"Turbulent Multiphase Flows"

67th American Physical Society Meeting, Division of Fluid Dynamics

San Francisco, CA, November 24, 2014

"Particle Laden Flows"

64th American Physical Society Meeting, Division of Fluid Dynamics

San Diego CA, November 19, 2012

"Drops, bubbles and multiphase flows"

23rd ICTAM

Beijing, China, August 23, 2012

"Multiphase Flow CFD"

20th AIAA Computational Fluid Dynamics Conference

Honolulu, Hawaii, June 29, 2011

"Turbulence simulation and high-performance computing"

Invited Guest to Student Luncheon

63rd American Physical Society Meeting, Division of Fluid Dynamics

Long Beach CA, November 21, 2010

"Particle Laden Flows"

63rd American Physical Society Meeting, Division of Fluid Dynamics
Long Beach CA, November 21, 2010

"Turbulent Jets and Mixing Layers"

49th AIAA Aerospace Science Meeting
Orlando, Florida, January 7, 2010

"Particle Laden Flows"

62nd American Physical Society Meeting, Division of Fluid Dynamics
Minneapolis MN, November 23, 2009

International, national or governmental service

- Panel reviewer for National and International Agencies

DIVERSITY, EQUITY & INCLUSION

- The CFM lab has been traditionally a diverse lab
 - Advised 12 students among women and URM in STEM:
 - 2 Ph.D., 3 M.S., 7 UG
 - 12/33 advised students are either women or URM
 - Both current Ph.D. students are women or URM students
- Ferrante has collaborated with June Hairston (Ed.D.) of the PNW-LSAMP to advertise and hire URM students in the CFM lab and advised URM students suggested by them.
- As leader of the Task Force Holistic Education, past Chair and currently member of the Graduate Committee, and member of the Diversity, Equity & Inclusion (DEI) Committee of the AA Dept., Ferrante has been working towards creating a culture and opportunities in the A&A Community to welcome diversity and foster a culture of equity and inclusion for women and underrepresented minorities in A&A.
- Lead of interviews with CTOs of private companies for strategic planning on DEI for the A&A Dept. (Fall 2020)