

Journal articles

- (78) Wentland, C., Huang, C. and Duraisamy, K., "Scalable Projection-based Reduced Order Models of Large Scale Fluid Systems," AIAA Journal, 2023.
- (77) Rezaian, E., and Duraisamy, K., "Data-driven Balanced Truncation for Predictive Model Order Reduction of Aeroacoustic Response," AIAA Journal, 2023.
- (76) Bhola, S., and Duraisamy, K., "Estimating Global Identifiability using Conditional Mutual Information in a Bayesian Framework," Nature: Scientific Reports, 2023.
- (75) Huang, C., and Duraisamy, K., "Predictive Reduced Order Modeling of Chaotic Multi-scale Problems using Adaptively-Sampled Projections," Journal of Computational Physics, 2023.
- (74) Pradhan, A., and Duraisamy, K., "Data-Driven discovery of Variational Multiscale Closures: A unified approach to sub-grid modelling and super-resolution," International Journal of Numerical Methods in Engineering, 2023.
- (73) Srivastava, V., Sulzer, V., Mohtat, P., Siegel, J., and Duraisamy, K., "Non-intrusive Physics-constrained Learning of Fuel Cell Model Augmentations," Computational Mechanics, 2023.
- (72) Arnold-Medabalimi, N., Huang, C., and Duraisamy, K., "PLATFORM: A python package for developing reduced order models of reacting flows," Journal of Open Source Software, 2022.
- (71) Comer, A., Gallagher, T., Duraisamy, K., and Rankin, B., "A modified thickened flame model for simulating extinction," Combustion Theory and Modeling, 2022.
- (70) Wentland, C., and Duraisamy, K., "PERFORM: A python package for developing reduced order models of reacting flows," Journal of Open Source Software, 2022.
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- (68) Huang, C., Duraisamy, K. and Merkle, C. "Component-based Reduced Order Modeling of Large-scale Complex Systems," Frontiers in Physics, 2022.
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- (66) Jacobsen, C., and Duraisamy, K. "Disentangling Physical Fields Using Variational Autoencoders," Frontiers in Physics, 2022.
- (65) Arnold-Medabalimi, N., Huang, C., and Duraisamy, K., "Large-Eddy Simulation and Challenges for Projection-based Reduced-Order Modeling of a Gas Turbine Model Combustor," International Journal of Spray and Combustion Dynamics, 2022.
- (64) Gouasmi, A., Murman, S., and Duraisamy, K., "Entropy-Stable Schemes in the Low Mach Regime: Flux-Preconditioning, Entropy Breakdowns and Entropy Transfers," Journal of Computational Physics, 2022.
- (63) Xu, J., Pradhan, A., and Duraisamy, K., "Conditionally Parameterized, Discretization-Aware Neural Networks for Mesh-Based Modeling of Physical Systems," Neural Information Processing Systems, 2021.
- (62) Srivastava, V., Duraisamy, K., "Generalizable Physics-constrained Modeling using Learning and Inference assisted by Feature Space Engineering," Physical Review Fluids, 2021.
- (61) Huang, C., Wentland, C., Duraisamy, K., and Merkle, C., "Model Reduction for Multi-scale Transport Problems using Model-form-Preserving Least Squares Projections with Variable Transformation," Journal of Computational Physics, 2021.
- (60) Foti, D., and Duraisamy, K., "Sub-grid scale characterization and asymptotic behavior of multi-dimensional upwind schemes for the vorticity transport equations," Physical Review Fluids, 2021.
- (59) Duraisamy, K. "Perspectives on Machine Learning-augmented Reynolds-averaged and Large Eddy Simulation Models of Turbulence," Physical Review Fluids, 2021.
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- (56) Pan, S., and Duraisamy, K., "On the Structure of Time-delay Embedding in Linear Models of Non-linear Dynamical Systems," Chaos, 2020.
- (55) Pradhan, A., and Duraisamy, K., "Variational Multiscale Closures for Finite Element Discretizations Using the Mori-Zwanzig Approach," Computer Methods in Applied Mechanics & Engineering, 2020.

- (54) Parish, E., Wentland, C., Duraisamy, K., "The Adjoint Petrov Galerkin Method for Non-linear Model Reduction," *Computer Methods in Applied Mechanics & Engineering*, 2020.
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- (52) Gouasmi, A., Duraisamy, K., and Murman, S., "Formulation of Entropy Stable Schemes for the Compressible Multicomponent Euler Equations," *Computer Methods in Applied Mechanics & Engineering*, 2020.
- (51) Davoudi, B., Taheri, E., Duraisamy, K., Jayaraman, B., Kolmanovsky, I., "Quad-rotor Flight Simulation in Realistic Atmospheric Conditions," *AIAA Journal*, 2020.
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- (49) Pan, S., and Duraisamy, K., "Physics-Informed Probabilistic Learning of Linear Embeddings of Non-linear Dynamics with Guaranteed Stability," *SIAM Journal on Applied Dynamical Systems*, 2020.
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- (43) Duraisamy, K., Iaccarino, G., and Xiao, H., "Turbulence Modeling in the Age of Data," *Annual Review of Fluid Mechanics*, 2019.
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- (30) Aranake, A., and Duraisamy, K., "Aerodynamic Optimization of Shrouded Wind Turbines," *Wind Energy*, Vol. 20, 2017, 13 pages.

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- (90) Uchida, D., and Duraisamy, K., Control-aware learning of Koopman embedding models, American Control Conference, 2023.
- (89) Davoudi, B., Duraisamy, K., Krogius, M., Atkins, E., and Gaskell, P., "Physics-based Modeling for Autonomous Operation of Unmanned Aerial Systems in Extreme Gusts," AIAA Aviation, 2023.
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- (84) Pacini, B., Yildirim, A., Davoudi, B., Martins, J., and Duraisamy, K., Aerodynamic and Aeroacoustic Optimization for Urban Air Mobility Vehicle Design, AIAA Aviation, 2021.
- (83) Rezaian, E., Biswas, R., and Duraisamy, K., "Non-Intrusive Parametric Reduced Order Models For The Prediction Of Internal And External Flow Fields Over Automobile Geometries," International Mechanical Engineering Congress and Exposition, 2021.
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- (81) Tekriwal, M., Duraisamy, K., and Jeannin, J., "A formal proof of the Lax equivalence theorem for finite difference schemes," NASA Formal Methods, 2021 [Journal quality].
- (80) Wentland, C., Huang, C., and Duraisamy, K., "Investigation of Sampling Strategies for Reduced-Order Models of Rocket Combustors. AIAA Scitech, Nashville, TN, Jan 2021.
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- (78) Davoudi, B., and Duraisamy, K., "A Hybrid Blade Element Momentum Model for Flight Simulation of Rotary Wing Unmanned Aerial Vehicles," AIAA Aviation, Dallas, TX, June 2019.
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- (76) Holland, J., Baeder, J., and Duraisamy, K., "Field Inversion and Machine Learning With Embedded Neural Networks: Physics-Consistent Neural Network Training," AIAA Aviation, Dallas, TX, June 2019.
- (75) Wentland, C., Huang, C., and Duraisamy, K., "Closure of Reacting Flow Reduced-Order Models via the Adjoint Petrov-Galerkin Method," AIAA Aviation, Dallas, TX, June 2019.
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- (37) Aranake, A., Lakshminarayan, V., and Duraisamy, K., "Analysis and Design of Shrouded Wind Turbines," ASME Wind Turbine Symposium, Dallas, January 2013.
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- (27) Bueno, A., Castro, C., Duraisamy, K., Palacios, F., and Zuazua, E., "When is the Discrete Gradient not useful in Optimal Shape design?," 49th Aerospace Sciences Meeting, Orlando, Florida, Jan, 2011.
- (26) Hussain, F., and Duraisamy, K., "Scaling Laws in Vortex Reconnection," 13th Asian Congress of Fluid Mechanics, Dhaka, Bangladesh, Dec, 2010.
- (25) Wang, Q., Duraisamy, K., Alonso, J., and Iaccarino, G. "Risk Assessment of Hypersonic Flow Simulations Using Adjoint- Based Sampling Methods," 12th AIAA Non-Deterministic Approaches Conference, Orlando Florida, Apr, 2010.
- (24) Duraisamy, K., Alonso, J., Palacios, F., and Chandrasekhar, P., "Adjoint Based Error Estimation for High Speed Flow Computations," 48th Aerospace Sciences Meeting, Orlando, Florida, Jan, 2010.
- (23) Thom, A., and Duraisamy, K., "Numerical Investigation of the Aerodynamics and Acoustics of Head-On Blade-Vortex Interaction," 65th American Helicopter Society Annual Forum, Dallas, May, 2009.
- (22) Fletcher, T., Duraisamy, K., and Brown, R., "Sensitivity of Tail Rotor Noise to Helicopter Configuration in Forward Flight," 65th American Helicopter Society Annual Forum, Dallas, May, 2009.
- (21) Kim, H., Duraisamy, K., and Brown, R., "Effect of Rotor Stiffness and Lift Offset on the Aeroacoustics of a Coaxial Rotor in Level Flight," 65th American Helicopter Society Annual Forum, Dallas, May, 2009.
- (20) Fletcher, T., Duraisamy, K., and Brown, R., "Aeroacoustic Analysis of Main Rotor - Tail Rotor Interaction," 34th European Rotorcraft Forum, Liverpool, England, September, 2008.
- (19) Thom, A., and Duraisamy, K., "High Resolution Computation of the Aerodynamics and Acoustics of Blade-Vortex Interaction," 34th European Rotorcraft Forum, Liverpool, England, September, 2008.
- (18) Kim, H., Duraisamy, K., and Brown, R., "Aeroacoustics of a Coaxial Rotor," 64th American Helicopter Society Annual Forum, Montreal, Canada, May, 2008.
- (17) Duraisamy, K., and Brown, R., "Aerodynamic Response of a Hovering Rotor to Ramp Change in Pitch Input," 64th American Helicopter Society Annual Forum, Montreal, Canada, May, 2008.
- (16) Kim, H., Kenyon, A., Duraisamy, K., and Brown, R., "Aerodynamics and Acoustics of a Thrust Compounded Coaxial Rotor Configuration," AHS Specialist's Conference on Aeromechanics, San Francisco, CA, Jan 2008.
- (15) Kelly, M., Duraisamy, K., and Brown, R., "Prediction of Blade Vortex Interaction, Airloads and Acoustics of the HART Rotor using the Vorticity Transport Model," AHS Specialist's Conference on Aeromechanics, San Francisco, CA, Jan 2008.
- (14) Duraisamy, K., and Lele, S., "Turbulent Transport in Isolated Trailing Vortices," Turbulence and Shear Flow Phenomena 5, Munich, Germany, August 2007.
- (12) Revell, A., Duraisamy, K., and Iaccarino, G., "Advanced Turbulence Modelling of Wingtip Vortices," Turbulence and Shear Flow Phenomena 5, Munich, Germany, August 2007.
- (11) Lakshminarayan, V., Duraisamy, K., and Baeder, J., "Computational Investigation of Coaxial Rotor Aerodynamics," 63rd American Helicopter Society Annual Forum, Virginia Beach, Virginia, May, 2007.
- (10) Duraisamy, K., McCroskey, W., and Baeder, J., "Analysis of Wind Tunnel Wall Interference Effects on Unsteady Subsonic Airfoils," 24th AIAA Applied Aerodynamics Conference, San Francisco, California, June 2006.
- (9) Duraisamy, K., Ramasamy, M., Baeder, J., and Leishman, G., Computational and Experimental Study of Hovering Rotor Tip Vortex Formation," 62nd Annual Forum of the American Helicopter Society, Phoenix, Arizona, May 2006.
- (8) Duraisamy, K., Sitaraman, J. and Baeder, J., "High Resolution Wake Capturing Methodology for Accurate Simulation of Rotor Aerodynamics," 61st Annual Forum of the American Helicopter Society, Grapevine, Texas, June 2005.
- (7) Duraisamy, K., and Baeder, J., "Numerical Simulation of the Effects of Spanwise Blowing on Wing-Tip Vortex Formation and Evolution," 23rd AIAA Applied Aerodynamics Conference, Toronto, Canada, June 2005.
- (6) Duraisamy, K., and Baeder, J., "Control of Helicopter Rotor Tip Vortex Structure using Upper Surface Blowing", 60th Annual Forum of the American Helicopter Society, Baltimore, Maryland, June 2004.
- (5) Duraisamy, K., and Baeder, J., "A New High Order Implicit Scheme using Non-Oscillatory Reconstruction in Space and Time," 42nd AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, Jan 2004.
- (4) Duraisamy, K., and Baeder, J., "Control of Tip Vortex Structure using Steady and Oscillatory Blowing," 21st Applied Aerodynamics Conference, Orlando, Florida, June 2003.

- (3) Garg, U., Shende, N., Duraisamy, K., and Balakrishnan N., "An Embedded Grid Adaptation Strategy for Unstructured Grid Based Finite Volume Computations," 2nd International Conference on Computational Fluid Dynamics, Sydney, Australia, July 2002.
- (2) Duraisamy, K., and Baeder, J., "A New Class of Higher Order Accurate Non-Oscillatory Implicit Time Integration Schemes," 8th AIAA/CEAS Aeroacoustics Conference, Breckenridge, Colorado, June 2002.
- (1) Duraisamy, K., and Baeder, J., "Active Flow Control Concepts for Rotor Airfoils using Synthetic Jets", 1st AIAA Flow Control Conference, St. Louis, Missouri, June 2002.

Government, university, or industrial reports

- (13) Duraisamy, K., Spalart, P., Rumsey, C., "Status, Emerging Ideas and Future Directions of Turbulence Modeling Research in Aeronautics," NASA Technical Memorandum 2017-219692, 2017.
- (12) Duraisamy, K., "Data-enabled, Physics-constrained Predictive Modeling of Complex Systems," SIAM News, July 2017.
- (11) Parish, E., and Duraisamy, K., "Dynamic Subgrid Scale Model for LES based on the Mori-Zwanzig Formalism," Proceedings of the CTR Summer Program, Stanford University, Stanford, California, 2016.
- (10) Mishra, A., Duraisamy, K., and Iaccarino, G., "Epistemic Uncertainty in Statistical Markovian Turbulence Models," Annual Research Briefs, Center for Turbulence Research, Stanford University, Stanford, California, 2015.
- (9) Duraisamy, K. and Durbin, P., "Transition modeling using data driven approaches," Proceedings of the CTR Summer Program, Stanford University, Stanford, California, 2014.
- (8) Eldred, M., Domino, S., Barone, M., Jakeman, J., Alonso, J., Duraisamy, K., Iaccarino, G., Tang, G., and Xiu, D., "Advances in UQ for Wind Energy Applications," Sandia National Laboratory Report SAND2013-0951C, 2013.
- (7) Alonso, J., Duraisamy, K., Iaccarino, G., Tang, G., Witteveen, J., Barone, M., Domino, S., Eldred, M., and Xiu, D., "Large-Scale Uncertainty and Error Analysis for Time-dependent Fluid/Structure Interactions in Wind Turbine Applications," Sandia National Laboratory Report SAND2012-1807C, 2012.
- (6) Pecnik, R., O'Sullivan, J., Duraisamy, K., Kassinos, S., Radhakrishnan, H., Iaccarino, G., "Improvement of Algebraic Structure Based Models and Application to Complex Flows," Proceedings of the CTR Summer Program, Stanford University, Stanford, California, 2012.
- (5) Palacios, F., Duraisamy, K., and Alonso, J., "Improvement of Adjoint-based Methods for Efficient Computation of Response Surfaces," Annual Research Briefs, Center for Turbulence Research, Stanford University, Stanford, California, 2009.
- (4) Duraisamy, K., and Lele, S., "DNS of Isolated Vortex Evolution," Proceedings of the CTR Summer Program, Stanford University, Stanford, California, 2006.
- (3) Duraisamy, K., and Iaccarino, G., "Curvature correction and application of the v2-f turbulence model to tip vortex flows," Annual Research Briefs, Center for Turbulence Research, Stanford University, Stanford, California, 2005.
- (2) Hahn, S., Alonso, J., Baeder, J., Duraisamy, K., Iaccarino, G., Lele, S., Moin, P., Schmitz, F., Shoeybi, M., and Wu, Z., "Progress on Hybrid Unsteady Simulation of Helicopter Rotor Flow," Annual Research Briefs, Center for Turbulence Research, Stanford University, Stanford, California, 2005.
- (1) Duraisamy, K., and Baeder, J., "Validation of Synthetic Jet Control using RANS and DES Tools," NASA Langley Research Center Workshop on CFD Validation of Synthetic Jets and Turbulent Separation Control, Williamsburg, Virginia, March 2004.

Invited presentations

Departmental/Institute colloquia

- (17) Fluid Mechanics Seminar, Stanford University, Jan 2024.
- (16) Mechanical Engineering, Johns Hopkins University, Oct 2023.
- (15) Chemical Engineering, Imperial College, London, May 2023.
- (14) Applied Mathematics, University of Waterloo, Canada, Nov 2022.

- (13) Mechanical & Aerospace Engineering, Notre Dame University, Nov 2022.
- (12) Mechanical Engineering, Rice University, Mar 2021
- (11) Mathematics, Pennsylvania State University, PA, Sep 2019
- (10) Mechanical/Aerospace/Nuclear, RPI, Troy, NY, Apr 2019
- (9) Mathematics, University of Michigan, Ann Arbor, MI, Jan 2019
- (8) Mathematics, University of California, Berkeley, CA, Nov 2018
- (7) Aerospace Engineering, University of Kansas, Lawrence, KS, Apr 2018
- (6) Mechanical Engineering, Stanford University, Stanford, CA, Sep 2017
- (5) Ecole Des Mines Des Paris, Sophie Antipolis, France, Dec 2016.
- (4) Aerospace Engineering, University of Washington, Seattle, WA, March 2016.
- (3) Aerospace Engineering, University of Illinois, Urbana Champaign, Feb 2016.
- (2) Aerospace Engineering, Indian Institute of Science, Bangalore, India, Dec 2012
- (1) Mathematics, Tata Institute of Fundamental Research, Bangalore, India, Dec 2009.

Invited Talks / Keynotes / Plenaries at conferences & workshops

- (48) Invited Lecture, Turbulence & Shear Flow Phenomena, June 2024.
- (47) Isaac Newton Institute, Cambridge University, May 2023
- (46) Isaac Newton Institute, Cambridge University, Jan 2023
- (45) Symposium Keynote, WCCM, Tokyo, August 2022.
- (44) Data-driven and Equations-informed tools for Complex Flows and Complex Fluids: Challenges and Benchmarks towards a quantitative AI, Rome, July 2022.
- (43) Distinguished lecture, Generation IV & Small reactors, Canadian Nuclear Society, Nov 2021.
- (42) Turing Institute Data-centric Engineering Seminar Series, London, Oct 2021.
- (41) Keynote, Machine Learning for Prediction and Control of Fluid Flows, Euromech, Paris, Jun 2021
- (40) Lawrence Livermore National Labs, Livermore, California, March 2021.
- (40) Physics Informed Machine Learning Workshop (ARPA-E), July 2020.
- (39) Institute for Computational & Experimental Research In Mathematics (Workshop on Algorithms for Dimension and Complexity Reduction), Providence, RI, March 2020.
- (38) Workshop on Data Centric Engineering, MIT, Cambridge, MA, Dec 2019.
- (37) European Numerical Mathematics and Advanced Applications, Egmond aan Zee, Netherlands, Sep 2019.
- (36) Plenary, Computational Sciences and AI in Industry (CSAI): new digital technologies for solving future societal and economical challenges, Jyväskylä, Finland, June 2019.
- (35) Physics Informed Machine Learning, Seattle, WA, June 2019.
- (34) SIAM CSE, Spokane, WA, Feb 2019.
- (33) Keynote, High Fidelity Industrial LES/DNS, Brussels, Belgium, November 2018.
- (32) UTRC, Hartford, CT, Aug 2018.
- (31) WCCM, New York, NY, July 2018.
- (30) SIAM UQ, Los Angeles, CA, April 2018.
- (29) US/Japan Meeting on Data-driven methods for Fluids, Tokyo, Japan, Apr 2018.
- (28) Institute of Mathematics and Applications (Digital Twins workshop), Minneapolis, MN, March 2018.
- (27) Ansys, Pittsburgh, PA, Feb 2018.
- (26) Physics Informed Machine Learning, Santa Fe, NM, Jan 2018
- (25) Future CFD Technologies (NASA), Orlando, FL, Jan 2018
- (24) AIAA Scitech, Orlando, FL, Jan 2018
- (23) DLR, Braunschweig, Germany, Oct 2017.
- (22) Lawrence Livermore National Laboratories, Livermore, CA, Sep 2017.
- (21) Plenary, NASA Symposium on Advances in Turbulence Modeling, Ann arbor, MI July 2017.
- (20) AIAA Aviation Special Session on Model Reduction for CFD, Denver, CO, June 2017
- (19) USACM Workshop on UQ and Data-driven Modeling, Austin, TX, March 2017.
- (18) UTRC, Hartford, CT, March 2017.
- (17) SIAM CSE, Atlanta, GA, Feb 2017.

- (16) Data-Driven Methods for Reduced-Order Modeling and Stochastic Partial Differential Equations, Banff Research Station, Canada, Jan 2017.
- (15) Naval Surface Warfare Center, Bethesda, MD, Nov 2016.
- (14) Models, Dynamics & Learning (DARPA), Santa Barbara, CA, Nov 2016.
- (13) Machine Learning Technologies and their Applications to Scientific and Engineering Domains, NASA Langley Workshop, Langley, VA, August 2016.
- (12) SIAM Annual Meeting, Boston, MA, July 2016
- (11) ECCOMAS, Crete, Greece, June 2016.
- (10) NASA Langley Big-Data Seminar Series, Langley, VA, May 2016.
- (9) SIAM UQ Conference, Lausanne, Switzerland, Apr 2016.
- (8) Physics Informed Machine Learning (DoE), Santa Fe, NM, Jan 2016.
- (7) AIAA SCITECH 2016 Conference, San Diego, CA, Jan 2016.
- (6) *Plenary*, MACCCR Fuels Research Review Meeting, Lawrence Livermore National Labs, Livermore, CA, Oct 2015.
- (5) Air Force Research Labs, Wright Patterson Air Force Base, OH, Mar 2015.
- (4) 15th International Conference on Numerical Combustion, Avignon, France, Apr 2015.
- (3) National Wind Resource Center, Lubbock, Texas, Sep 2013.
- (2) NASA Langley Research Center, Langley, Virginia, July 2013.
- (1) Extreme Engineering - Opportunities Using Petaflop Computing, Science and Technology Facilities Council, Daresbury Laboratories, Daresbury, UK, July 2008.