



## Gianluca Iaccarino

Professor of Mechanical Engineering and Director, Institute for Computational and Mathematical Engineering

 Curriculum Vitae available Online

### CONTACT INFORMATION

- **Administrator**

Corinne Beck - Administrative Associate

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### Bio

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#### BIO

I am a professor in Mechanical Engineering and Director of the Institute for Computational Mathematical Engineering (<https://icme.stanford.edu>).

I received my PhD in Italy from the Politecnico di Bari in 2005 and have worked for several years at the Center for Turbulence Research (NASA Ames & Stanford) before joining the faculty at Stanford in 2007. Since 2014 I am the Director of the PSAAP Center at Stanford, funded by the US Department of Energy: a \$20M research Center focused on multiphysics simulations, uncertainty quantification and exascale computing (<http://exascale.stanford.edu>).

In 2010, I received the Presidential Early Career Award for Scientists and Engineers (PECASE) award from the President Obama. In the last couple of years, I received best paper awards from AIAA, ASME IMECE and Turbo Expo Conferences.

Over the years, my interests in research and teaching have touched many topics, but always revolved around the use of computing and data to solve problems in energy, biomedicine, aerodynamics, design.

#### ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy
- Member, Institute for Computational and Mathematical Engineering (ICME)
- Affiliate, Stanford Woods Institute for the Environment

#### ADMINISTRATIVE APPOINTMENTS

- Director, ICME Institute for Computational and Mathematical Engineering, (2018- present)
- Visiting Professor, Ecole Centrale Paris, (2016-2016)
- Director, Exascale Computing Engineering Center - PSAAP II, (2014- present)
- Visiting Professor, Technical University of Munich, (2011-2011)

- Director, TFSA Thermal and Fluid Sciences Industrial Affiliates Program, (2010-2018)
- Professor, Mechanical Engineering Department, Stanford, (2007- present)
- Postdoctoral Fellow, Mechanical Engineering Department, Stanford, (2005-2007)
- Research Engineer, CTR, Center for Turbulence Research, (1998-2005)
- Research Scientist, CIRA, Italian Center for Aerospace Research, (1993-1998)

## HONORS AND AWARDS

- TUM Ambassador, Technical University of Munich (2018)
- ASME IMECE Best Paper Award, ASME (2017)
- Jefferson Goblet Award, Best Paper, AIAA (2017)
- Turbo Expo Best Paper Award, ASME (2016)
- William R. and Inez Kerr Bell Faculty Scholar, Stanford University (2014)
- Gold Medal Honoring Italians Abroad, City of Piano di Sorrento (Italy) (2013)
- Presidential Early Career Award for Scientists and Engineers, The White House & US Department of Energy (2010)
- Humboldt Fellowship, Humboldt Research Fellowship Program (2009)
- Terman Fellow, Stanford University (2007)

## BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate Editor, Computers and Fluids (2018 - present)
- Associate Editor, Flow, Turbulence & Combustion (2015 - present)
- Associate Editor, Journal of Computational Physics (2014 - present)
- Co-Chair, APS Division of Fluid Dynamics Conference (2014 - 2014)
- AdCom, Advisory Committee to the Chair, Mechanical Engineer Department, Stanford (2013 - 2018)
- Associate Editor, ASME Applied Mechanics Review (2013 - 2017)
- General Chair (elected), AIAA XVI Non-Deterministic Approaches (2013 - 2013)
- Technical Chair (elected), AIAA XV Non-Deterministic Approaches (2013 - 2013)
- Associate Fellow, AIAA (2012 - present)
- Member, SIAM, ASME, AIAA, APS (2010 - present)
- Non-Deterministic Approaches Technical Committee, AIAA (2010 - present)
- Member of the Board of Directors, Cascade Technologies Inc (2000 - present)

## PROFESSIONAL EDUCATION

- PhD, Politecnico di Bari, Italy , Mechanical Engineering (2005)
- MS, University di Napoli, Italy , Aeronautical Engineering (1993)
- BS, University di Napoli, Italy , Aeronautical Engineering (1992)

## PATENTS

- ES Shaqfeh, G Iaccarino, P Shah. "United States Patent App. 15/435,112 Methods and Systems for Simulating Nanoparticle Flux", Leland Stanford Junior University, Sep 14, 2017

## LINKS

- My Homepage: <http://www.stanford.edu/~jops>
- Google Scholar: [https://scholar.google.com/citations?hl=en&user=Icy-HoEAAA AJ&view\\_op=list\\_works&sortby=pubdate](https://scholar.google.com/citations?hl=en&user=Icy-HoEAAA AJ&view_op=list_works&sortby=pubdate)

- PSAAP Center at Stanford: <https://exascale.stanford.edu>
- ICME: <https://icme.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Computing and data for energy, health and engineering

Challenges in energy sciences, green technology, transportation, and in general, engineering design and prototyping are routinely tackled using numerical simulations and physical testing. Computations barely feasible two decades ago on the largest available supercomputers, have now become routine using turnkey commercial software running on a laptop. Demands on the analysis of new engineering systems are becoming more complex and multidisciplinary in nature, but exascale-ready computers are on the horizon. What will be the next frontier? Can we channel this enormous power into an increased ability to simulate and, ultimately, to predict, design and control? In my opinion two roadblocks loom ahead: the development of credible models for increasingly complex multi-disciplinary engineering applications and the design of algorithms and computational strategies to cope with real-world uncertainty.

My research objective is to pursue concerted innovations in physical modeling, numerical analysis, data fusion, probabilistic methods, optimization and scientific computing to fundamentally change our present approach to engineering simulations relevant to broad areas of fluid mechanics, transport phenomena and energy systems. The key realization is that computational engineering has largely ignored natural variability, lack of knowledge and randomness, targeting an idealized deterministic world. Embracing stochastic scientific computing and data/algorithms fusion will enable us to minimize the impact of uncertainties by designing control and optimization strategies that are robust and adaptive. This goal can only be accomplished by developing innovative computational algorithms and new, physics-based models that explicitly represent the effect of limited knowledge on the quantity of interest.

#### Multidisciplinary Teaching

I consider the classical boundaries between disciplines outdated and counterproductive in seeking innovative solutions to real-world problems. The design of wind turbines, biomedical devices, jet engines, electronic units, and almost every other engineering system requires the analysis of their flow, thermal, and structural characteristics to ensure optimal performance and safety. The continuing growth of computer power and the emergence of general-purpose engineering software has fostered the use of computational analysis as a complement to experimental testing in multiphysics settings. Virtual prototyping is a staple of modern engineering practice! I have designed a new undergraduate course as an introduction to Computational Engineering, covering theory and practice across multidisciplinary applications. The emphasis is on geometry modeling, mesh generation, solution strategy and post-processing for diverse applications. Using classical flow/thermal/structural problems, the course develops the essential concepts of Verification and Validation for engineering simulations, providing the basis for assessing the accuracy of the results.

### PROJECTS

- PSAAP Project - Stanford

## Teaching

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### COURSES

#### 2018-19

- Computational Engineering: ME 123 (Spr)
- Departmental Seminar: CME 500 (Aut, Win, Spr)
- First Year Seminar Series: CME 300 (Aut, Win, Spr)

- Linear Algebra with Application to Engineering Computations: CME 200, ME 300A (Aut)
- Uncertainty Quantification: CEE 362A, ME 470 (Spr)

#### 2017-18

- Computational Engineering: ME 123 (Spr)
- Computational Methods in Fluid Mechanics: ME 469 (Spr)

#### 2016-17

- Computational Engineering: ME 123 (Spr)
- Computational Methods in Fluid Mechanics: ME 469 (Win)
- Linear Algebra with Application to Engineering Computations: CME 200, ME 300A (Aut)

#### 2015-16

- Computational Methods in Fluid Mechanics: ME 469 (Spr)
- Linear Algebra with Application to Engineering Computations: CME 200, ME 300A (Aut)
- Seminar in Fluid Mechanics: ENGR 298 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Anjan Dwaraknath, William Murch

#### Orals Chair

Nolan Skochdopole

#### Doctoral Dissertation Advisor (AC)

Ohiremen Dibua, Laura Lyman, Heather Pacella

#### Master's Program Advisor

Vincent Cao, Ines Chami, Lilia Chang, Mark Chang, Yuan Chen, Will Deaderick, Nutchapol Dendumrongsup, Jonathan Hollenbeck, Daniel Kunin, Zihan Lin, Frederik Mellbye, Kaleigh Mentzer, Lawrence Moore, Dahlia Radif, David Thomas, Grant Uy, Sallie Walecka, Zhenzhen Weng, Yinuo Yao

#### Doctoral Dissertation Co-Advisor (AC)

Taylor Geisler, Jonathan Pham

#### Doctoral (Program)

Christiane Adcock, Izzy Aguiar, Ryan Aronson, Amel Awadelkarim, Steven Brill, Robin Brown, Aldo Carranza, Casey Chu, Philip Etter, Abeynaya Gnanasekaran, Ryan Humble, Qiuye Jia, Dan Johnson, Ruilin Li, Xiran Liu, Laura Lyman, Halwest Mohammad, Shaked Regev, Hao Sheng, Jimmy Smith, Nimit Sohoni, Nurbek Tazhimbetov, Varun Vasudevan, Siqi Xue, Honglin Yuan, Ruohan Zhan

#### Postdoctoral Research Mentor

Lluis Jofre-Cruanyes

### Publications

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#### PUBLICATIONS

- **Cutting the double loop: Theory and algorithms for reliability-based design optimization with parametric uncertainty** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*  
del Rosario, Z., Fenrich, R. W., Iaccarino, G.  
2019; 118 (12): 718–40

- **Eigenvector perturbation methodology for uncertainty quantification of turbulence models** *PHYSICAL REVIEW FLUIDS*  
Thompson, R. L., Mishra, A., Iaccarino, G., Edeling, W., Sampaio, L.  
2019; 4 (4)
- **Uncertainty Estimation Module for Turbulence Model Predictions in SU2** *AIAA JOURNAL*  
Mishra, A., Mukhopadhyaya, J., Iaccarino, G., Alonso, J.  
2019; 57 (3): 1066–77
- **Estimating uncertainty in homogeneous turbulence evolution due to coarse-graining** *PHYSICS OF FLUIDS*  
Mishra, A., Duraisamy, K., Iaccarino, G.  
2019; 31 (2)
- **An Alternative Formulation for Design Under Uncertainty** *Advances in Evolutionary and Deterministic Methods for Design, Optimization and Control in Engineering and Sciences*  
Fusi, F., Congedo, P., Geraci, G., Iaccarino, G.  
Springer.2019
- **Lurking Variable Detection via Dimensional Analysis** *SIAM-ASA JOURNAL ON UNCERTAINTY QUANTIFICATION*  
del Rosario, Z., Lee, M., Iaccarino, G.  
2019; 7 (1): 232–59
- **Turbulence Modeling in the Age of Data** *ANNUAL REVIEW OF FLUID MECHANICS, VOL 51*  
Duraisamy, K., Iaccarino, G., Xiao, H., Davis, S. H., Moin, P.  
2019; 51: 357–77
- **Immersed-finite-element method for deformable particle suspensions in viscous and viscoelastic media** *PHYSICAL REVIEW E*  
Saadat, A., Guido, C. J., Iaccarino, G., Shaqfeh, E. G.  
2018; 98 (6)
- **Hierarchy of models for electrostatic comb-drive actuators in electrolytes** *JOURNAL OF MICROMECHANICS AND MICROENGINEERING*  
Dibua, O. L., Ramsurrun, S., Mani, A., Pruitt, B. L., Iaccarino, G.  
2018; 28 (12)
- **Effects of particle polydispersity on radiative heat transfer in particle-laden turbulent flows** *INTERNATIONAL JOURNAL OF MULTIPHASE FLOW*  
Rahmani, M., Geraci, G., Iaccarino, G., Mani, A.  
2018; 104: 42–59
- **Data-Free and Data-Driven RANS Predictions with Quantified Uncertainty** *FLOW TURBULENCE AND COMBUSTION*  
Edeling, W. N., Iaccarino, G., Cinnella, P.  
2018; 100 (3): 593–616
- **A Framework for Characterizing Structural Uncertainty in Large-Eddy Simulation Closures** *FLOW TURBULENCE AND COMBUSTION*  
Jofre, L., Domino, S. P., Iaccarino, G.  
2018; 100 (2): 341–63
- **DEMONSTRATING THE POTENTIAL OF A NOVEL MODEL TO IMPROVE OPEN-LOOP CONTROL OF ELECTROSTATIC COMB-DRIVE ACTUATORS IN ELECTROLYTES**  
Dibua, O., Mukundan, V., Pruitt, B., Mani, A., Iaccarino, G., ASME  
AMER SOC MECHANICAL ENGINEERS.2018
- **Suspension flow through an asymmetric T-junction** *Journal of Fluid Mechanics*  
Manoorkar, S., Krishnan, S., Sedes, O., Shaqfeh, E., Iaccarino, G.  
2018; 844
- **Application of QMU to the design of a nuclear waste storage tank** *NUCLEAR ENGINEERING AND DESIGN*  
Frankel, A., Sharp, D., Iaccarino, G.  
2017; 324: 379–89
- **Fully resolved viscoelastic particulate simulations using unstructured grids** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Krishnan, S., Shaqfeh, E. S., Iaccarino, G.

2017; 338: 313-338

- **Polynomial chaos assessment of design tolerances for vortex-induced vibrations of two cylinders in tandem** *AI EDAM-ARTIFICIAL INTELLIGENCE FOR ENGINEERING DESIGN ANALYSIS AND MANUFACTURING*  
Geraci, G., de Tullio, M. D., Iaccarino, G.  
2017; 31 (2): 185-198
- **Efficient control variates for uncertainty quantification of radiation transport** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*  
Frankel, A., Iaccarino, G.  
2017; 189: 398-406
- **Eigenspace perturbations for uncertainty estimation of single-point turbulence closures** *PHYSICAL REVIEW FLUIDS*  
Iaccarino, G., Mishra, A. A., Ghili, S.  
2017; 2 (2)
- **A generalized multi-resolution expansion for uncertainty propagation with application to cardiovascular modeling** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Schiavazzi, D. E., Doostan, A., Iaccarino, G., Marsden, A. L.  
2017; 314: 196-221
- **Vortex-induced rotations of a rigid square cylinder at low Reynolds numbers** *JOURNAL OF FLUID MECHANICS*  
Ryu, S., Iaccarino, G.  
2017; 813: 482-507
- **Eulerian formulation of the interacting particle representation model of homogeneous turbulence** *PHYSICAL REVIEW FLUIDS*  
Campos, A., Duraisamy, K., Iaccarino, G.  
2016; 1 (6)
- **Convergence of the Bouguer-Beer law for radiation extinction in particulate media** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*  
Frankel, A., Iaccarino, G., Mani, A.  
2016; 182: 45-54
- **A segregated explicit algebraic structure-based model for wall-bounded turbulent flows** *INTERNATIONAL JOURNAL OF HEAT AND FLUID FLOW*  
Campos, A., Duraisamy, K., Iaccarino, G.  
2016; 61: 284-297
- **Sensitivity of flow evolution on turbulence structure** *PHYSICAL REVIEW FLUIDS*  
Mishra, A. A., Iaccarino, G., Duraisamy, K.  
2016; 1 (5)
- **A density-matching approach for optimization under uncertainty** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Seshadri, P., Constantine, P., Iaccarino, G., Parks, G.  
2016; 305: 562-578
- **High-order statistics in global sensitivity analysis: Decomposition and model reduction** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Geraci, G., Congedo, P. M., Abgrall, R., Iaccarino, G.  
2016; 301: 80-115
- **Large-Eddy Simulation of a Wing-Body Junction Flow** *AIAA JOURNAL*  
Ryu, S., Emory, M., Iaccarino, G., Campos, A., Duraisamy, K.  
2016; 54 (3): 793-804
- **A Novel Weakly-Intrusive Non-linear Multiresolution Framework for Uncertainty Quantification in Hyperbolic Partial Differential Equations** *JOURNAL OF SCIENTIFIC COMPUTING*  
Geraci, G., Congedo, P. M., Abgrall, R., Iaccarino, G.  
2016; 66 (1): 358-405
- **A comparison of laminar-turbulent boundary-layer transitions induced by deterministic and random oblique waves at Mach 3** *INTERNATIONAL JOURNAL OF HEAT AND FLUID FLOW*

- Ryu, S., Marxen, O., Iaccarino, G.  
2015; 56: 218-232
- **Exploiting active subspaces to quantify uncertainty in the numerical simulation of the HyShot II scramjet** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Constantine, P. G., Emory, M., Larsson, J., Iaccarino, G.  
2015; 302: 1-20
  - **Reusing Chebyshev points for polynomial interpolation** *NUMERICAL ALGORITHMS*  
Ghili, S., Iaccarino, G.  
2015; 70 (2): 249-267
  - **Quantifying inflow and RANS turbulence model form uncertainties for wind engineering flows** *JOURNAL OF WIND ENGINEERING AND INDUSTRIAL AERODYNAMICS*  
Gorle, C., Garcia-Sanchez, C., Iaccarino, G.  
2015; 144: 202-212
  - **An adaptive multiresolution semi-intrusive scheme for UQ in compressible fluid problems** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS*  
Abgrall, R., Congedo, P. M., Geraci, G., Iaccarino, G.  
2015; 78 (10): 595-637
  - **Uncertainty Quantification for the Trailing-Edge Noise of a Controlled-Diffusion Airfoil** *AIAA JOURNAL*  
CHRISTOPHE, J., Moreau, S., Hamman, C. W., Witteveen, J. A., Iaccarino, G.  
2015; 53 (1): 42-54
  - **Direct numerical simulations of hypersonic boundary-layer transition with finite-rate chemistry** *JOURNAL OF FLUID MECHANICS*  
Marxen, O., Iaccarino, G., Magin, T. E.  
2014; 755
  - **Nonlinear instability of a supersonic boundary layer with two-dimensional roughness** *JOURNAL OF FLUID MECHANICS*  
Marxen, O., Iaccarino, G., Shaqfeh, E. S.  
2014; 752: 497-520
  - **A subgrid-scale eddy-viscosity model based on the volumetric strain-stretching** *PHYSICS OF FLUIDS*  
Ryu, S., Iaccarino, G.  
2014; 26 (6)
  - **The deviation from parallel shear flow as an indicator of linear eddy-viscosity model inaccuracy** *PHYSICS OF FLUIDS*  
Gorle, C., Larsson, J., EMORY, M., Iaccarino, G.  
2014; 26 (5)
  - **A matching pursuit approach to solenoidal filtering of three-dimensional velocity measurements** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Schiavazzi, D., Coletti, F., Iaccarino, G., Eaton, J. K.  
2014; 263: 206-221
  - **Simulations of High Reynolds Number Air Flow Over the NACA-0012 Airfoil Using the Immersed Boundary Method** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*  
Johnson, J. P., Iaccarino, G., Chen, K., Khalighi, B.  
2014; 136 (4)
  - **Local shear and mass transfer on individual coral colonies: Computations in unidirectional and wave-driven flows** *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS*  
Chang, S., Iaccarino, G., Ham, F., Elkins, C., Monismith, S.  
2014; 119 (4): 2599-2619
  - **A stochastic Galerkin method for the Euler equations with Roe variable transformation** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Petterson, P., Iaccarino, G., Nordstrom, J.  
2014; 257: 481-500
  - **SPARSE MULTIREOLUTION REGRESSION FOR UNCERTAINTY PROPAGATION** *INTERNATIONAL JOURNAL FOR UNCERTAINTY QUANTIFICATION*

- 
- Schiavazzi, D., Doostan, A., Iaccarino, G.  
2014; 4 (4): 303-331
- **Uncertainty-quantification analysis of the effects of residual impurities on hydrogen-oxygen ignition in shock tubes** *COMBUSTION AND FLAME*  
Urzay, J., Kseib, N., Davidson, D. F., Iaccarino, G., Hanson, R. K.  
2014; 161 (1): 1-15
  - **Flow past a transversely rotating sphere at Reynolds numbers above the laminar regime** *JOURNAL OF FLUID MECHANICS*  
Poon, E. K., Ooi, A. S., Giacobello, M., Iaccarino, G., Chung, D.  
2014; 759
  - **A method for the direct numerical simulation of hypersonic boundary-layer instability with finite-rate chemistry** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Marxen, O., Magin, T. E., Shaqfeh, E. S., Iaccarino, G.  
2013; 255: 572-589
  - **An intrusive hybrid method for discontinuous two-phase flow under uncertainty** *COMPUTERS & FLUIDS*  
Pettersson, P., Iaccarino, G., Nordstrom, J.  
2013; 86: 228-239
  - **The effect of shear thinning and walls on the sedimentation of a sphere in an elastic fluid under orthogonal shear** *JOURNAL OF NON-NEWTONIAN FLUID MECHANICS*  
Padhy, S., Rodriguez, M., Shaqfeh, E. S., Iaccarino, G., Morris, J. F., Tonmukayakul, N.  
2013; 201: 120-129
  - **Modeling of structural uncertainties in Reynolds-averaged Navier-Stokes closures** *PHYSICS OF FLUIDS*  
Emory, M., Larsson, J., Iaccarino, G.  
2013; 25 (11)
  - **Subcell resolution in simplex stochastic collocation for spatial discontinuities** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Witteveen, J. A., Iaccarino, G.  
2013; 251: 17-52
  - **Numerical analysis and modeling of plume meandering in passive scalar dispersion downstream of a wall-mounted cube** *7th International Symposium on Turbulence Heat and Mass Transfer (THMT)*  
Rossi, R., Iaccarino, G.  
ELSEVIER SCIENCE INC.2013: 137-148
  - **A simplex-based numerical framework for simple and efficient robust design optimization** *COMPUTATIONAL OPTIMIZATION AND APPLICATIONS*  
Congedo, P. M., Witteveen, J., Iaccarino, G.  
2013; 56 (1): 231-251
  - **Non-intrusive low-rank separated approximation of high-dimensional stochastic models** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Doostan, A., Validi, A., Iaccarino, G.  
2013; 263: 42-55
  - **Simulations of a sphere sedimenting in a viscoelastic fluid with cross shear flow** *JOURNAL OF NON-NEWTONIAN FLUID MECHANICS*  
Padhy, S., Shaqfeh, E. S., Iaccarino, G., Morris, J. F., Tonmukayakul, N.  
2013; 197: 48-60
  - **Assessment of Uncertainties in Modeling of Laminar to Turbulent Transition for Transonic Flows** *FLOW TURBULENCE AND COMBUSTION*  
Pecnik, R., Witteveen, J. A., Iaccarino, G.  
2013; 91 (1): 41-61
  - **Quantification of margins and uncertainties using multiple gates and conditional probabilities** *RELIABILITY ENGINEERING & SYSTEM SAFETY*  
Iaccarino, G., Sharp, D., Glimm, J.  
2013; 114: 99-113
  - **Large-eddy simulation of passive scalar dispersion in an urban-like canopy** *JOURNAL OF FLUID MECHANICS*  
Philips, D. A., Rossi, R., Iaccarino, G.



2013; 723: 404-428

- **A framework for epistemic uncertainty quantification of turbulent scalar flux models for Reynolds-averaged Navier-Stokes simulations** *PHYSICS OF FLUIDS*  
Gorle, C., Iaccarino, G.  
2013; 25 (5)
- **Simplex stochastic collocation with ENO-type stencil selection for robust uncertainty quantification** *JOURNAL OF COMPUTATIONAL PHYSICS*  
Witteveen, J. A., Iaccarino, G.  
2013; 239: 1-21
- **Chemical kinetic uncertainty quantification for Large Eddy Simulation of turbulent nonpremixed combustion** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Mueller, M. E., Iaccarino, G., Pitsch, H.  
2013; 34: 1299-1306
- **A probabilistic non-dominated sorting GA for optimization under uncertainty** *ENGINEERING COMPUTATIONS*  
Petrone, G., Axerio-Cilies, J., Quagliarella, D., Iaccarino, G.  
2013; 30 (8): 1054-1085
- **A sparse multiresolution stochastic approximation for uncertainty quantification** *8th International Conference on Scientific Computing and Applications*  
Schiavazzi, D., Doostan, A., Iaccarino, G.  
AMER MATHEMATICAL SOC.2013: 295-303
- **An Aerodynamic Investigation of an Isolated Rotating Formula 1 Wheel Assembly** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*  
Axerio-Cilies, J., Iaccarino, G.  
2012; 134 (12)
- **Reynolds-Averaged Navier-Stokes Simulations of the HyShot II Scramjet** *AIAA JOURNAL*  
Pecnik, R., Terrapon, V. E., Ham, F., Iaccarino, G., Pitsch, H.  
2012; 50 (8): 1717-1732
- **Unsteady Aerodynamic Flow Investigation Around a Simplified Square-Back Road Vehicle With Drag Reduction Devices** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*  
Khalighi, B., Chen, K., Iaccarino, G.  
2012; 134 (6)
- **Risk Assessment of Scramjet Unstart Using Adjoint-Based Sampling Methods** *AIAA JOURNAL*  
Wang, Q., Duraisamy, K., Alonso, J. J., Iaccarino, G.  
2012; 50 (3): 581-592
- **Effects of viscoelasticity in the high Reynolds number cylinder wake** *JOURNAL OF FLUID MECHANICS*  
Richter, D., Iaccarino, G., Shaqfeh, E. S.  
2012; 693: 297-318
- **An Aerodynamic Investigation of an Isolated Stationary Formula 1 Wheel Assembly** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*  
Axerio-Cilies, J., Issakhanian, E., Jimenez, J., Iaccarino, G.  
2012; 134 (2)
- **REFINEMENT CRITERIA FOR SIMPLEX STOCHASTIC COLLOCATION WITH LOCAL EXTREMUM DIMINISHING ROBUSTNESS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*  
Witteveen, J. A., Iaccarino, G.  
2012; 34 (3): A1522-A1543
- **FORWARD AND BACKWARD UNCERTAINTY PROPAGATION FOR DISCONTINUOUS SYSTEM RESPONSE USING THE PADE-LEGENDRE METHOD** *INTERNATIONAL JOURNAL FOR UNCERTAINTY QUANTIFICATION*  
Chantrasmı, T., Iaccarino, G.  
2012; 2 (2): 125-143
- **STUDY OF DRAG REDUCTION DEVICES FOR A SQUARE BACK VEHICLE CONFIGURATION USING RANS CFD SIMULATIONS** *ASME Fluids Engineering Division Summer Meeting (FEDSM)*

- Khalighi, B., Chen, K., Iaccarino, G.  
AMER SOC MECHANICAL ENGINEERS.2012: 1–8
- **SIMPLEX STOCHASTIC COLLOCATION WITH RANDOM SAMPLING AND EXTRAPOLATION FOR NONHYPERCUBE PROBABILITY SPACES** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*  
Witteveen, J. A., Iaccarino, G.  
2012; 34 (2): A814-A838
  - **Backward uncertainty propagation method in flow problems: Application to the prediction of rarefaction shock waves** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*  
Congedo, P. M., Colonna, P., Corre, C., Witteveen, J. A., Iaccarino, G.  
2012; 213: 314-326
  - **The influence of normal stress anisotropy in predicting scalar dispersion with the v(2)-f model** *INTERNATIONAL JOURNAL OF HEAT AND FLUID FLOW*  
Philips, D. A., Rossi, R., Iaccarino, G.  
2011; 32 (5): 943-963
  - **Numerical Simulation of Polymer Injection in Turbulent Flow Past a Circular Cylinder** *JOURNAL OF FLUIDS ENGINEERING-TRANSACTIONS OF THE ASME*  
Richter, D., Shaqfeh, E. S., Iaccarino, G.  
2011; 133 (10)
  - **A QMU approach for characterizing the operability limits of air-breathing hypersonic vehicles** *RELIABILITY ENGINEERING & SYSTEM SAFETY*  
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