Stanford

Parviz Moin

Franklin P. and Caroline M. Johnson Professor in the School of Engineering

Mechanical Engineering

Bio

BIO

Moin is the founding director of the Center for Turbulence Research. Established in 1987 as a research consortium between NASA and Stanford, Center for Turbulence Research is devoted to fundamental studies of turbulent flows. Center of Turbulence Research is widely recognized as the international focal point for turbulence research, attracting diverse groups of researchers from engineering, mathematics and physics. He was the founding director of the Institute for Computational and Mathematical Engineering at Stanford.

Professor Moin pioneered the use of direct and Large Eddy Simulation techniques for the study of turbulence physics, control and modelling concepts and has written widely on the structure of turbulent shear flows. His current interests include: Computational physics, Physics and control of turbulent boundary layers, hypersonic flows, propulsion, flow control, large eddy simulation for aerospace applications and aircraft icing.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Institute for Computational and Mathematical Engineering (ICME)

ADMINISTRATIVE APPOINTMENTS

- Founding Director, Institute for Computational and Mathematical Engineering, Stanford, (2003-2005)
- Chair, American Physical Society, Fluid Dynamics Division, (2000-2001)
- Chair, Engineering Sciences Section, National Academy of Sciences, (2014-2017)

HONORS AND AWARDS

- Member, National Academy of Sciences (2011-)
- Member, National Academy of Engineering (1997-)
- Member, American Academy of Arts and Sciences (2009-)
- Corresponding Member, Royal Spanish Academy of Engineering (2014-)
- Fellow, American Physical Society (APS) (1992)
- Fellow, American Institute of Aeronautics and Astronautics (AIAA) (2009)
- Fluid Dynamics Prize, American Physical Society (APS) (1996)
- Fluid Dynamics Award, American Institute of Aeronautics and Astronautics (AIAA) (2009)
- Highly Cited Researcher, ISI-Original list
- Einstein Professorship, Chinese Academy of Sciences (2009)

- Moody Award, American Society of Mechanical Engineers (ASME) (2006)
- Outstanding Leadership Medal, The National Aeronautics and Space Administration (NASA) (2002)
- Outstanding Achievement Award, University of Minnesota (2008)
- Doctores Honoris Causa, Universidad Politecnica de Madrid (1998)
- Alexander von Humboldt Senior Fellowship, Federal Republic of Germany (1995)
- Lawrence Sperry Award, American Institute of Aeronautics and Astronautics (AIAA) (1986)
- Exceptional Scientific Achievement Medal, The National Aeronautics and Space Administration (NASA) (1985)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Visiting Committee, Division of Engineering and Applied Science, California Institute of Technology (2026 - present)
- Chair, External Review Committee, Saint Anthony Falls Laboratory, University of Minnesota (2025 - 2025)
- Member, Committee on Foundational Research Gaps and Future Directions for Digital Twins, National Academy of Sciences, Engineering and Medicine (2022 - 2023)
- Editorial Advisory Board, Flow (2021 - present)
- Chair, Physical Review Fluids Lead Editor Search Committee, American Physical Society (2020 - 2021)
- Member, Space Nuclear Propulsion Committee, National Academy of Sciences, Engineering and Medicine (2020 - 2021)
- Co-Chair, Visiting Committee, Division of Engineering and Applied Science, California Institute of Technology (2019 - 2019)
- Member, Committee on Advanced Technologies for Gas Turbines, National Academies of Sciences, Engineering and Medicine (2018 - 2019)
- Panel on Review of Laboratory Research at the Army's Research Development, and Engineering Centers, National Academies of Sciences, Engineering and Medicine (2018 - 2019)
- Member, Aeronautics and Space Engineering Board, National Academies of Sciences, Engineering and Medicine (2017 - 2023)
- Member, Visiting Committee, Department of Aerospace and Mechanical Engineering, University of Southern California (2017 - 2017)
- Editorial Board, Physical Review Fluids (2015 - 2021)
- Panel on Improving the Air Force Scientific Discovery Mission, National Academies, Air Force Studies Board (2015 - 2015)
- Chair, National Academy of Sciences, Engineering Sciences Section (2014 - 2017)
- Member, Visiting Committee, Division of Engineering and Applied Science, California Institute of Technology (2014 - 2014)
- Member, Committee on Membership, National Academy of Sciences (2013 - 2016)
- Member, International Temporary Nominating Committee, National Academy of Sciences (2013 - 2015)
- Panel on Mechanical Science and Engineering at the Army Research Laboratory, National Academy of Sciences (2013 - 2014)
- Mechanical Engineering Peer Committee, National Academy of Engineering (2010 - 2012)
- Consultant, Naval Research Advisory Committee (NRAC) (2009 - 2009)
- Editor, Annual Review of Fluid Mechanics (2002 - 2023)
- Editorial Board, Flow, Turbulence and Combustion (2000 - 2015)
- Chair, Division of Fluid Dynamics, American Physical Society (2000 - 2001)
- Associate Editor, Physics of Fluids (1999 - 2015)
- Member, United States National Committee on Theoretical and Applied Mechanics (1999 - 2003)
- Associate Editor, Journal of Computational Physics (1998 - 2024)
- Vice Chair, Division of Fluid Dynamics, American Physical Society (1998 - 1999)
- Executive Committee, Division of Fluid Dynamics, American Physical Society (1993 - 1996)

PROFESSIONAL EDUCATION

- B.S., University of Minnesota , Mechanical Engineering (1974)
- M.S., Stanford University , Mechanical Engineering (1975)
- M.S., Stanford University , Mathematics (1978)
- Ph.D., Stanford University , Mechanical Engineering (1978)

LINKS

- Center for Turbulence Research: http://ctr.stanford.edu
- CTR Current Staff and Postdoctoral Fellows: http://ctr.stanford.edu/current
- CTR Former Postdoctoral Fellows, Staff, and Visiting Scholars: http://ctr.stanford.edu/former
- Flow Physics and Computational Engineering: https://web.stanford.edu/group/fpc/cgi-bin/fpcwiki/

Teaching

COURSES

2025-26

- Turbulence: ME 361 (Spr)

2024-25

- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)
- Seminar in Fluid Mechanics: ENGR 298 (Aut)
- Spectral Methods in Computational Physics: CME 322, ME 408 (Win)

2023-24

- Turbulence Physics and Modeling Using Numerical Simulation Data: ME 406 (Sum)

2022-23

- Linear Algebra with Application to Engineering Computations: CME 200, ME 300A (Aut)
- Spectral Methods in Computational Physics: CME 322, ME 408 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Miya Coimbra, Wenyuan Xue

Postdoctoral Faculty Sponsor

Rahul Arun, Deniz Bezgin, Arnaud Budo, Alexander Cicchino, Tânia Ferreira, Tobias Gibis, Salvador Gomez, Akhil Nekkanti, Hang Song, Antoine Stock, John Sullivan, Jianyu Wang, Hang Yu, Federico Zabaleta

Doctoral Dissertation Advisor (AC)

Arun Balakrishna, Lucy Brown, Ahmed Elnahhas, Tim Flint, Alex Storrer, Michael Whitmore, Christopher Williams

Orals Evaluator

Albo Voci

Doctoral (Program)

Ahmed Elnahhas, Tim Flint, Elaine Koh

Publications

PUBLICATIONS

- **Predictions of Flow Distortions Inside a Serpentine Diffuser from Large-Eddy Simulations** *AIAA JOURNAL*
  Agrawal, R., Winkler, C., Bose, S. T., Moin, P.
  2025
- **Large-eddy simulations of conjugate heat transfer in boundary layers over laser-scanned ice roughness** *PHYSICAL REVIEW FLUIDS*
  Zabaleta, F., Bornhoft, B., Jain, S. S., Bose, S. T., Moin, P.
  2025; 10 (10)
- **Turbulence-chemistry interaction in a non-equilibrium hypersonic boundary layer** *JOURNAL OF FLUID MECHANICS*
  Williams, C., Di Renzo, M., Moin, P.
  2025; 1017
- **On the Use of Artificial Ice Shapes for Large-Eddy Simulations in Aircraft Icing** *JOURNAL OF AIRCRAFT*
  Bornhoft, B., Moin, P., Jain, S. S., Bose, S. T.
  2025
- **Studies of Transonic Aircraft Flows and Prediction of Initial Buffet Using Large-Eddy Simulation** *JOURNAL OF AIRCRAFT*
  Goc, K. A., Agrawal, R., Bose, S. T., Moin, P.
  2025
- **Investigations of wind tunnel effects in large-eddy simulations of NTF high-lift aircraft**
  Agrawal, R., Whitmore, M. P., Bose, S. T., Moin, P., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **Predictions of flow distortions inside a serpentine diffuser from large-eddy simulations**
  Agrawal, R., Winkler, C., Bose, S. T., Moin, P., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2025
- **An extension of Thwaites' method for turbulent boundary layers** *FLOW*
  Agrawal, R., Bose, S. T., Griffin, K. P., Moin, P.
  2024; 4
- **Reynolds-Number-Dependence of Length Scales Governing Turbulent-Flow Separation in Wall-Modeled Large Eddy Simulation** *AIAA JOURNAL*
  Agrawal, R., Bose, S. T., Moin, P.
  2024
- **Navier-Stokes characteristic boundary conditions for high-enthalpy compressible flows in thermochemical non-equilibrium** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Williams, C., Di Renzo, M., Urzay, J., Moin, P.
  2024; 509
- **Large-eddy simulations of the NACA23012 airfoil with laser-scanned ice shapes** *AEROSPACE SCIENCE AND TECHNOLOGY*
  Bornhoft, B., Jain, S. S., Goc, K., Bose, S. T., Moin, P.
  2024; 146
- **Stable, entropy-consistent, and localized artificial-diffusivity method for capturing discontinuities** *Physical Review Fluids*
  Jain, S. S., Agrawal, R., Moin, P.
  2024
- **Reynolds number sensitivities in wall-modeled large-eddy simulations of a high-lift aircraft**
  Agrawal, R., Whitmore, M. P., Goc, K. A., Bose, S. T., Moin, P., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Large-eddy simulation of Supercooled Large Droplets impingement using a Lagrangian particle approach**
  Zabaleta, F., Bornhoft, B., Moin, P., Jain, S. S., Bose, S. T., AIAA

AMER INST AERONAUTICS & ASTRONAUTICS.2024

- **Roughness modeling investigation in large-eddy simulations of a NACA23012 airfoil under rime ice conditions**
  Bornhoft, B., Moin, P., Jain, S. S., Bose, S. T., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Slip-Wall-Modeled Large-Eddy Simulation for Prediction of Turbulent Smooth-Body Separation**
  Whitmore, M. P., Bose, S. T., Moin, P., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024
- **Nonequilibrium wall model for large eddy simulations of complex flows exhibiting turbulent smooth body separation** *Physical Review Fluids*
  Agrawal, R., Bose, S. T., Moin, P.
  2024; 9
- **Are the dynamics of wall turbulence in minimal channels and larger domain channels equivalent? A graph-theoretic approach**
  Elnahhas, A., Lenz, E., Moin, P., Lozano-Duran, A., Bae, H.
  edited by Jimenez, J.
  IOP PUBLISHING LTD.2024
- **Wind Tunnel and Grid Resolution Effects in Large-Eddy Simulation of the High-Lift Common Research Model** *JOURNAL OF AIRCRAFT*
  Goc, K. A., Moin, P., Bose, S. T., Clark, A. M.
  2023
- **Near-wall model for compressible turbulent boundary layers based on an inverse velocity transformation** *JOURNAL OF FLUID MECHANICS*
  Griffin, K. P., Fu, L., Moin, P.
  2023; 970
- **Assessment of diffuse-interface methods for compressible multiphase fluid flows and elastic-plastic deformation in solids** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Jain, S. S., Adler, M. C., West, J. R., Mani, A., Moin, P., Lele, S. K.
  2023; 475
- **Introduction** *ANNUAL REVIEW OF FLUID MECHANICS*
  Stone, H. A., Moin, P.
  2023; 55: V
- **Atomization of the optimally disturbed liquid jets** *PHYSICAL REVIEW FLUIDS*
  Hwang, H., Kim, D., Moin, P.
  2022; 7 (11)
- **A kinetic energy-and entropy-preserving scheme for compressible two-phase flows** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Jain, S. S., Moin, P.
  2022; 464
- **Non-Boussinesq subgrid-scale model with dynamic tensorial coefficients** *PHYSICAL REVIEW FLUIDS*
  Agrawal, R., Whitmore, M. P., Griffin, K. P., Bose, S. T., Moin, P.
  2022; 7 (7)
- **Performance of Wall-Modeled LES with Boundary-Layer-Conforming Grids for External Aerodynamics** *AIAA JOURNAL*
  Lozano-Duran, A., Bose, S. T., Moin, P.
  2021
- **Prediction of aerothermal characteristics of a generic hypersonic inlet flow** *THEORETICAL AND COMPUTATIONAL FLUID DYNAMICS*
  Fu, L., Bose, S., Moin, P.
  2021
- **Velocity transformation for compressible wall-bounded turbulent flows with and without heat transfer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Griffin, K., Fu, L., Moin, P.
  2021; 118 (34)

- **Wall-Modeled Large-Eddy Simulation of Turbulent Boundary Layers with Mean-Flow Three-Dimensionality** *AIAA JOURNAL*
  Cho, M., Lozano-Duran, A., Moin, P., Park, G.
  2021; 59 (5): 1707-1717
- **The turbulent bubble break-up cascade. Part 2. Numerical simulations of breaking waves** *JOURNAL OF FLUID MECHANICS*
  Chan, W., Johnson, P. L., Moin, P., Urzay, J.
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- **The turbulent bubble break-up cascade. Part 1. Theoretical developments** *JOURNAL OF FLUID MECHANICS*
  Chan, W., Johnson, P. L., Moin, P.
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- **A mechanism for the amplification of interface distortions on liquid jets** *JOURNAL OF FLUID MECHANICS*
  Hwang, H., Moin, P., Hack, M.
  2021; 911
- **Shock-induced heating and transition to turbulence in a hypersonic boundary layer** *Journal of Fluid Mechanics*
  Fu, L., Karp, M., Bose, S. T., Moin, P., Urzay, J.
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- **Large eddy simulation of aircraft at affordable cost: a milestone in computational fluid dynamics** *FLOW*
  Goc, K. A., Lehmkuhl, O., Park, G. I., Bose, S. T., Moin, P.
  2021; 1: 1-21
- **Identifying and tracking bubbles and drops in simulations: A toolbox for obtaining sizes, lineages, and breakup and coalescence statistics** *Journal of Computational Physics*
  Chan, W. R., Dodd, M. S., Johnson, P. L., Moin, P.
  2021; 432: 22
- **General method for determining the boundary layer thickness in nonequilibrium flows** *Physical Review Fluids*
  Griffin, K., Fu, L., Moin, P.
  2021; 6: 024608
- **Laminar to fully turbulent flow in a pipe: scalar patches, structural duality of turbulent spots and transitional overshoot** *JOURNAL OF FLUID MECHANICS*
  Wu, X., Moin, P., Adrian, R. J.
  2020; 896
- **Subgrid-scale Capillary Breakup Model for Liquid Jet Atomization** *COMBUSTION SCIENCE AND TECHNOLOGY*
  Kim, D., Moin, P.
  2020
- **Turbophoresis of small inertial particles: theoretical considerations and application to wall-modelled large-eddy asimulations** *JOURNAL OF FLUID MECHANICS*
  Johnson, P. L., Bassenne, M., Moin, P.
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- **Non-equilibrium three-dimensional boundary layers at moderate Reynolds numbers** *JOURNAL OF FLUID MECHANICS*
  Lozano-Duran, A., Giometto, M. G., Park, G., Moin, P.
  2020; 883
- **A conservative diffuse-interface method for compressible two-phase flows** *Journal of Computational Physics*
  Jain, S. S., Mani, A., Moin, P.
  2020; 418
- **Wall-modeled large-eddy simulation of non-equilibrium turbulent boundary layers** *arXiv preprint arXiv:2001.01020*
  Cho, M., Park, G., Lozano-Durán, A., Moin, P.
  2020: 1-14
- **Birth of microbubbles in turbulent breaking waves**

Chan, W., Mirjalili, S., Jain, S. S., Urzay, J., Mani, A., Moin, P.
AMER PHYSICAL SOC.2019

- **A dynamic spectrally enriched subgrid-scale model for preferential concentration in particle-laden turbulence** *INTERNATIONAL JOURNAL OF MULTIPHASE FLOW*
  Bassenne, M., Esmaily, M., Livescu, D., Moin, P., Urzay, J.
  2019; 116: 270–80
- **Dynamic slip wall model for large-eddy simulation.** *Journal of fluid mechanics*
  Bae, H. J., Lozano-Durán, A., Bose, S. T., Moin, P.
  2019; 859: 400-432
- **Dynamic slip wall model for large-eddy simulation** *JOURNAL OF FLUID MECHANICS*
  Bae, H., Lozano-Duran, A., Bose, S. T., Moin, P.
  2018; 859: 400–432
- **Wavelet multiresolution analysis of particle-laden turbulence** *PHYSICAL REVIEW FLUIDS*
  Bassenne, M., Moin, P., Urzay, J.
  2018; 3 (8)
- **Coherent instability in wall-bounded shear** *JOURNAL OF FLUID MECHANICS*
  Hack, M., Moin, P.
  2018; 844: 917–55
- **Annual Review of Fluid Mechanics Introduction** *ANNUAL REVIEW OF FLUID MECHANICS, VOL 50*
  Davis, S. H., Moin, P.
  edited by Davis, S. H., Moin, P.
  2018; 50: V-VI
- **Conservative and bounded volume-of-fluid advection on unstructured grids** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Ivey, C. B., Moin, P.
  2017; 350: 387–419
- **Large-Eddy Simulation of Thermally Stratified Atmospheric Boundary-Layer Flow Using a Minimum Dissipation Model.** *Boundary-layer meteorology*
  Abkar, M., Moin, P.
  2017; 165 (3): 405-419
- **Large-Eddy Simulation of Thermally Stratified Atmospheric Boundary-Layer Flow Using a Minimum Dissipation Model** *BOUNDARY-LAYER METEOROLOGY*
  Abkar, M., Moin, P.
  2017; 165 (3): 405–19
- **Log-layer mismatch and modeling of the fluctuating wall stress in wall-modeled large-eddy simulations.** *Physical review fluids*
  Yang, X. I., Park, G. I., Moin, P.
  2017; 2 (10)
- **Large-Eddy Simulation-Based Characterization of Suction and Oscillatory Blowing Fluidic Actuator** *AIAA JOURNAL*
  Kim, J., Moin, P., Seifert, A.
  2017; 55 (8): 2566–79
- **Transitional-turbulent spots and turbulent-turbulent spots in boundary layers** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wu, X., Moin, P., Wallace, J. M., Skarda, J., Lozano-Duran, A., Hickey, J.
  2017; 114 (27): E5292–E5299
- **An Appreciation of the Life and Work of William C. Reynolds (1933-2004)** *ANNUAL REVIEW OF FLUID MECHANICS, VOL 49*
  Moin, P., Homsy, G. M.
  2017; 49: 1-21
- **Minimum-dissipation scalar transport model for large-eddy simulation of turbulent flows** *PHYSICAL REVIEW FLUIDS*

Abkar, M., Bae, H. J., Moin, P.
2016; 1 (4)

- **Space-time characteristics of wall-pressure and wall shear-stress fluctuations in wall-modeled large eddy simulation** *PHYSICAL REVIEW FLUIDS*
  Park, G. I., Moin, P.
  2016; 1 (2)
- **Direct numerical simulation of a turbulent hydraulic jump: turbulence statistics and air entrainment** *JOURNAL OF FLUID MECHANICS*
  Mortazavi, M., Le Chenadec, V., Moin, P., Mani, A.
  2016; 797: 60-94
- **Space-time characteristics of wall-pressure and wall shear-stress fluctuations in wall-modeled large eddy simulation.** *Physical review fluids*
  Park, G. I., Moin, P.
  2016; 1 (2)
- **Constant-energetics physical-space forcing methods for improved convergence to homogeneous-isotropic turbulence with application to particle-laden flows** *PHYSICS OF FLUIDS*
  Bassenne, M., Urzay, J., Park, G. I., Moin, P.
  2016; 28 (3)
- **Numerical aspects and implementation of a two-layer zonal wall model for LES of compressible turbulent flows on unstructured meshes** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Park, G. I., Moin, P.
  2016; 305: 589-603
- **On the suitability of second-order accurate discretizations for turbulent flow simulations** *EUROPEAN JOURNAL OF MECHANICS B-FLUIDS*
  Moin, P., Verzicco, R.
  2016; 55: 242-245
- **Accurate interface normal and curvature estimates on three-dimensional unstructured non-convex polyhedral meshes** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Ivey, C. B., Moin, P.
  2015; 300: 365-386
- **Minimum-dissipation models for large-eddy simulation** *PHYSICS OF FLUIDS*
  Rozema, W., Bae, H. J., Moin, P., Verstappen, R.
  2015; 27 (8)
- **Osborne Reynolds pipe flow: Direct simulation from laminar through gradual transition to fully developed turbulence** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wu, X., Moin, P., Adrian, R. J., Baltzer, J. R.
  2015; 112 (26): 7920-7924
- **Reduced-order representation of near-wall structures in the late transitional boundary layer** *JOURNAL OF FLUID MECHANICS*
  Sayadi, T., Schmid, P. J., Nichols, J. W., Moin, P.
  2014; 748: 278-301
- **Subgrid-scale backscatter in reacting and inert supersonic hydrogen-air turbulent mixing layers** *JOURNAL OF FLUID MECHANICS*
  O'Brien, J., Urzay, J., Ihme, M., Moin, P., Saghafian, A.
  2014; 743: 554-584
- **An improved dynamic non-equilibrium wall-model for large eddy simulation** *PHYSICS OF FLUIDS*
  Park, G. I., Moin, P.
  2014; 26 (1)
- **A dynamic slip boundary condition for wall-modeled large-eddy simulation** *PHYSICS OF FLUIDS*
  Bose, S. T., Moin, P.
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- **Direct numerical simulation of complete H-type and K-type transitions with implications for the dynamics of turbulent boundary layers** *JOURNAL OF FLUID MECHANICS*
  Sayadi, T., Hamman, C. W., Moin, P.
  2013; 724: 480-509
- **Application of vortex identification schemes to direct numerical simulation data of a transitional boundary layer** *PHYSICS OF FLUIDS*
  Pierce, B., Moin, P., Sayadi, T.
  2013; 25 (1)
- **On the use of the Ffowcs Williams-Hawkings equation to predict far-field jet noise from large-eddy simulations** *INTERNATIONAL JOURNAL OF AEROACOUSTICS*
  Mendez, S., Shoeybi, M., Lele, S. K., Moin, P.
  2013; 12 (1-2): 1-20
- **Large eddy simulation of controlled transition to turbulence** *PHYSICS OF FLUIDS*
  Sayadi, T., Moin, P.
  2012; 24 (11)
- **Fundamental and subharmonic transition to turbulence in zero-pressure-gradient flat-plate boundary layers** *PHYSICS OF FLUIDS*
  Sayadi, T., Hamman, C. W., Moin, P.
  2012; 24 (9)
- **Verification of variable-density flow solvers using manufactured solutions** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Shunn, L., Ham, F., Moin, P.
  2012; 231 (9): 3801-3827
- **Large-Eddy Simulations of Perfectly Expanded Supersonic Jets Using an Unstructured Solver** *48th AIAA Aerospace Sciences Meeting*
  Mendez, S., Shoeybi, M., Sharma, A., Ham, F. E., Lele, S. K., Moin, P.
  AMER INST AERONAUTICS ASTRONAUTICS.2012: 1103–18
- **Boundary layer turbulence in transitional and developed states** *PHYSICS OF FLUIDS*
  Park, G. I., Wallace, J. M., Wu, X., Moin, P.
  2012; 24 (3)
- **Grid-point requirements for large eddy simulation: Chapman's estimates revisited** *PHYSICS OF FLUIDS*
  Choi, H., Moin, P.
  2012; 24 (1)
- **NOISE PREDICTION OF PRESSURE-MISMATCHED JETS USING UNSTRUCTURED LARGE EDDY SIMULATION** *ASME Turbo Expo 2011*
  Khalighi, Y., Ham, F., Moin, P., Lele, S. K., Schlinker, R. H.
  AMER SOC MECHANICAL ENGINEERS.2011: 381–387
- **Grid-independent large-eddy simulation using explicit filtering** *PHYSICS OF FLUIDS*
  Bose, S. T., Moin, P., You, D.
  2010; 22 (10)
- **A high order multivariate approximation scheme for scattered data sets** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Wang, Q., Moin, P., Laccarino, G.
  2010; 229 (18): 6343-6361
- **An adaptive implicit-explicit scheme for the DNS and LES of compressible flows on unstructured grids** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Shoeybi, M., Svaerd, M., Ham, F. E., Moin, P.
  2010; 229 (17): 5944-5965
- **Transitional and turbulent boundary layer with heat transfer** *PHYSICS OF FLUIDS*
  Wu, X., Moin, P.
  2010; 22 (8)
- **Large-activation-energy theory for premixed combustion under the influence of enthalpy fluctuations** *JOURNAL OF FLUID MECHANICS*

Wu, X., Moin, P.
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- **Assessment of high-resolution methods for numerical simulations of compressible turbulence with shock waves** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Johnsen, E., Larsson, J., Bhagatwala, A. V., Cabot, W. H., Moin, P., Olson, B. J., Rawat, P. S., Shankar, S. K., Sjoegreen, B., Yee, H. C., Zhong, X., Lele, S. K.
  2010; 229 (4): 1213-1237
- **Prediction of Sound Generated by Complex Flows at Low Mach Numbers** *AIAA JOURNAL*
  Khalighi, Y., Mani, A., Ham, F., Moin, P.
  2010; 48 (2): 306-316
- **A RATIONAL INTERPOLATION SCHEME WITH SUPERPOLYNOMIAL RATE OF CONVERGENCE** *SIAM JOURNAL ON NUMERICAL ANALYSIS*
  Wang, Q., Moin, P., Iaccarino, G.
  2010; 47 (6): 4073-4097
- **Sources of high-speed jet noise: analysis of LES data and modeling** *IUTAM Symposium on Computational Aero-Acoustics for Aircraft Noise Prediction*
  Lele, S. K., Mendez, S., Ryu, J., Nichols, J., Shoeybi, M., Moin, P.
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- **UNSTRUCTURED LARGE EDDY SIMULATION TECHNOLOGY FOR PREDICTION AND CONTROL OF JET NOISE** *ASME Turbo Expo 2010*
  Khalighi, Y., Ham, F., Moin, P., Lele, S. K., Colonius, T., Schlinker, R. H., Reba, R. A., Simonich, J.
  AMER SOC MECHANICAL ENGINEERS.2010: 57–70
- **Revisiting Taylor's hypothesis** *JOURNAL OF FLUID MECHANICS*
  Moin, P.
  2009; 640: 1-4
- **Suitability of artificial bulk viscosity for large-eddy simulation of turbulent flows with shocks** *JOURNAL OF COMPUTATIONAL PHYSICS*
  Mani, A., Larsson, J., Moin, P.
  2009; 228 (19): 7368-7374
- **Prediction of wall-pressure fluctuation in turbulent flows with an immersed boundary method** *JOURNAL OF COMPUTATIONAL PHYSICS*
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