

Stanford



Parviz Moin

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

CONTACT INFORMATION

- **Administrative Contact**

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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: interaction of turbulent flows and shock waves, aerodynamic noise, hypersonic flows, propulsion, computational science, flow control, large eddy simulation. He is a co- Editor of the Annual Review of Fluid Mechanics and Associate Editor of Journal of Computational Physics, and on the editorial board of Physical Review Fluids.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering

ADMINISTRATIVE APPOINTMENTS

- Founding Director, Institute for Computational and Mathematical Engineering, Stanford, (2003-2005)
- 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 Prize, 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

- Committee on Advanced Technologies for Gas Turbines, National Academies of Sciences, Engineering and Medicine (2018 - present)
- Panel on Review of In-house Laboratory Independent Research at the Army's Research Development, and Engineering Centers, National Academies of Sciences, Engineering and Medicine (2018 - present)
- Aeronautics and Space Engineering Board, National Academies of Sciences, Engineering and Medicine (2017 - present)
- Editorial Board, Physical Review Fluids (2015 - present)
- 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, International Temporary Nominating Committee, National Academy of Sciences (2013 - present)
- Member, Committee on Membership, National Academy of Sciences (2013 - 2016)
- 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 - present)
- 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 - present)
- Vice Chair, Division of Fluid Dynamics, American Physical Society (1998 - 1999)
- Executive Committee, Division of Fluid Dynamics, American Physical Society (1993 - 1996)

PROGRAM AFFILIATIONS

- Institute for Computational and Mathematical Engineering (ICME)

PROFESSIONAL EDUCATION

- B.S., University of Minnesota , Mechanical Engineering (with High Distinction) (1974)
- M.S., Stanford University , Mechanical Engineering (1975)
- M.S., Stanford University , Mathematics (1978)
- Ph.D., Stanford University , Mechanical Engineering (with Great Distinction) (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: <http://www.stanford.edu/group/fpc/cgi-bin/fpcwiki/>

Teaching

COURSES

2018-19

- Seminar in Fluid Mechanics: ENGR 298 (Aut)
- Spectral Methods in Computational Physics: CME 322, ME 408 (Win)
- Turbulence: ME 361 (Spr)

2017-18

- Ordinary Differential Equations for Engineers: CME 102, ENGR 155A (Win)
- Ordinary Differential Equations for Engineers, ACE: CME 102A (Win)
- Turbulence: ME 361 (Spr)
- Turbulence Physics and Modeling Using Numerical Simulation Data: ME 406 (Sum)

2016-17

- Spectral Methods in Computational Physics: CME 322, ME 408 (Win)

2015-16

- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)
- Ordinary Differential Equations for Engineers: CME 102, ENGR 155A (Win)
- Ordinary Differential Equations for Engineers, ACE: CME 102A (Win)
- Turbulence Physics and Modeling Using Numerical Simulation Data: ME 406 (Sum)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Michael Adler, Minjeong Cho, Mario Di Renzo, Quentin Douasbin, Lin Fu, Zhu Huang, Jinah Jeun, Lluís Jofre-Cruanyes, Perry Johnson, Michael Karp, Dong Li, Adrian Lozano Duran, Immanuel Paul

Doctoral Dissertation Advisor (AC)

Ahmed Elnahhas, Suhas Suresh

Orals Evaluator

Thomas Underwood

Master's Program Advisor

Kaushik Ram Sadagopan

Postdoctoral Research Mentor

Mario Di Renzo

Doctoral (Program)

Publications

PUBLICATIONS

- **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., 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): 405–19
- **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
- **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
- **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.
2014; 26 (1)
- **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.
2010; 655: 3-37
 - **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.
ELSEVIER SCIENCE BV.2010: 84–93
 - **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*
Kang, S., Iaccarino, G., Ham, F., Moin, P.
2009; 228 (18): 6753-6772
- **Forest of hairpins in a low-Reynolds-number zero-pressure-gradient flat-plate boundary layer** *PHYSICS OF FLUIDS*
Wu, X., Moin, P.
2009; 21 (9)
- **Direct numerical simulation of turbulence in a nominally zero-pressure-gradient flat-plate boundary layer** *JOURNAL OF FLUID MECHANICS*
Wu, X., Moin, P.
2009; 630: 5-41
- **Accurate Immersed-Boundary Reconstructions for Viscous Flow Simulations** *AIAA JOURNAL*
Kang, S., Iaccarino, G., Moin, P.
2009; 47 (7): 1750-1760
- **Computational study of optical distortions by separated shear layers and turbulent wakes** *JOURNAL OF FLUID MECHANICS*
Mani, A., Moin, P., Wang, M.
2009; 625: 273-298
- **A dynamic global-coefficient subgrid-scale model for large-eddy simulation of turbulent scalar transport in complex geometries** *PHYSICS OF FLUIDS*
You, D., Moin, P.
2009; 21 (4)
- **Large-eddy simulation of evaporating spray in a coaxial combustor** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Apte, S. V., Mahesh, K., Moin, P.
2009; 32: 2247-2256
- **Active Control of Flow Separation Over an Airfoil Using Synthetic Jets** *IUTAM Symposium on Unsteady Separated Flows and their Control*
You, D., Moin, P.
SPRINGER.2009: 551–561
- **Numerical Experiments with Shock-Turbulence Interaction** *3rd International Conference on Numerical Modeling of Space Plasma Flows*
Lele, S. K., Larsson, J., Bhagatwala, A., Moin, P.
ASTRONOMICAL SOC PACIFIC.2009: 31–41
- **Stochastic modeling of atomizing spray in a complex swirl injector using large eddy simulation** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*
Apte, S. V., Mahesh, K., Gorokhovski, M., Moin, P.
2009; 32: 2257-2266
- **MINIMAL REPETITION DYNAMIC CHECKPOINTING ALGORITHM FOR UNSTEADY ADJOINT CALCULATION** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Wang, Q., Moin, P., Iaccarino, G.
2009; 31 (4): 2549-2567
- **Resolution requirements for aero-optical simulations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Mani, A., Wang, M., Moin, P.
2008; 227 (21): 9008-9020
- **Active control of flow separation over an airfoil using synthetic jets** *IUTAM Symposium on Unsteady Separated Flows and their Control*
You, D., Moin, P.
ACADEMIC PRESS LTD- ELSEVIER SCIENCE LTD.2008: 1349–57
- **Nonlinear evolution of the Richtmyer-Meshkov instability** *JOURNAL OF FLUID MECHANICS*
Herrmann, M., Moin, P., Abarzhi, S. I.
2008; 612: 311-338

- **Preface to Special Topic: Turbulence Physics and Control - Papers from a Workshop in Honor of John Kim's 60th Birthday, Stanford, California, September 2007** *PHYSICS OF FLUIDS*
Choi, H., Moin, P.
2008; 20 (10)
- **Discrete conservation principles in large-eddy simulation with application to separation control over an airfoil** *Workshop on Turbulence Physics and Control*
You, D., Ham, F., Moin, P.
AMER INST PHYSICS.2008
- **A direct numerical simulation study on the mean velocity characteristics in turbulent pipe flow** *JOURNAL OF FLUID MECHANICS*
Wu, X., Moin, P.
2008; 608: 81-112
- **A predictive wall model for large-eddy simulation based on optimal control techniques** *PHYSICS OF FLUIDS*
Templeton, J. A., Wang, M., Moin, P.
2008; 20 (6)
- **A Monte Carlo method for solving unsteady adjoint equations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Wang, Q., Gleich, D., Saberi, A., Etemadi, N., Moin, P.
2008; 227 (12): 6184-6205
- **Toward petascale shock/turbulence computations** *4th Annual Scientific Discovery Through Advanced Computing Conference (SciDAC 2008)*
Larsson, J., Johnsen, E., Lele, S. K., Moin, P.
IOP PUBLISHING LTD.2008
- **Large-eddy simulation analysis of mechanisms for viscous losses in a turbomachinery tip-clearance flow** *JOURNAL OF FLUID MECHANICS*
You, D., Wang, M., Moin, P., Mittal, R.
2007; 586: 177-204
- **Effects of hydrophobic surfaces on the drag and lift of a circular cylinder** *PHYSICS OF FLUIDS*
You, D., Moin, P.
2007; 19 (8)
- **Vortex dynamics and low-pressure fluctuations in the tip-clearance flow** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*
You, D., Wang, M., Moin, P., Mittal, R.
2007; 129 (8): 1002-1014
- **A dynamic global-coefficient subgrid-scale eddy-viscosity model for large-eddy simulation in complex geometries** *PHYSICS OF FLUIDS*
You, D., Moin, P.
2007; 19 (6)
- **Trailing-edge noise reduction using derivative-free optimization and large-eddy simulation** *JOURNAL OF FLUID MECHANICS*
Marsden, A. L., Wang, M., Dennis, J. E., Moin, P.
2007; 572: 13-36
- **Complex effects in large eddy simulations** *Symposium on Complex Effects in Large Eddy Simulation*
Moin, P., Iaccarino, G.
SPRINGER.2007: 1-?
- **Towards time-stable and accurate LES on unstructured grids** *Symposium on Complex Effects in Large Eddy Simulation*
Ham, F., Mattsson, K., Iaccarino, G., Moin, P.
SPRINGER.2007: 235-?
- **Computational issues and algorithm assessment for shock/turbulence interaction problems** *3rd Annual Scientific Discovery through Advanced Computing Conference (SciDAC 2007)*
Larsson, J., Cook, A., Lele, S. K., Moin, P., Cabot, B., Sjoegreen, B., Yee, H., Zhong, X.
IOP PUBLISHING LTD.2007
- **Application of a dynamic global-coefficient subgrid-scale model for large-eddy simulation in complex geometries** *5th Joint ASME/JSME Fluids Engineering Summer Conference*

- You, D., Moin, P.
AMER SOC MECHANICAL ENGINEERS.2007: 1429–1437
- **Numerical Simulations of the bursting of a laminar separation bubble and its relation to airfoil stall** *11th EUROMECH European Turbulence Conference*
Marxen, O., You, D., Moin, P.
SPRINGER-VERLAG BERLIN.2007: 712–714
 - **Statistical description of the free-space propagation of highly aberrated optical beams** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*
Mani, A., Wang, M., Moin, P.
2006; 23 (12): 3027-3035
 - **Large-eddy simulations of longitudinal vortices embedded in a turbulent boundary layer** *AIAA JOURNAL*
You, D., Wang, M., Mittal, R., Moin, P.
2006; 44 (12): 3032-3039
 - **Direct numerical simulation of polymer-induced drag reduction in turbulent boundary layer flow of inhomogeneous polymer solutions** *JOURNAL OF FLUID MECHANICS*
Dimitropoulos, C. D., Dubief, Y., Shaqfeh, E. S., Moin, P.
2006; 566: 153-162
 - **A quasi-generalized-coordinate approach for numerical simulation of complex flows** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*
You, D., Wang, M., Mittal, R., Moin, P.
2006; 128 (6): 1394-1399
 - **Large-eddy simulation of flow over a wall-mounted hump with separation control** *AIAA JOURNAL*
You, D., Wang, M., Moin, P.
2006; 44 (11): 2571-2577
 - **Effects of tip-gap size on the tip-leakage flow in a turbomachinery cascade** *PHYSICS OF FLUIDS*
You, D., Wang, M., Moin, P., Mittal, R.
2006; 18 (10)
 - **Large-eddy simulation of reacting turbulent flows in complex geometries** *4th ASME/JSME Joint Fluids Engineering Conference*
Mahesh, K., Constantinescu, G., Apte, S., Iaccarino, G., Ham, F., Moin, P.
ASME.2006: 374–81
 - **Large-eddy simulation of realistic gas turbine combustors** *AIAA 42nd Aerospace Sciences Meeting and Exhibit*
Moin, P., Apte, S. V.
AMER INST AERONAUTICS ASTRONAUTICS.2006: 698–708
 - **Analysis of stability and accuracy of finite-difference schemes on a skewed mesh** *JOURNAL OF COMPUTATIONAL PHYSICS*
You, D. Y., Mittal, R., Wang, M., Moin, P.
2006; 213 (1): 184-204
 - **Partially reflecting and non-reflecting boundary conditions for simulation of compressible viscous flow** *11th International Congress on Sound and Vibration*
Polifke, W., Wall, C., Moin, P.
ACADEMIC PRESS INC ELSEVIER SCIENCE.2006: 437–49
 - **Computational study on the internal layer in a diffuser** *JOURNAL OF FLUID MECHANICS*
Wu, X. H., Schluter, J., Moin, P., Pitsch, H., Iaccarino, G., Ham, F.
2006; 550: 391-412
 - **An efficient wall model for large-eddy simulation based on optimal control theory** *PHYSICS OF FLUIDS*
Templeton, J. A., Wang, M., Moin, P.
2006; 18 (2)
 - **Wall modeling for large-eddy simulation of turbulent boundary layers** *IUTAM Symposium on One Hundred Years of Boundary Layer Research*
Moin, P., Wang, M.
SPRINGER.2006: 269–278

-
- **An experimental and numerical investigation of drag reduction in a turbulent boundary layer using a rigid rodlike polymer** *PHYSICS OF FLUIDS*
Paschkewitz, J. S., Dimitropoulos, C. D., Hou, Y. X., Somandepalli, V. S., Mungal, M. G., Shaqfeh, E. S., Moin, P.
2005; 17 (8)
 - **New answers on the interaction between polymers and vortices in turbulent flows** *FLOW TURBULENCE AND COMBUSTION*
Dubief, Y., Terrapon, V. E., White, C. M., Shaqfeh, E. S., Moin, P., Lele, S. K.
2005; 74 (4): 311-329
 - **Direct numerical simulation of polymer-induced drag reduction in turbulent boundary layer flow** *PHYSICS OF FLUIDS*
Dimitropoulos, C. D., Dubief, Y., Shaqfeh, E. S., Moin, P., Lele, S. K.
2005; 17 (1)
 - **Large-eddy simulation of rotor tip-clearance flows: Computational challenges and accomplishments** *Annual Conference on High Performance Computing Modernization Program*
Moin, P., Wang, M., You, D., Mittal, R.
IEEE COMPUTER SOC.2005: 134-141
 - **Vortex dynamics and mechanisms for viscous losses in the tip-clearance flow** *ASME Fluids Engineering Division Summer Meeting*
You, D., Wang, M., Moin, P., Mittal, R.
AMER SOC MECHANICAL ENGINEERS.2005: 1601-1610
 - **Outflow conditions for integrated large eddy simulation/Reynolds-averaged Navier-Stokes simulations** *AIAA 32nd Fluid Dynamics Conference*
Schluter, J. U., Pitsch, H., Moin, P.
AMER INST AERONAUT ASTRONAUT.2005: 156-64
 - **Higher entropy conservation and numerical stability of compressible turbulence simulations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Honein, A. E., Moin, P.
2004; 201 (2): 531-545
 - **Numerical simulation of turbulent drag reduction using rigid fibres** *JOURNAL OF FLUID MECHANICS*
Paschkewitz, J. S., Dubief, Y., Dimitropoulos, C. D., Shaqfeh, E. S., Moin, P.
2004; 518: 281-317
 - **Study of tip-clearance flow in turbomachines using large-eddy simulation** *COMPUTING IN SCIENCE & ENGINEERING*
You, D. H., Wang, M., Moin, P., Mittal, R.
2004; 6 (6): 38-46
 - **Suppression of vortex-shedding noise via derivative-free shape optimization** *PHYSICS OF FLUIDS*
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