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Education

Massachusetts Institute of Technology	Aerospace Engineering	Ph.D. 2007
Massachusetts Institute of Technology	Aerospace Engineering	S.M. 2004
Massachusetts Institute of Technology	Aerospace Engineering	S.B. 2003
Massachusetts Institute of Technology	Physics	S.B. 2003

Appointments and Research Experience

Sep. 2014-present:	Associate Professor, Department of Aerospace Engineering, University of Michigan, Ann Arbor, MI
2008-2014:	Assistant Professor, Department of Aerospace Engineering, University of Michigan, Ann Arbor, MI
Aug. 2008:	Visiting Professor, Department of Aerospace Engineering, University of Michigan, Ann Arbor, MI
2007-2008:	Postdoctoral Associate, Department of Aerospace Engineering, Massachusetts Institute of Technology, Cambridge, MA
2003-2007:	Research Assistant, Department of Aerospace Engineering, Massachusetts Institute of Technology, Cambridge, MA
Summer 2004:	DOE Computational Science Graduate Fellowship Practicum, Argonne National Laboratory, Argonne, IL
2002-2003:	Undergraduate Researcher, Aerospace Computational Design Laboratory, Massachusetts Institute of Technology, Cambridge, MA
2001-2002:	Undergraduate Researcher, Gas Turbine Laboratory, Massachusetts Institute of Technology, Cambridge, MA
Summer 2001:	Research Experience for Undergraduates, Department of Mathematics, University of Washington, Seattle, WA
2000-2001:	Undergraduate Researcher, Laboratory for Nuclear Science Massachusetts Institute of Technology, Cambridge, MA
Summer 2000:	Research Experience for Undergraduates, Department of Physics, University of California, San Diego, CA

Professional Activities

- Senior Member, AIAA; Member SIAM, ASEE
- Associate Member: AIAA Fluid Dynamics Technical Committee
- University of Michigan Center for Research on Learning and Teaching Advisory Board
- Organizing Committees: 2012 AIAA ASM Fluid Dynamics Track, 2012 International Conference on High-Order CFD Methods, 2012 AIAA Fluid Dynamics Conference, 2013 AIAA CFD Conference and Student Paper Competition
- Reviewer for: SIAM Journal of Scientific Computing, AIAA Journal, Journal of Computational Physics, Computer Methods in Applied Mechanics and Engineering, International

Journal of Numerical Methods in Fluids, International Journal of Numerical Methods in Engineering, Applied Mathematical Modeling, Communications in Applied Mathematics and Computational Science, Mathematical Methods in Applied Sciences, NSF, AFOSR, NASA

Honors and Awards

- Aerospace Engineering Department Award, 2019
- Vulcan's Education Excellence Award, 2017
- Department of Energy Office of Science Early Career Research Program Award, 2013
- Air Force Office of Scientific Research Young Investigator Award, 2011
- Sigma Gamma Tau Silver Shaft Teaching Award, 2011, 2015
- Department of Energy Computational Science Graduate Fellowship, 2003-2007
- Salisbury Award for Superior Achievement in Aeronautics and Astronautics, 2003
- Boston Area Physics Contest Winner, 2001
- National Merit Finalist, 1999

Teaching Experience

- W16, W17, W18: Introduction to Aerospace Engineering, AE 201, University of Michigan
- W13, W14, W15, W16, W17, W18, W19: Undergraduate Computational Methods for Aerospace Engineering, AE 423, University of Michigan
- W12, W13, W17, W19: Graduate Advanced Computational Fluid Dynamics, AE 623, University of Michigan
- W09, F09, W10, F10, W11, F11, F12, F13, F14, F15, F17, F18: Undergraduate Aerodynamics, AE 325, University of Michigan
- F08, F16, F18: Graduate Computational Fluid Dynamics, AE 523, University of Michigan
- S08: Undergraduate Computational Methods for Aerospace Engineering , 16.90, MIT (co-instructor)
- S07: Undergraduate Aerodynamics, 16.100, MIT (co-instructor)
- 2004-2007: Graduate Resident Tutor at MIT

Research Interests

Development of robust, scalable, and adaptive solution techniques for computational fluid dynamics. Topics include high-order methods, numerical error estimation, unsteady adaptive simulations, large-scale model reduction, parallel algorithms, and uncertainty quantification.

Current and recent research projects include:

- Unsteady output-based error estimation and mesh adaptation
- Adaptive RANS calculations with the discontinuous Galerkin method
- Gradient-enhanced response surface construction, applied to radiation hydrodynamics simulations
- Uncertainty quantification in nuclear reactor thermal-hydraulics codes
- Stochastic-space adaptive methods for uncertainty quantification
- Entropy-adjoint approach to mesh refinement
- Probabilistic approach to contaminant source inversion
- Cut-cell mesh generation
- Nonlinear model reduction for inverse problems

Publications

Journal Publications

[1] Matteo Franciolini, Krzysztof J. Fidkowski, and Andrea Crivellini. Efficient discontinuous galerkin implementations and preconditioners for implicit unsteady compressible flow simulations. *arXiv preprint arXiv:1812.04789*, 2018.

[2] Kevin Doetsch and Krzysztof J. Fidkowski. Combined entropy and output-based adjoint approach for mesh refinement and error estimation. *AIAA Journal*, 0(0):0–0, 2019.

[3] Guodong Chen and Krzysztof J. Fidkowski. Discretization error control for constrained aerodynamic shape optimization. *Journal of Computational Physics*, 0(0):1–9, 2019. doi:10.1016/j.jcp.2019.02.038.

[4] Krzysztof J. Fidkowski. Comparison of hybrid and standard discontinuous Galerkin methods in a mesh-optimisation setting. *International Journal of Computational Fluid Dynamics*, 0(0):1–9, 2019. doi:10.1080/10618562.2019.1588962.

[5] Krzysztof J. Fidkowski. Output-based space-time mesh optimization for unsteady flows using continuous-in-time adjoints. *Journal of Computational Physics*, 341(15):258–277, July 2017. doi:10.1016/j.jcp.2017.04.005.

[6] Krzysztof J. Fidkowski. A hybridized discontinuous Galerkin method on mapped deforming domains. *Computers and Fluids*, 139(5):80–91, November 2016. doi:10.1016/j.compfluid.2016.04.004.

[7] Devina P. Sanjaya and Krzysztof J. Fidkowski. Improving high-order finite element approximation through geometrical warping. *AIAA Journal*, 54(12):3994–4010, 2016. doi:10.2514/1.J055071.

[8] Marco A. Ceze and Krzysztof J. Fidkowski. High-order output-based adaptive simulations of turbulent flow in two dimensions. *AIAA Journal*, 54(9), 2016. doi:10.2514/1.J054517.

[9] Steven M. Kast, Johann P.S. Dahm, and Krzysztof J. Fidkowski. Optimal test functions for boundary accuracy in discontinuous finite element methods. *Journal of Computational Physics*, 298(1):360–386, 2015. URL: http://www.sciencedirect.com/science/article/pii/S0021999115003885, doi:10.1016/j.jcp.2015.05.048.

[10] Marco A. Ceze and Krzysztof J. Fidkowski. Constrained pseudo-transient continuation. *International Journal for Numerical Methods in Engineering*, 102:1683–1703, 2015. doi:10.1002/nme.4858.

[11] Devina Sanjaya, Krzysztof Fidkowski, and Ian Tobasco. Adjoint-accelerated statistical and deterministic inversion of atmospheric contaminant transport. *Computers and Fluids*, 100(1):291–307, 2014. doi:10.1016/j.compfluid.2014.05.021.

[12] K.J. Fidkowski. Algebraic tailoring of discontinuous Galerkin p-multigrid for convection. *Computers and Fluids*, 98(2):164–176, 2014. doi:10.1016/j.compfluid.2014.01.021.

[13] M. A. Ceze and K. J. Fidkowski. Drag prediction using adaptive discontinuous finite elements. *AIAA Journal of Aircraft*, 51(4):1284–1294, 2014. doi:10.2514/1.C032622.

[14] Steven M. Kast and Krzysztof J. Fidkowski. Output-based mesh adaptation for high order Navier-Stokes simulations on deformable domains. *Journal of Computational Physics*, 252(1):468–494, 2013. doi:10.1016/j.jcp.2013.06.007.

[15] Z.J. Wang, Krzysztof Fidkowski, Remi Abgrall, Francesco Bassi, Doru Caraeni, Andrew Cary, Herman Deconinck, Ralf Hartmann, Koen Hillewaert, H.T. Huynh, Norbert Kroll, Georg May, Per-Olof Persson, Bram van Leer, and Miguel Visbal. High-order CFD methods: Current status and perspective. *International Journal for Numerical Methods in Fluids*, 2013. doi:10.1002/fld.3767.

[16] Marco A. Ceze and Krzysztof J. Fidkowski. An anisotropic hp-adaptation framework for functional prediction. *American Institute of Aeronautics and Astronautics Journal*, 51:492–509, 2013. doi:10.2514/1.J051845.

[17] T. J. Drzewiecki, I. M. Asher, T. P. Grunloch, V. E. Petrov, K. J. Fidkowski, A. Manera, and T. J. Downar. Parameter sensitivity study of boiling and two-phase flow models in CFD. *Journal of Computational Multiphase Flow*, 4(4), 2012. doi:10.1260/1757-482X.4.4.411.

[18] K. J. Fidkowski, M. A. Ceze, and P. L. Roe. Entropy-based drag error estimation and mesh adaptation in two dimensions. *AIAA Journal of Aircraft*, 49(5):1485–1496, September-October 2012. doi:10.2514/1.C031795.

[19] C. Lieberman, K. Fidkowski, K. Willcox, and B. van Bloemen Waanders. Hessian-based model reduction: large-scale inversion and prediction. *International Journal for Numerical Methods in Fluids*, 2012. doi:10.1002/fld.3650.

[20] R.P. Drake, F.W. Doss, R.G. McClarren, M.L. Adams, N. Amato, D. Bingham, C.C. Chou, C. DiStefano, K. Fidkowski, B. Fryxell, T.I. Gombosi, M.J. Grosskopf, J.P. Holloway, B. van der Holst, C.M. Huntington, S. Karni, C.M. Krauland, C.C. Kuranz, E. Larsen, B. van Leer, B. Mallick, D. Marion, W. Martin, J.E. Morel, E.S. Myra, V. Nair, K.G. Powell, L. Rauchwerger, P. Roe, E. Rutter, I.V. Sokolov, Q. Stout, B.R. Torralva, G. Toth, K. Thornton, and A.J. Visco. Radiative effects in radiative shocks in shock tubes. *High Energy Density Physics*, 7:130–140, 2011. doi:10.1016/j.hedp.2011.03.005.

[21] Krzysztof J. Fidkowski and Yuxing Luo. Output-based space-time mesh adaptation for the compressible Navier-Stokes equations. *Journal of Computational Physics*, 230:5753–5773, 2011. doi:10.1016/j.jcp.2011.03.059.

[22] Krzysztof J. Fidkowski. Output error estimation strategies for discontinuous Galerkin discretizations of unsteady convection-dominated flows. *International Journal for Numerical Methods in Engineering*, 88(12):1297–1322, 2011. doi:10.1002/nme.3224.

[23] Krzysztof J. Fidkowski and David L. Darmofal. Review of output-based error estimation and mesh adaptation in computational fluid dynamics. *American Institute of Aeronautics and Astronautics Journal*, 49(4):673–694, 2011. doi:10.2514/1.J050073.

[24] Krzysztof J. Fidkowski and Philip L. Roe. An entropy adjoint approach to mesh refinement. *SIAM Journal on Scientific Computing*, 32(3):1261–1287, 2010. doi:10.1137/090759057.

[25] D. Galbally, K. Fidkowski, K. Willcox, and O. Ghattas. Nonlinear model reduction for uncertainty quantification in large-scale inverse problems. *International Journal for Numerical Methods in Engineering*, 81:1581–1608, 2009. doi:10.1002/nme.2746.

[26] K. J. Fidkowski and D. L. Darmofal. A triangular cut-cell adaptive method for high-order discretizations of the compressible Navier-Stokes equations. *Journal of Computational Physics*, 225:1653–1672, 2007. doi:10.1016/j.jcp.2007.02.007.

[27] D.W. Milanes, D.R. Kirk, K.J. Fidkowski, and I.A. Waitz. Gas turbine engine durability impacts of high-fuel-air ratio combustors: near wall reaction effects on film-cooled backward-facing step heat transfer. *Journal of Engineering for Gas Turbines and Power*, 128(2):318–325, 2006. doi:10.1115/GT2002-30182.

[28] Krzysztof J. Fidkowski, Todd A. Oliver, James Lu, and David L. Darmofal. p-Multigrid solution of high–order discontinuous Galerkin discretizations of the compressible Navier-Stokes equations. *Journal of Computational Physics*, 207:92–113, 2005. doi:10.1016/j.jcp.2005.01.005.

[29] A. Quirrenbach, J.E. Roberts, K.J. Fidkowski, W. de Vries, and W. van Breugel. Keck adaptive optics observations of the radio galaxy 3C294: A merging system at z = 1.786? *The Astrophysical Journal*, 556:108–112, July 2001. doi:10.1086/321564.

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Conference Proceedings

[1] Gustavo Luiz Olichevis Halila, Guodong Chen, Yayun Shi, Krzysztof J. Fidkowski, and Joaquim R. R. A. Martins. High-reynolds number transitional flow prediction using a coupled discontinuous-Galerkin RANS PSE framework. AIAA Paper 2019–0974, 2019. doi:https://doi.org/10.2514/6.2019-0974.

[2] Qingzhao Wang, Renato R. Medeiros, Carlos E. Cesnik, Krzysztof J. Fidkowski, Joël Brezillon, and Hans M. Bleecke. Techniques for improving neural network-based aerodynamics reduced-order models. AIAA Paper 2019–1849, 2019. doi:https://doi.org/10.2514/6.2019-1849.

[3] Kevin T. Doetsch and Krzysztof J. Fidkowski. A combined entropy and output-based adjoint approach for mesh refinement and error estimation. AIAA Paper 2018–0918, 2018. doi:10.2514/6.2018-0918.

[4] Yukiko S. Shimizu and Krzysztof J. Fidkowski. Output-based error estimation for chaotic flows using reduced-order modeling. AIAA Paper 2018–0826, 2018. doi:10.2514/6.2018-0826.

[5] Krzysztof J. Fidkowski. Three-dimensional benchmark RANS computations using discontinuous finite elements on solution-adapted meshes. AIAA Paper 2018–1104, 2018. doi:10.2514/6.2018-1104.

[6] Guodong Chen and Krzysztof J. Fidkowski. Airfoil shape optimization using output-based adapted meshes. AIAA Paper 2017–3102, 2017. doi:10.2514/6.2017-3102.

[7] Kaihua Ding and Krzysztof J. Fidkowski. Output error control using r-adaptation. AIAA Paper 2017–4111, 2017. doi:10.2514/6.2017-4111.

[8] Devina P. Sanjaya, Krzysztof J. Fidkowski, Laslo T. Diosady, and Scott M. Murman. Error minimization via metric-based curved-mesh adaptation. AIAA Paper 2017–3099, 2017. doi:10.2514/6.2017-3099.

[9] Krzysztof J. Fidkowski. Unsteady output-based adaptation using continuous-in-time adjoints. AIAA Paper 2017–0529, 2017. doi:10.2514/6.2017-0529.

[10] Yukiko S. Shimizu and Krzysztof J. Fidkowski. Output error estimation for chaotic flows. AIAA Paper 2016-3806, 2016.

[11] Krzysztof J. Fidkowski. Output-based space-time adaptation with non-variational time integration. ECCOMAS conference, 2016.

[12] Krzysztof J. Fidkowski. A local sampling approach to anisotropic metric-based mesh optimization. AIAA Paper 2016–0835, 2016. doi:10.2514/6.2016-0835.

[13] Krzysztof J. Fidkowski and Marco A. Ceze. High-order output-based adaptive simulations of turbulent flow over a three dimensionsional bump. AIAA Paper 2015–0862, 2016. doi:10.2514/6.2016-0862.

[14] Kaihua Ding, Krzysztof J. Fidkowski, and Philip L. Roe. Continuous adjoint based error estimation and r-refinement for the active-flux method. AIAA Paper 2016–0832, 2016. doi:10.2514/6.2016-0832.

[15] Devina P. Sanjaya and Krzysztof J. Fidkowski. Improving high-order finite element approximation through geometrical warping. AIAA Paper 2015–2605, 2015. doi:10.2514/6.2015-2605.

[16] Krzysztof J. Fidkowski. An output-based adaptive hybridized discontinuous Galerkin method on deforming domains. AIAA Paper 2015–2602, 2015. doi:10.2514/6.2015-2602.

[17] Steven M. Kast, Johann P.S. Dahm, and Krzysztof J. Fidkowski. A hybrid Petrov-Galerkin method for optimal output prediction. AIAA Paper 2015–1956, 2015. doi:10.2514/6.2015-1956.

[18] Marco A. Ceze and Krzysztof J. Fidkowski. High-order output-based adaptive simulations of turbulent flow in two dimensions. AIAA Paper 2015–1532, 2015. doi:10.2514/6.2015-1532.

[19] Derek J. Dalle and Krzysztof J. Fidkowski. Multifidelity airfoil shape optimization using adaptive meshing. AIAA Paper 2014–2996, 2014. doi:10.2514/6.2014-2996.

[20] Benjamin A. Rothacker, Marco A. Ceze, and Krzysztof J. Fidkowski. Adjoint-based error estimation and mesh adaptation for problems with output constraints. AIAA Paper 2014–2576, 2014. doi:10.2514/6.2014-2576.

[21] Kaihua Ding, Krzysztof J. Fidkowski, and Philip L. Roe. Acceleration techniques for adjoint-based error estimation and mesh adaptation. Eighth International Conference on Computational Fluid Dynamics ICCFD8-0249, 2014.

[22] Johann P.S. Dahm and Krzysztof J. Fidkowski. Error estimation and adaptation in hybridized discontinous Galerkin methods. AIAA Paper 2014–0078, 2014. doi:10.2514/6.2014-0078.

[23] Marco A. Ceze and Krzysztof J. Fidkowski. Pseudo-transient continuation, solution update methods and CFL strategies for DG discretizations of the RANS-SA equations. AIAA Paper 2013–2686, 2013. doi:10.2514/6.2013-2686.

[24] Kaihua Ding, Krzysztof J. Fidkowski, and Philip L. Roe. Adjoint-based error estimation and mesh adaptation for the active flux method. AIAA Paper 2013–2942, 2013. doi:10.2514/6.2013-2942.

[25] Marnix van Schrojenstein Lantman and Krzysztof J. Fidkowski. Adjoint-based optimization of flapping kinematics in viscous flows. AIAA Paper 2013–2848, 2013. doi:10.2514/6.2013-2848.

[26] I. M. Asher, K. J. Fidkowski, T. J. Drzewiecki, T. P. Grunloch, V. E. Petrov, A. Manera, and T. J. Downar. Sensitivity study of Eulerian multiphase boiling models: NPhase-CMFD. 15th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-15) 215, 2013.

[27] Marco A. Ceze and Krzysztof J. Fidkowski. Drag prediction using adaptive discontinuous finite elements. AIAA Paper 2013-0051, 2013. doi:10.2514/6.2013-51.

[28] Steven M. Kast, Marco A. Ceze, and Krzysztof J. Fidkowski. Output-adaptive solution strategies for unsteady aerodynamics on deformable domains. Seventh International Conference on Computational Fluid Dynamics ICCFD7-3802, 2012. URL: http://www.iccfd.org/iccfd7/assets/pdf/papers/ICCFD7-3802_paper.pdf.

[29] Marco A. Ceze and Krzysztof J. Fidkowski. Output-based *hp*-adaptation applied to aerodynamic flows. Tenth World Congress on Computational Mechanics WCCM-18038, 2012. doi:10.5151/meceng-wccm2012-18038.

[30] Krzysztof J. Fidkowski. An output-based dynamic order refinement strategy for unsteady aerodynamics. AIAA Paper 2012-77, 2012. doi:10.2514/6.2012-77.

[31] T. J. Drzewiecki, I. M. Asher, K. J. Fidkowski, and T. J. Downar. Parameter sensitivity study of boiling and two-phase flow models in computational thermal hydraulics. 14th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-14) 502, 2011.

[32] Steven M. Kast, Krzysztof J. Fidkowski, and Philip L. Roe. An unsteady entropy adjoint approach for adaptive solution of the shallow-water equations. AIAA Paper 2011-3694, 2011. doi:10.2514/6.2011-3694.

[33] Krzysztof J. Fidkowski, Marco A. Ceze, and Philip L. Roe. Drag output error estimation using the entropy adjoint approach. AIAA Paper 2011-3867, 2011. doi:10.2514/6.2011-3867.

[34] Marco A. Ceze and Krzysztof J. Fidkowski. A robust adaptive solution strategy for high-order implicit CFD solvers. AIAA Paper 2011-3696, 2011. doi:10.2514/6.2011-3696.

[35] Y. Luo and K.J. Fidkowski. Output-based space time mesh adaptation for unsteady aerodynamics. AIAA Paper 2011-491, 2011. doi:10.2514/6.2011-491.

[36] Ian S. Tobasco and Krzysztof J. Fidkowski. A probabilistic approach to inverse convection-diffusion. AIAA Paper 2011-824, 2011. doi:10.2514/6.2011-824.

[37] Marco A. Ceze and Krzysztof J. Fidkowski. Output-driven anisotropic mesh adaptation for viscous flows using discrete choice optimization. AIAA Paper 2010-0170, 2010. doi:10.2514/6.2010-170.

[38] Krzysztof J. Fidkowski and Philip L. Roe. Entropy-based mesh refinement, I: The entropy adjoint approach. AIAA Paper 2009-3790, 2009. doi:10.2514/6.2009-3790.

[39] Krzysztof J. Fidkowski and David L. Darmofal. Output-based error estimation and mesh adaptation: Overview and recent results. AIAA Paper 2009-1303, 2009. doi:10.2514/6.2009-1303.

[40] K. Fidkowski, F. Engelsen, K. Willcox, and I. Kroo. Stochastic gust analysis techniques for aircraft conceptual design. AIAA Paper 2008-5848, 2008. doi:10.2514/6.2008-5848.

[41] Krzysztof J. Fidkowski and David L. Darmofal. An adaptive simplex cut-cell method for discontinuous Galerkin discretizations of the Navier-Stokes, equations. AIAA Paper 2007-3941, 2007. doi:10.2514/6.2007-3941.

[42] Todd A. Oliver, Krzysztof J. Fidkowski, and David L. Darmofal. Multigrid solution for high–order discontinuous Galerkin discretization of the compressible Navier-Stokes equations. In *Third International Conference on Computational Fluid Dynamics, Toronto, Canada*, 2004. doi:10.1007/3-540-31801-1_64.

[43] Krzysztof J. Fidkowski and David L. Darmofal. Development of a high-order solver for aerodynamic applications. AIAA Paper 2004-112, 2004. doi:10.2514/6.2004-436.

Technical Proceedings

[1] K.J. Fidkowski. Output-based error estimation and mesh adaptation for steady and unsteady flow problems. In H. Deconinck and T. Horvath, editors, *38^{th} Advanced CFD Lectures Series; Von Karman Institute for Fluid Dynamics (September 14–16 2015)*. von Karman Institute for Fluid Dynamics, 2015.

[2] K.J. Fidkowski. Quantifying uncertainties in radiation hydrodynamics models. In *VKI Uncertainty Quantification Lecture Series, STO-AVT-235, Stanford, CA*. von Karman Institute for Fluid Dynamics, 2014.

[3] K.J. Fidkowski. High-order output-based adaptive methods for steady and unsteady aerodynamics. In H. Deconinck and R. Abgrall, editors, *37^{th} Advanced CFD Lectures series; Von Karman Institute for Fluid Dynamics (December 9–12 2013)*. von Karman Institute for Fluid Dynamics, 2013.

[4] Krzysztof J. Fidkowski and David L. Darmofal. Output-based adaptive meshing using triangular cut cells. M.I.T. Aerospace Computational Design Laboratory Report. ACDL TR-06-2, 2006. URL: http://raphael.mit.edu/pubsTechRep.html.

Dissertation

[1] Krzysztof J. Fidkowski. A high–order discontinuous Galerkin multigrid solver for aerodynamic applications. MS thesis, M.I.T., Department of Aeronautics and Astronautics, June 2004. URL: http://hdl.handle.net/1721.1/16657.

[2] Krzysztof J. Fidkowski. *A Simplex Cut-Cell Adaptive Method for High–order Discretizations of the Compressible Navier-Stokes Equations*. PhD thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 2007. URL: http://hdl.handle.net/1721.1/39701.

Presentations (other than the above conference proceedings)

1. Adjoint-Based Mesh Optimization for Hybridized Discontinuous Galerkin Methods. Finite Elements in Fluids. Chicago, IL, 2019.

2. Improving Robustness of CFD Applications through Output-Based Adaptive Methods. Centre for Computational Science and Engineering. University of Toronto Institute for Aerospace Studies. April 5, 2018.

3. Improving CFD Robustness and Fidelity Through Output-Based Adaptive Methods. Fluid Dynamics Research Consortium Fall Seminar Series. Penn State University. November 16, 2017

4. Theory and Applications of Unstructured h-p Mesh Optimization for Computational Fluid Dynamics. Applied Mathematics Seminar UC Berkeley / Lawrence Berkeley Laboratory. December 13, 2017

5. Output-Based Adaptation for Chaotic Flow Simulations. 2017 SIAM Conference on Computational Science and Engineering, Atlanta, Georgia, 2017.

6. Advances in High-Order Adaptive Methods for Unsteady Problems. Recent progress on numerical analysis of higher order methods & industrial mathematics related on computational fluid dynamics. National Institute for Mathematical Sciences, Daejeon, Korea, 2016.

7. Introduction to Output-Based Error Estimation and Mesh Adaptation. Workshop on Mesh Movement and Adaptation in Adjoint-based Design Mazurski Raj, Masuria, Poland, 2015.

8. A Comparison of Hybrid and Standard Discontinuous Galerkin Methods for Output-Based Adaptive Simulations on Deformable Domains. 13th US National Congress on Computational Mechanics San Diego, California, 2015.

9. Error Estimation and Mesh Adaptation using Output Adjoints. 38th Advanced CFD Lecture Series. Von Karman Institute, Belgium, 2015 (Invited).

10. Output-Based Adaptive Methods for Unsteady Flow Problems. 38th Advanced CFD Lecture Series. Von Karman Institute, Belgium, 2015 (Invited).

11. Output-Based Adaptive Methods for Computational Fluid Dynamics. Computational and Applied Mathematics Seminar. Purdue University, 2015 (Invited).

12. Goal-Oriented Curved Mesh Optimization for High-Order Finite-Element Methods. 2015 SIAM Conference on Computational Science and Engineering, Salt Lake City, Utah, 2015.

13. New Directions in High-Order Adaptive Methods for Computational Fluid Dynamics. K.J. Fidkowski. Symposium in Honor of Antony Jameson's 80th birthday. Stanford, CA. November 2014 (Invited).

14. A Scalable Algebraic p-Multigrid Preconditioner for High-Order DG Discretizations of Convection-Dominated Flows. K.J. Fidkowski. U.S. National Congress on Computational Mechanics. July 2013 (Keynote).

15. Output-based Adaptive Methods for Large-Scale Aerodynamics Simulations. K.J. Fidkowski. Jameson, Roe, van Leer Symposium. San Diego, CA. June 2013 (Invited).

16. Output-Based Adaptive Methods for Steady and Unsteady Aerodynamics. K.J. Fidkowski. RTWH-Aachen University Applied Mathematics Seminar, May 2013 (Invited).

17. UQ Applications in Multiphase Flow and an Adaptive MLS Sampling Method. I.M. Asher and K.J. Fidkowski. Society for Industrial and Applied Mathematics Conference on Computational Science and Engineering, February 2013.

18. Output-Based Adaptation for Hybridized Discontinuous Galerkin Methods. P.N. Klein, J.P.S. Dahm, and K.J. Fidkowski. Society for Industrial and Applied Mathematics Conference on Computational Science and Engineering, February 2013.

19. Output-based hp-adaptive Simulations of High- Reynolds Number Compressible Flows. M.A. Ceze and K.J. Fidkowski. Society for Industrial and Applied Mathematics Conference on Computational Science and Engineering, February 2013.

20. Output-Based hp-Adaptive Methods for Steady and Unsteady Aerodynamics. K.J. Fidkowski. ICES, University of Texas, September 2012 (Invited).

21. Drag Output Error Estimation for Numerical Simulations of Two-Dimensional Flows. K.J. Fidkowski. Iowa State University, March 2012 (Invited).

22. Output-Based Adaptive Simulations of Unsteady Flows. K.J. Fidkowski. University of Michigan SIAM Student Conference (Plenary talk), November 2011.

23. Output-Based Error Estimation and Adaptation for Uncertainty Quantification. I.M. Asher and K.J. Fidkowski. US National Congress on Computational Mechanics, July 2011.

24. Output-Based Adaptive Simulations of Unsteady Flows. 7th International Congress on Industrial and Applied Mathematics, July 2011.

25. Gradient-Enhanced Response Surfaces for Uncertainty Propagation in Radiation-Hydrodynamics Simulations. C.S. Miranda, J.P. Dahm, and K.J. Fidkowski. 7th International Congress on Industrial and Applied Mathematics, July 2011.

26. Adjoint-Based Numerical Error Estimation for the Unsteady Compressible Navier-Stokes Equations. K.J. Fidkowski and I.M. Asher. SIAM Conference on Computational Science and Engineering. March 2011.

27. Is My CFD Mesh Adequate? A Quantitative Answer. Gas Dynamics Research Colloquium, University of Michigan. January 2011.

28. Progress in Mesh-Adaptive Discontinuous Galerkin Methods for CFD, German Aerospace Center Seminar, May 2009 (Invited). (Similar presentation at NASA Ames in June 2009)

29. Towards Automated Mesh Adaptation Using Simplex Cut Cells. K.J. Fidkowski. Computational Research in Boston Seminar (Invited), October 2007. (Similar presentation at NASA Ames in December 2007, and at a Computation for Design and Optimization seminar in May 2008).

30. A Cut-Cell Adaptive Method for High-Order Discretizations of the Compressible Navier-Stokes Equations. K.J. Fidkowski. 2007 Computational Science Graduate Fellowship Conference in Washington D.C. June 2007.

31. An Automated, Adaptive Cut-Cell Method for Triangles and Tetrahedra. K.J. Fidkowski, University of Michigan, February 1, 2007.

32. p-Multigrid solution of high-order discontinuous Galerkin discretizations of the Euler and compressible Navier-Stokes equations. K.J. Fidkowski, D.L. Darmofal. 12th Copper Mountain Conference on Multigrid Methods in Copper Mountain, Colorado. April 3, 2005.

33. Shock capturing and robust output-based adaptation for DG. G.E. Barter, K.J. Fidkowski, D.L. Darmofal. 7th World Congress on Computational Mechanics in Los Angeles, CA. July 16, 2006.