

John Andrew Evans

CONTACT INFORMATION	Smead Aerospace Engineering Sciences University of Colorado Boulder 3775 Discovery Drive, Room 361 Boulder, CO 80303 USA	<i>Phone:</i> (303) 492-0020 <i>Fax:</i> (303) 492-7881 <i>E-mail:</i> john.a.evans@colorado.edu <i>Web:</i> colorado.edu/isogeometric
RESEARCH INTERESTS	Computational Mechanics and Geometry · Computational Fluid Dynamics and Structural Mechanics · Fluid-Structure Interaction · Wave Propagation · Turbulence Modeling and Simulation · Isogeometric and Finite Element Analysis · Structure-Preserving Discretizations · Multiscale/Stabilized Methods · Computer Aided Geometric Design · Curvilinear Mesh Generation · Design Space Exploration and Optimization · Geometric Uncertainty Quantification	
EDUCATION	Ph.D., Computational and Applied Mathematics , December 2011 The University of Texas at Austin, Austin, Texas, USA M.S., Computational and Applied Mathematics , December 2008 The University of Texas at Austin, Austin, Texas, USA M.S., Applied Mathematics , August 2006 Rensselaer Polytechnic Institute, Troy, New York, USA B.S., Mathematics , <i>Summa cum laude</i> , May 2006 Rensselaer Polytechnic Institute, Troy, New York, USA	
PROFESSIONAL EXPERIENCE	University of Colorado Boulder , Boulder, Colorado, USA <i>Ann and H.J. Smead Department of Aerospace Engineering Sciences</i> Jack Rominger Faculty Fellow July 2017 to Present Assistant Professor August 2013 to Present Visiting Assistant Professor June 2013 to August 2013 <i>Department of Applied Mathematics</i> Affiliated Faculty September 2015 to Present <i>Integrative Quantitative Biology Program</i> Affiliated Faculty September 2013 to Present The University of Texas at Austin , Austin, Texas, USA <i>Institute for Computational Engineering and Sciences</i> Postdoctoral Researcher January 2012 to August 2013	
CONSULTING ACTIVITIES	Walt Disney Animation Studios , Burbank, California, USA, July 2018 to Present	
HONORS, AWARDS, AND PRIZES	2019: Clarivate Analytics Highly Cited Researcher (Among Top 1% Worldwide in Computer Science Citations) 2019: Graduate Teaching and Mentoring Award <i>Department of Aerospace Engineering Sciences</i> <i>University of Colorado Boulder</i> 2019: Simons Visiting Professor <i>Oberwolfach Research Institute</i> 2018: Clarivate Analytics Highly Cited Researcher	

(Among Top 1% Worldwide in Computer Science Citations)
 2017: Top Teaching Performer in College of Engineering and Applied Science
 University of Colorado Boulder
 2017: Clarivate Analytics Highly Cited Researcher
 (Among Top 1% Worldwide in Computer Science Citations)
 2017 - Present: Jack Rominger Faculty Fellowship
 College of Engineering and Applied Science
 University of Colorado Boulder
 2016: Thomson Reuters Highly Cited Researcher
 (Among Top 1% Worldwide in Computer Science Citations)
 2016: United States Junior Oberwolfach Fellow
 Oberwolfach Research Institute
 2015: Senior Member of American Institute for Aeronautics and Astronautics
 2012 - 2013: Computational Engineering and Sciences Postdoctoral Fellowship
 The University of Texas at Austin
 2007 - 2010: Computational and Applied Mathematics Supplemental Fellowship
 The University of Texas at Austin
 2006 - 2010: Department of Energy Computational Science Graduate Fellowship
 2006 - 2007: David Bruton Jr. Fellowship
 The University of Texas at Austin

CITATION METRICS Number of Citations: 4514 (Google Scholar), 2559 (Web of Science)
 h-index: 25 (Google Scholar), 18 (Web of Science)
 i10-index: 39 (Google Scholar), 26 (Web of Science)

REFEREED JOURNAL ARTICLES
 (GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS UNDERLINED)

47. F. de Prenter, C.V. Verhoosel, E.H. van Brummelen, J.A. Evans, C. Messe, J. Benzaken, and K. Maute, “Multigrid solvers for immersed finite element methods and immersed isogeometric analysis.” Computational Mechanics, accepted for publication.
46. J.A. Evans, M.A. Scott, K. Shepherd, D. Thomas, and R.Vazquez, “Hierarchical B-spline complexes of discrete differential forms.” IMA Journal of Numerical Analysis, 40:422-473, 2020.
45. E.L. Peters and J.A. Evans, “A divergence-conforming hybridized discontinuous Galerkin method for the incompressible Reynolds Averaged Navier-Stokes equations.” International Journal for Numerical Methods in Fluids, 91:112-133, 2019.
44. R.W. Skinner, A. Doostan, E.L. Peters, J.A. Evans, and K.E. Jansen, “A reduced-basis multi-fidelity approach for an efficient parametric study of NACA airfoils.” AIAA Journal, 57:1481-1491, 2019.
43. E.P. Kightley, A. Pearson, J.A. Evans, and D.M. Bortz, “Fragmentation of biofilm-seeded bacterial aggregates in shear flow.” European Journal of Applied Mathematics, 29:1062-1078, 2018.
42. X. Wei, Y. Zhang, D. Toshniwal, H. Speleers, X. Li, C. Manni, J.A. Evans, and T.J.R. Hughes, “Blended B-spline construction on unstructured quadrilateral and hexahedral meshes with optimal convergence rates in isogeometric analysis.” Computer Methods in Applied Mechanics and Engineering, 341:609-639, 2018.
41. D. Bommers, J.A. Evans, and L. Liu, “Special Issue on the 12th International Conference on Geometric Modeling and Processing (GMP 2018).” Computer Aided Geometric Design, 62:1-2, 2018.

40. J.A. Evans, R.R. Hiemstra, T.J.R. Hughes, and A. Reali, “Explicit higher-order accurate isogeometric collocation methods for structural dynamics.” *Computer Methods in Applied Mechanics and Engineering*, 338:208-240, 2018.
39. C. Coley, J. Benzaken, and J.A. Evans, “A geometric multigrid method for isogeometric compatible discretizations of the generalized Stokes and Oseen problems.” *Numerical Linear Algebra with Applications*, 25:e2145, 2018.
38. C. Coley and J.A. Evans, “Variational multiscale modeling with discontinuous subscales: Analysis and application to scalar transport.” *Meccanica*, 53:1241-1269, 2018.
37. R. Simpson, Z. Liu, R. Vazquez, and J.A. Evans, “An isogeometric boundary element method for electromagnetic scattering with compatible B-spline discretizations.” *Journal of Computational Physics*, 362:264-289, 2018.
36. J. Chan and J.A. Evans, “Multi-patch discontinuous Galerkin isogeometric analysis for wave propagation: Explicit time-stepping and efficient mass matrix inversion.” *Computer Methods in Applied Mechanics and Engineering*, 333:22-54, 2018.
35. D. Kamensky, J.A. Evans, M.-C. Hsu, and Y. Bazilevs, “Projection-based stabilization of interface Lagrange multipliers in immersogeometric fluid-thin structure interaction analysis, with application to heart valve modeling.” *Computers and Mathematics with Applications*, 74:2068-2088, 2017.
34. L. Engvall and J.A. Evans, “Isogeometric unstructured tetrahedral and mixed-element Bernstein-Bézier discretizations.” *Computer Methods in Applied Mechanics and Engineering*, 319:83-123, 2017.
33. J. Benzaken, A. Herrema, M.C. Hsu, and J.A. Evans, “A rapid and efficient isogeometric design space exploration framework with application to structural mechanics.” *Computer Methods in Applied Mechanics and Engineering*, 316:1215-1256, 2017.
32. T.M. van Opstal, J. Yan, C. Coley, J.A. Evans, T. Kvamsdal, and Y. Bazilevs, “Isogeometric divergence-conforming variational multiscale formulation of incompressible turbulent flows.” *Computer Methods in Applied Mechanics and Engineering*, 316:859-879, 2017.
31. D. Kamensky, M.C. Hsu, Y. Yu, J.A. Evans, M.S. Sacks, and T.J.R. Hughes, “Immersogeometric cardiovascular fluid-structure interaction analysis with divergence-conforming B-splines.” *Computer Methods in Applied Mechanics and Engineering*, 314:408-472, 2017.
30. C. Michoski, J. Chan, L. Engvall, and J.A. Evans, “Foundations of the blended isogeometric discontinuous Galerkin (BIDG) method.” *Computer Methods in Applied Mechanics and Engineering*, 305:658-681, 2016.
29. L. Engvall and J.A. Evans, “Isogeometric triangular Bernstein-Bezier discretizations: Automatic mesh generation and geometrically exact finite element analysis.” *Computer Methods in Applied Mechanics and Engineering*, 304:378-407, 2016.
28. D. Kamensky, J.A. Evans, and M.-C. Hsu, “Stability and conservation properties of collocated constraints in immersogeometric fluid-thin structure interaction analysis.” *Communications in Computational Physics*, 18:1147-1180, 2015.

27. D. Schillinger, J.A. Evans, F. Frischmann, R.R. Hiemstra, M.-C. Hsu, and T.J.R. Hughes, “A collocated C^0 finite element method: Reduced quadrature perspective, cost comparison with standard finite elements, and explicit structural dynamics.” *International Journal for Numerical Methods in Engineering*, 102:576-631, 2015. *Recipient of Oleg Zienkiewicz Best Paper Award from the Institution of Civil Engineers.*
26. D. Kamensky, M.-C. Hsu, D. Schillinger, J.A. Evans, A. Aggarwal, Y. Bazilevs, M.S. Sacks, and T.J.R. Hughes, “An immersogeometric variational framework for fluid-structure interaction: Application to bioprosthetic heart valves.” *Computer Methods in Applied Mechanics and Engineering*, 284:1005-1053, 2015. *Web of Science Highly Cited Paper in Computer Science.*
25. D. Thomas, M.A. Scott, J.A. Evans, K. Tew, and E.J. Evans, “Bézier projection: A unified approach for local projection and quadrature-free refinement and coarsening of NURBS and T-splines with particular application to isogeometric design and analysis.” *Computer Methods in Applied Mechanics and Engineering*, 284:55-105, 2015.
24. L. De Lorenzis, J.A. Evans, T.J.R. Hughes, and A. Reali, “Isogeometric collocation: Neumann boundary conditions and contact.” *Computer Methods in Applied Mechanics and Engineering*, 284:21-54, 2015.
23. J. Chan and J.A. Evans, “A dual Petrov-Galerkin finite element method for the convection-diffusion equation.” *Computers and Mathematics with Applications*, 68:1513-1529, 2014.
22. C. Michoski, J.A. Evans, and P.G. Schmitz, “Discontinuous Galerkin hp -adaptive methods for multiscale chemical reactors: Quiescent reactors.” *Computer Methods in Applied Mechanics and Engineering*, 279:163-197, 2014.
21. T.J.R. Hughes, J.A. Evans, and A. Reali, “Finite element and NURBS approximations of eigenvalue, boundary-value, and initial-value problems.” *Computer Methods in Applied Mechanics and Engineering*, 272:290-320, 2014.
20. D. Schillinger, J.A. Evans, A. Reali, M.A. Scott, and T.J.R. Hughes, “Isogeometric collocation: Cost comparison with Galerkin methods and extension to hierarchical NURBS discretizations.” *Computer Methods in Applied Mechanics and Engineering*, 267:170-232, 2013. *Web of Science Highly Cited Paper in Computer Science.*
19. J. Liu, H. Gomez, J.A. Evans, T.J.R. Hughes, and C.M. Landis, “Functional entropy variables: A new methodology for deriving thermodynamically consistent algorithms for complex fluids, with particular reference to the isothermal Navier-Stokes-Korteweg equations.” *Journal of Computational Physics*, 248:47-86, 2013.
18. J. Liu, L. Dedé, J.A. Evans, M.J. Borden, and T.J.R. Hughes, “Isogeometric analysis of the advective Cahn-Hilliard equation: Spinodal decomposition under shear flow.” *Journal of Computational Physics*, 242:321-350, 2013.
17. J.A. Evans and T.J.R. Hughes, “Isogeometric divergence-conforming B-splines for the unsteady Navier-Stokes equations.” *Journal of Computational Physics*, 241:141-167, 2013.
16. M.A. Scott, R.N. Simpson, J.A. Evans, S. Lipton, S.P.A. Bordas, T.J.R. Hughes, and T.W. Sederberg, “Isogeometric boundary element analysis using unstructured T-splines.” *Computer Methods in Applied Mechanics and Engineering*, 254:197-221, 2013. *Web of Science Highly Cited Paper in Computer Science.*

15. J.A. Evans and T.J.R. Hughes, "Isogeometric divergence-conforming B-splines for the steady Navier-Stokes equations." *Mathematical Models and Methods in Applied Sciences*, 23:1421-1478, 2013. *Web of Science Highly Cited Paper in Mathematics*.
14. J.A. Evans and T.J.R. Hughes, "Isogeometric divergence-conforming B-splines for the Darcy-Stokes-Brinkman equations." *Mathematical Models and Methods in Applied Sciences*, 23:671-741, 2013.
13. J.A. Evans and T.J.R. Hughes, "Explicit trace inequalities for isogeometric analysis and parametric hexahedral finite elements." *Numerische Mathematik*, 123:259-290, 2013.
12. J.A. Evans and T.J.R. Hughes, "Discrete spectrum analyses for various mixed discretizations of the Stokes eigenproblem." *Computational Mechanics*, 50:667-674, 2012.
11. D. Schillinger, L. Dedé, M.A. Scott, J.A. Evans, M.J. Borden, E. Rank, and T.J.R. Hughes, "An isogeometric design-through-analysis methodology based on adaptive hierarchical refinement of NURBS, immersed boundary methods, and T-spline CAD surfaces." *Computer Methods in Applied Mechanics and Engineering*, 249-252:116-150, 2012. *Web of Science Highly Cited Paper in Computer Science and Recipient of John Argyris Best Paper Award from the International Association for Computational Mechanics*.
10. H.A.F.A. Santos, J.A. Evans, and T.J.R. Hughes, "Generalization of the twist-Kirchhoff theory of plate elements to arbitrary quadrilaterals and assessment of convergence." *Computer Methods in Applied Mechanics and Engineering*, 209-212:101-114, 2012.
9. F. Brezzi, J.A. Evans, T.J.R. Hughes, and L.D. Marini, "New rectangular plate elements based on twist-Kirchhoff theory." *Computer Methods in Applied Mechanics and Engineering*, 200:2547-2561, 2011.
8. M.J. Borden, M.A. Scott, J.A. Evans, and T.J.R. Hughes, "Isogeometric finite element data structures based on Bézier extraction of NURBS." *International Journal for Numerical Methods in Engineering*, 87:15-47, 2011. *Web of Science Highly Cited Paper in Engineering*.
7. C. Michoski, J.A. Evans, P.G. Schmitz, and A. Vasseur, "A discontinuous Galerkin method for viscous compressible multifluids." *Journal of Computational Physics*, 229:2249-2266, 2010.
6. S. Lipton, J.A. Evans, Y. Bazilevs, T. Elguedj, and T.J.R. Hughes, "Robustness of isogeometric structural discretizations under severe mesh distortion." *Computer Methods in Applied Mechanics and Engineering*, 199:356-373, 2010. *Web of Science Highly Cited Paper in Computer Science*.
5. Y. Bazilevs, V. Calo, J.A. Cottrell, J.A. Evans, T.J.R. Hughes, S. Lipton, M.A. Scott, and T. Sederberg, "Isogeometric analysis using T-splines." *Computer Methods in Applied Mechanics and Engineering*, 199:229-263, 2010. *Web of Science Highly Cited Paper in Computer Science*.
4. J.A. Evans, T.J.R. Hughes, and G. Sangalli, "Enforcement of constraints and maximum principles in the variational multiscale method." *Computer Methods in Applied Mechanics and Engineering*, 199:61-76, 2009.

3. C. Michoski, J.A. Evans, P.G. Schmitz, and A. Vasseur, “Quantum hydrodynamics with trajectories: The nonlinear conservation form mixed/discontinuous Galerkin method with applications in chemistry.” *Journal of Computational Physics*, 228:8589-8608, 2009.
2. J.A. Evans, Y. Bazilevs, I. Babûska, and T.J.R. Hughes, “ n -Widths, sup-infs, and comparison ratios for the k -version of the isogeometric finite element method.” *Computer Methods in Applied Mechanics and Engineering*, 198:1726-1741, 2009. *Web of Science Highly Cited Paper in Computer Science*.
1. J.A. Evans and M. Reyhan, “A quasi-sequential cellular automaton approach to traffic modeling.” *COMAP UMAP Journal*, 26.3:331-344, 2005.

BOOK CHAPTERS

3. J.A. Evans, C. Coley, R.M. Aronson, C.L. Wetterer-Nelson, and Y. Bazilevs, “Residual based large eddy simulation with isogeometric divergence-conforming discretizations.” In *Frontiers in Computational Fluid-Structure Interaction and Flow Simulation: Research from Lead Investigators under 40*, edited by T. Tezduyar, 91-130. Cham: Birkhäuser/Springer, 2018.
2. J.A. Evans and T.J.R. Hughes, “Isogeometric compatible discretizations for viscous incompressible flow.” In *Isogeometric Analysis: A New Paradigm in the Numerical Approximation of PDEs*, edited by A. Buffa. G. Sangalli, 155-193. Switzerland: Springer International Publishing, 2016.
1. Y. Bazilevs, V.M. Calo, J.A. Cottrell, J.A. Evans, T.J.R. Hughes, S. Lipton, M.A. Scott, and T.W. Sederberg, “Isogeometric analysis: Toward unification of CAD and FEA.” In *Trends in Engineering Computational Technology*, edited by M. Papadrakakis, B.H.V. Topping, 1-16. Stirling, UK: Saxe-Coburg Publications, 2008.

CONFERENCE PROCEEDINGS

15. B. Parmar, E.L. Peters, K.E. Jansen, A. Doostan, and J.A. Evans, “Generalized non-linear eddy viscosity models for data-assisted Reynolds stress closure.” Proceedings of the AIAA SciTech 2020, Orlando, FL, 2020.
14. R. Balin, J.R. Wright, J.W. Patterson, J.A. Farnsworth, J.A. Evans, R. Lakhani, P.R. Spalart, and K.E. Jansen, “Hybrid turbulence model computations of the NASA juncture flow model using PHASTA.” Proceedings of the AIAA SciTech 2020, Orlando, FL, 2020.
13. E.S. Barroso, J.A. Evans, J.B.C. Neto, C.A. Vidal, and E.P. Junior, “An algorithm for automatic discretization of isogeometric plane models.” Proceedings of the Ibero-Latin American Congress on Computational Methods in Engineering, Natal, Brazil, 2019.
12. J.A. Evans, K. Maute, C. Messe, L. Noel, and F. de Prenter, “Adaptive topology optimization with hierarchical B-splines.” Oberwolfach Reports, Report No. 33/2019, Pg. 13-15, 2019.
11. J.A. Evans, B. Jüttler, and G. Sangalli, “Isogeometric splines: Theory and applications.” BIRS Reports, Report No. 19w5196, 2019.
10. L. Engvall and J.A. Evans, “Element quality metrics for higher-order Bernstein-Bézier elements.” Proceedings of the 27th International Meshing Roundtable, Albuquerque, NM, 2018.
9. R.W. Skinner, A. Doostan, E.L. Peters, J.A. Evans, and K.E. Jansen, “An evaluation of bi-fidelity modeling efficiency on a general family of NACA airfoils.” Proceedings of the 35th Applied Aerodynamics Conference, Denver, CO, 2017.

8. L. Engvall and J.A. Evans, "Towards geometrically exact higher-order unstructured mesh generation." Proceedings of the 25th International Meshing Roundtable, Washington DC, 2016.
7. J.A. Evans, I. Babuška, Y. Bazilevs, J. Benzaken, J. Chan, and T.J.R. Hughes, "Optimality and approximation: A quantitative assessment of the approximation properties of spline, polynomial, and Fourier bases." Oberwolfach Reports, Report No. 8/2016, Pg. 352-354, 2016.
6. D. Schillinger, L. Dedé, M.A. Scott, J.A. Evans, M.J. Borden, E. Rank, and T.J.R. Hughes, "Isogeometric analysis and the finite cell method." Proceedings of the European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012), Vienna, Austria, 2012.
5. T.J.R. Hughes and J.A. Evans, "Isogeometric analysis." Proceedings of the International Congress of Mathematicians, Volume 1, Hyderabad, India, 2010.
4. J.A. Evans, K.E. Jansen, M.S. Shepherd, and A.C. Bauer, "A multiscale stabilization of the streamfunction form of the steady state Navier-Stokes equations." Journal of Physics: Conference Series, 46:463-467, 2006.
3. M. Oghbaei, K.S. Anderson, and J.A. Evans, "A state-time formulation for multi-body systems dynamics simulation, Part II: Parallel implementation." Proceedings of the 2005 ASME International Design Engineering Technical Conference and Computers and Information in Engineering Conference, Long Beach, California, 2005.
2. J.A. Evans, M. Oghbaei, and K.S. Anderson, "Modeling and simulation of a laser-powered lightcraft using advanced simulation tools." Proceedings of the 2005 ASME International Design Engineering Technical Conference and Computers and Information in Engineering Conference, Long Beach, California, 2005.
1. J.A. Evans, M. Oghbaei, and K.S. Anderson, "Incorporation of aerodynamic considerations in the dynamic simulation of a Type-200 lightcraft." Proceedings of the the 2005 International Conference on Advances in Computational Multibody Dynamics, Madrid, Spain, 2005.

TECHNICAL
REPORTS

2. J.A. Evans and T.J.R. Hughes, "Variational multiscale analysis: A new link between flux correction, total variation, and constrained optimization." ICES Report 2010-35, The University of Texas at Austin, 2010.
1. J.A. Evans, M. Oghbaei, and K.S. Anderson, "Modeling and simulation of a laser-powered lightcraft using impulse state-time equations." SCOREC Report 2006-27, Rensselaer Polytechnic Institute, 2006.

PREPRINTS

5. J.A. Evans, D. Kamensky, and Y. Bazilevs, "Variational multiscale modeling with discretely divergence-free subscales." Submitted for publication.
4. J. Benzaken, J.A. Evans, S. McCormick, and R. Tamstorf, "Nitsche's method for variational constrained minimization problems with application to membranes, plates, and shells." Submitted for publication.
3. L. Noel, M. Schmidt, C. Messe, J.A. Evans, and K. Maute, "Adaptive level set topology optimization using hierarchical B-splines." Submitted for publication.
2. J. Benzaken, A. Doostan, and J.A. Evans, "Physics-informed tolerance allocation: A surrogate-based framework for the control of geometric variation on system performance." Submitted for publication.

1. J.A Evans and L. Engvall, “Mesh quality metrics for isogeometric Bernstein-Bézier discretizations.” Submitted for publication.
- DISSERTATION AND THESES
2. J.A Evans, “Divergence-free B-spline Discretizations for Viscous Incompressible Flows.” PhD Dissertation, The University of Texas at Austin, 2011.
1. J.A. Evans, “Multiscale and Stabilized Methods for Fourth-Order Problems in Fluid Mechanics’.” MS Thesis, Rensselaer Polytechnic Institute, 2006.
- SELECTED ORAL PRESENTATIONS
64. (Invited Seminar) J.A. Evans, “Hierarchical B-spline complexes of discrete differential forms”, *University of Pittsburgh*, Pittsburgh, Pennsylvania, December 3, 2019.
63. (Invited Talk) J.A. Evans, D. Kamensky, and Y. Bazilevs, “Variational multiscale modeling with weakly divergence-free subscales”, *56th Society of Engineering Sciences Annual Technical Meeting*, St. Louis, Missouri, October 13-15, 2019.
62. (Invited Talk) J.A. Evans and D. Kamensky, “A pressure-robust residual-based stabilized method for the incompressible Navier-Stokes equations”, *15th U.S. National Congress on Computational Mechanics*, Austin, Texas, July 28 - August 1, 2019.
61. (Invited Seminar) J.A. Evans, “Level set topology optimization using hierarchical B-splines,” *Johannes Kepler University Linz*, Linz, Austria, July 25, 2019.
60. (Invited Seminar) J.A. Evans, “Isogeometric structure-preserving discretizations using hierarchical B-splines,” *Johannes Kepler University Linz*, Linz, Austria, July 24, 2019.
59. (Invited Talk) J.A. Evans, C. Messe, F. de Prenter, and K. Maute, “Adaptive topology optimization with hierarchical B-splines,” *Mini-Workshop: Mathematical Foundations of Isogeometric Analysis*, Oberwolfach, Germany, July 15-19, 2019.
58. (Invited Talk) J.A. Evans, “Simulation of turbulent incompressible fluid flow with isogeometric structure-preserving discretizations,” *Structure Preserving Discretizations: Finite Elements, Splines, and IGA*, Pittsburgh, Pennsylvania, May 31 - June 1, 2019.
57. (Plenary Talk) J.A. Evans, “Geometry, parameterization, and high-order spline approximation,” *16th International Conference on Approximation Theory*, Nashville, Tennessee, May 19-22, 2019.
56. (Invited Seminar) J.A. Evans, “Isogeometric structure-preserving discretizations: Fundamentals, current research thrusts, and future directions,” *Sandia National Laboratories*, Albuquerque, New Mexico, May 15, 2019.
55. (Invited Talk) J.A. Evans and L. Engvall, “The impact of parameterization on numerical approximation for isogeometric finite elements,” *Isogeometric Splines: Theory and Applications*, Banff, Canada, February 25 - March 1, 2019.
54. (Invited Talk) J.A. Evans, C. Messe, T. Gleim, F. de Prenter, and K. Maute, “Adaptive level set XFEM topology optimization with hierarchical B-splines,” *IGA2018: Integrating Design and Analysis*, Austin, Texas, October 10-12, 2018.
53. (Invited Talk) J.A. Evans and L. Engvall, “Easily computable metrics for assessing the quality of high-order finite element and isogeometric meshes,” *13th World Congress on Computational Mechanics*, New York City, New York, July 22-27, 2018.

52. (Invited Talk) J.A. Evans, “Mesh generation, parameterization, and optimization for high-order finite element and isogeometric analysis,” Programme on *Numerical Analysis of Complex PDE Models in the Sciences*, Workshop on *Interplay of Geometric Processing, Modelling, and Adaptivity in Galerkin Methods*, Erwin Schrödinger Institute, Vienna, Austria, July 16-20, 2018.
51. (Invited Talk) J.A. Evans and L. Engvall, “Isogeometric unstructured tetrahedral and mixed-element Bernstein-Bézier discretizations,” *Solid and Physical Modeling 2018*, Bilbao, Spain, June 11-13, 2018.
50. (Invited Talk) J.A. Evans, “Recent advances in isogeometric divergence-conforming discretizations,” *Advances in Computational Fluid-Structure Interaction and Flow Simulation*, Banff, Canada, May 2-4, 2018.
49. (Contributed Talk) J.A. Evans, C. Coley, R. Aronson, and C. Nelson, “Structure-preserving variational multiscale modeling of turbulent incompressible flow with subgrid vortices,” *Seventieth Annual Meeting of the American Physical Society Division of Fluid Dynamics*, Denver, Colorado, November 19-21, 2017.
48. (Plenary Lecture) J.A. Evans, “Isogeometric compatible discretizations: Fundamentals, current research thrusts, and future directions,” *Second Conference on Subdivision, Geometric and Algebraic Methods, Isogeometric Analysis, and Refinability in Italy*, Gaeta, Italy, September 17-21, 2017.
47. (Invited Talk) J.A. Evans and E. Peters, “A critical comparison of coupling schemes for non-matching isogeometric/finite element discretizations,” *14th U.S. National Congress on Computational Mechanics*, Montreal, Canada, July 17-20, 2017.
46. (Invited Talk) J.A. Evans and C. Nelson, “Stabilized and multiscale isogeometric collocation methods for transport and incompressible turbulent flow,” *19th International Conference on Finite Elements in Flow Problems*, Rome, Italy, April 5-7, 2017.
45. (Invited Seminar) J.A. Evans, “Isogeometric structure-preserving discretizations: Fundamentals, current research thrusts, and future directions,” *Rice University Computational and Applied Mathematics Colloquium*, Houston, Texas, January 30, 2017.
44. (Invited Talk) J.A. Evans and C. Nelson, “Stabilized isogeometric collocation methods for transport and incompressible flow,” *Isogeometric Analysis and Mesh-free Methods*, San Diego, California, October 10-12, 2016.
43. (Keynote Lecture) J.A. Evans, C. Coley, and J. Benzaken, “Multigrid methods for isogeometric structure-preserving discretizations,” *2016 European Congress on Computational Methods in Applied Sciences and Engineering*, Crete Island, Greece, June 5-10, 2016.
42. (Invited Seminar) J.A. Evans, “Isogeometric structure-preserving discretizations: Fundamentals, current research thrusts, and future directions,” *Delft University of Technology Applied Mathematics Seminar*, Delft, The Netherlands, May 30, 2016.
41. (Invited Talk) J.A. Evans, “Adaptive isogeometric approximation of vector fields using hierarchical B-splines,” *15th International Conference on Approximation Theory*, San Antonio, Texas, May 22-25, 2016.
40. (Invited Seminar) J.A. Evans, “An isogeometric framework for automated generation of geometrically exact, feature-preserving unstructured finite element meshes,”

University of Notre Dame Environmental Fluid Dynamics Seminar, Notre Dame, Indiana, March 1, 2016.

39. (Invited Talk) J.A. Evans, I. Babuska, Y. Bazilevs, J. Benzaken, J. Chan, and T.J.R. Hughes, “Optimality and approximation: A quantitative assessment of the approximation properties of spline, polynomial, and Fourier bases,” *Mini-Workshop: Mathematical Foundations of Isogeometric Analysis*, Oberwolfach, Germany, February 7-13, 2016.
38. (Invited Talk) J.A. Evans and C. Michoski, “Isogeometric structure-preserving methods for magnetohydrodynamics and fluid-structure interaction,” *13th U.S. National Congress on Computational Mechanics*, San Diego, California, July 26-30, 2015.
37. (Invited Talk) J.A. Evans, M.A. Scott, K. Shepherd, D. Thomas, and R. Vazquez, “Adaptive isogeometric vector field approximations with application to viscous incompressible fluid flow.” *Isogeometric Analysis 2015*, Trondheim, Norway, June 1-3, 2015.
36. (Keynote Lecture) J.A. Evans, “Isogeometric structure-preserving methods for computational fluid dynamics.” *18th International Conference on Finite Elements in Flow Problems*, Taipei, Taiwan, March 16-18, 2015.
35. (Invited Seminar) J.A. Evans, “Conservation of geometry in numerical simulation: A primer on isogeometric methods.” *University of Colorado Boulder Applied Mathematics Colloquium*, Boulder, Colorado, January 30, 2015.
34. (Invited Seminar) J.A. Evans, “Conservation of geometry and physics in computational fluid dynamics.” *University of Minnesota Warren Lecture Series*, Minneapolis, Minnesota, November 7, 2014.
33. (Invited Talk) J.A. Evans, “Structure-preserving isogeometric discretizations for incompressible magnetohydrodynamics.” *11th World Congress on Computational Mechanics*, Barcelona, Spain, July 20-25, 2014.
32. (Invited Talk) J.A. Evans, “Isogeometric structure-preserving discretizations for complex fluid flows.” *Higher-Order Finite Element and Isogeometric Methods 2014*, Frauenchiemsee Island, Germany, July 15-18, 2014.
31. (Invited Talk) J.A. Evans, “High-order and structure-preserving isogeometric methods for the incompressible Navier-Stokes and magnetohydrodynamics equations.” *International Conference on Spectral and High Order Methods 2014*, Salt Lake City, Utah, June 23-27, 2014.
30. (Invited Talk) J.A. Evans and T.J.R. Hughes, “Conservation of geometry and physics in numerical simulation of incompressible flow.” *Advances in Computational Fluid-Structure Interaction and Flow Simulation*, Tokyo, Japan, March 19-21, 2014.
29. (Invited Seminar) J.A. Evans, “Conservation of geometry and physics in computational modeling.” *BYU Physics and Astronomy Colloquium*, Provo, Utah, February 19, 2014.
28. (Invited Talk) J.A. Evans, R. Hiemstra, and D. Toshniwal, “Local conservation and isogeometric analysis.” *Isogeometric Analysis 2014*, Austin, Texas, January 8-10, 2014.

27. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Conservation of geometry and physics in numerical modeling of incompressible flow." *2013 SIAM Conference on Geometric and Physical Modeling*, Denver, Colorado, November 11-14, 2013.
26. (Invited Seminar) J.A. Evans, "Isogeometric analysis: Fundamentals, applications, and future challenges." *University of Colorado Boulder Mechanical Engineering Graduate Seminar*, Boulder, Colorado, October 24, 2013.
25. (Invited Seminar) J.A. Evans, "Conservation of geometry and physics in numerical modeling of incompressible flow." *Boulder Fluid Dynamics Seminar Series*, Boulder, Colorado, October 15, 2013.
24. (Invited Talk) J.A. Evans, D. Schillinger, R. Hiemstra, and T.J.R. Hughes, "Isogeometric divergence-conforming collocation methods for incompressible fluid flow," *12th U.S. National Congress on Computational Mechanics*, Raleigh, North Carolina, July 22-25, 2013.
23. (Invited Talk) J.A. Evans, D. Schillinger, R. Hiemstra, and T.J.R. Hughes, "Mixed isogeometric collocation methods for the Stokes equations," *MAFELAP 2013*, London, United Kingdom, June 11-14, 2013.
22. (Invited Talk) J.A. Evans, D. Schillinger, A. Reali, M.A. Scott, and T.J.R. Hughes, "Isogeometric collocation: Cost comparison with Galerkin methods and extension to hierarchical NURBS discretizations," *14th International Conference on Approximation Theory*, San Antonio, Texas, April 7-10, 2013.
21. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Structure-preserving B-spline methods for the incompressible Navier-Stokes Equations," *Numerical Methods for Partial Differential Equations Seminar, Massachusetts Institute of Technology*, Boston, Massachusetts, March 20, 2013.
20. (Invited Talk) J.A. Evans and T.J.R. Hughes, "The method of subgrid vortices: A paradigm for structure-preserving variational multiscale analysis," *Advances in Computational Mechanics*, San Diego, California, February 25-27, 2013.
19. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Isogeometric discrete differential forms with application to viscous fluid flow," *Joint Mathematics Meetings*, San Diego, California, January 10, 2013.
18. (Invited Seminar) J.A. Evans, "Divergence-conforming B-spline discretizations for viscous incompressible flows," *Scientific Computing Seminar, University of Houston*, Houston, Texas, October 4, 2012.
17. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Divergence-conforming B-spline discretizations of viscous incompressible flows," *10th World Congress on Computational Mechanics*, São Paulo, Brazil, July 8-13, 2012.
16. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Divergence-free B-spline discretizations for incompressible fluid flows," *Numerical Methods for Incompressible Fluid Flow*, Vancouver, Canada, July 14-16, 2011.
15. (Invited Talk) J.A. Evans, Y. Bazilevs, I. Babuška, and T.J.R. Hughes, "On the effectiveness of multi-dimensional and compatible splines in numerical approximation," *Higher-Order Finite Element and Isogeometric Methods 2011*, Krakow, Poland, June 27-29, 2011.
14. (Invited Talk) J.A. Evans, A. Buffa, T.J.R. Hughes, and G. Sangalli, "Divergence-free B-spline discretizations for the steady Navier-Stokes equations," *Isogeometric Analysis 2011*, Austin, Texas, January 13-15, 2011.

13. (Invited Talk) J.A. Evans, A. Buffa, T.J.R. Hughes, and G. Sangalli, "Divergence-free B-spline discretizations for the Stokes equations," *Non-Standard Numerical Methods for PDE's*, Pavia, Italy, June 29 - July 2, 2010.
12. (Invited Talk) J.A. Evans, Y. Bazilevs, I. Babuška, and T.J.R. Hughes, "Assessment of the effectiveness of multidimensional splines in numerical approximation and isogeometric analysis," *13th International Conference on Approximation Theory*, San Antonio, Texas, March 7-10, 2010.
11. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Isogeometric analysis of hydrodynamic noise generation," *10th U.S. National Congress on Computational Mechanics*, Columbus, Ohio, July 16-19, 2009.
10. (Invited Talk) J.A. Evans, Y. Bazilevs, I. Babuška, and T.J.R. Hughes, "Approximation properties of k -refined NURBS in isogeometric analysis," *MAFELAP 2009*, London, United Kingdom, June 9-12, 2009.
9. (Invited Talk) J.A. Evans, T.J.R. Hughes, and G. Sangalli, "Enforcement of constraints in variational multiscale analysis of convection-dominated transport," *MAFELAP 2009*, London, United Kingdom, June 9-12, 2009.
8. (Invited Talk) J.A. Evans and T.J.R. Hughes, "Toward accurate simulation of hydrodynamic noise generation: Exact variational multiscale analysis of the Helmholtz problem," *15th International Conference on Finite Elements in Flow Problems*, Tokyo, Japan, April 1-3, 2009.
7. (Invited Talk) J.A. Evans and T.J.R. Hughes, "The variational multiscale method in computational fluid dynamics," *Summer Workshop on Multiscale Modeling and Analysis*, Austin, Texas, August 4-8, 2008.
6. (Invited Talk) J.A. Evans, T.J.R. Hughes, and G. Sangalli, "Discontinuity capturing and the variational multiscale method," *8th World Congress on Computational Mechanics*, Venice, Italy, June 30-July 4, 2008.
5. (Contributed Talk) J.A. Evans, Y. Bazilevs, I. Babuška, and T.J.R. Hughes, "A variational framework for computational approximation theory," *Texas SIAM Student Conference 2008*, Houston, Texas, April 11-12, 2008.
4. (Contributed Talk) J.A. Evans, Y. Bazilevs, I. Babuška, and T.J.R. Hughes, "Numerical computation of approximation properties of p - and k -methods," *Finite Element Circus and Rodeo Spring 2008*, Baton Rouge, Louisiana, March 7-8, 2008.
3. (Invited Talk) M.A. Scott, J.A. Evans, S. Lipton, T.J.R. Hughes, Y. Bazilevs, V.M. Calo, and T.W. Sederberg, "T-splines and isogeometric analysis," *9th U.S. National Congress on Computational Mechanics*, San Francisco, California, July 22-26, 2007. (Three-Part Presentation)
2. (Contributed Talk) J.A. Evans, M. Oghbaei, and K.S. Anderson, "Modeling and simulation of a laser-powered lightcraft using an impulsive finite element in time formulation," *7th World Congress on Computational Mechanics*, Los Angeles, California, July 16-22, 2006.
1. (Contributed Talk) J.A. Evans, K.E. Jansen, E. Bohr, and M.S. Shepherd, "An explicit C^1 finite element for fluid dynamics applications," *7th World Congress on Computational Mechanics*, Los Angeles, California, July 16-22, 2006.

RESEARCH
GRANTS AND
GIFTS RECEIVED

11. "Automating U-spline Fluid-Structure Model Development for Mobility Applications," Army Research Laboratory, \$66,600; 11/01/2019 – 04/30/2020. (PI: J. Evans, Subcontract from Coreform LLC)
10. "Improving the Accuracy and Efficiency of Scale Resolving Simulations for Favorable and Adverse Pressure Gradient Flows," National Aeronautics and Space Administration, \$576,010; 01/01/2019 – 12/31/2021. (PI: K. Jansen, Co-PI: J. Evans)
9. "Graduate Assistance in Areas of National Need," Department of Education, \$373,125 (Year 1); 10/01/2018 – 09/30/2021 (PI: P. Axelrad, Co-PIs: Several Including J. Evans)
8. "Fast and Robust Cloth Simulation," Disney Research, \$25,000; Fall 2018. (Unrestricted Gift to J. Evans)
7. "Automated Storm Surge Modeling from Geospatial Data Sources," University of Colorado Boulder Research and Innovation Seed Grant Program, \$49,893; 07/01/2018 – 12/31/2019. (PI: J. Evans, Co-PI: C. Farmer)
6. "Collaborative Research: NISC SI2-S2I2 Conceptualization of CFDSI: Model, Data, and Analysis Integration for End-to-End Support of Fluid Dynamics Discovery and Innovation," National Science Foundation, \$321,805; 03/01/2018 – 08/31/2019. (PI: K. Jansen, Co-PIs: J. Brown, A. Doostan, J. Evans, J. Farnsworth)
5. "Fast and Robust Cloth Simulation," Disney Research, \$25,000; Fall 2017. (Unrestricted Gift to J. Evans)
4. "SI2-SSE: Software Elements to Enable Immersive Simulation," National Science Foundation, \$499,997; 09/01/2017 – 08/31/2020. (PI: K. Jansen, Co-PIs: A. Doostan, J. Evans, K. Maute)
3. "A Data-Centric Approach to Turbulence Simulation," National Science Foundation, \$549,990; 09/01/2017 – 08/31/2020. (PI: K. Jansen, Co-PIs: J. Evans, P. Spalart)
2. "Adaptive Multi-Resolution Level-Set Topology Optimization Framework," Defense Advanced Research Projects Agency, \$2,398,658; 01/01/2017 – 12/31/2020. (PI: K. Maute, Co-PIs: A. Doostan, J. Evans)
1. "An Integrated Isogeometric Approach to the Engineering Design and Optimization of Aircraft Structures," Air Force Office of Scientific Research, \$187,125; 06/15/2014 – 06/14/2017. (PI: J. Evans, Subcontract from Brigham Young University)

SUPERCOMPUTING
GRANTS RECEIVED

4. "Data Analytics and Machine Learning for Exascale Computational Fluid Dynamics," Program: Aurora Early Science Project, Funding Agency: Department of Energy, Personnel Support: One Post-Doctoral Researcher, CPU-Hours Granted: 1.5 Billion; 12/01/2018-12/31/2021 (PI: K. Jansen, Co-PIs: R. Balakrishnan, S. Becker, J. Brown, A. Doostan, J. Evans, J. Farnsworth, M. Shephard C. Smith, P. Spalart)
3. "Adaptive Detached Eddy Simulation of a Vertical Tail/Rudder Assembly with Active Flow Control," Program: Innovative and Novel Computational Impact on Theory and Experiment, Funding Agency: Department of Energy, CPU-Hours Granted: 90 Million; 01/2017-12/2017 (PI: K. Jansen, Co-PIs: K. Jansen, Co-PIs: J. Brown, J. Evans, M. Rasquin, O. Sahni, M.S. Shephard)

2. “Extreme Scale Unstructured Adaptive Computational Fluid Dynamics,” Program: Aurora Early Science Project, Funding Agency: Department of Energy, Personnel Support: One Post-Doctoral Researcher, CPU-Hours Granted: 600 Million; 12/2016-12/2019 (PI: K. Jansen, Co-PIs: M. Amitay, I. Bolotnov, J. Brown, C. Carothers, J. Evans, J. Farnsworth, O. Sahni, C. Smith, P. Saalart, M. Rasquin, E. Whalen)
1. “Extreme Scale Unstructured Adaptive Computational Fluid Dynamics: From Multiphase Flow to Aerodynamic Flow Control,” Program: Tier 2 Early Science Project, Funding Agency: Department of Energy; 08/2016-12/2017 (PI: K. Jansen, Co-PIs: K. Jansen, Co-PIs: I. Bolotnov, J. Brown, C. Carothers, J. Evans, C. Smith, M. Rasquin)

TEACHING
EXPERIENCE

University of Colorado Boulder, Boulder, Colorado, USA
Ann and H.J. Smead Department of Aerospace Engineering Sciences

- Spring 2020: Turbulent Flows, In Progress
- Fall 2019: Aerodynamics, Instructor Rating: 5.4/6.0
- Fall 2018: Mathematical Foundations of FEA, Instructor Rating: 6.0/6.0
- Fall 2018: Fluid Mechanics, Instructor Rating: 6.0/6.0
- Spring 2018: Turbulent Flows, Instructor Rating: 5.9/6.0
- Fall 2017: Aerodynamics, Instructor Rating: 6.0/6.0
- Spring 2017: Aerospace Software, Instructor Rating: 6.0/6.0
- Fall 2017: Aerodynamics, Instructor Rating: 5.8/6.0
- Spring 2016: Turbulent Flows, Instructor Rating: 5.7/6.0
- Spring 2016: Aerospace Software, Instructor Rating: 5.9/6.0
- Fall 2015: Aerodynamics, Instructor Rating: 5.7/6.0
- Spring 2015: Aerospace Software, Instructor Rating: 5.4/6.0
- Fall 2014: Stabilized and Multiscale Methods in CFD, Instructor Rating: 6.0/6.0
- Fall 2014: Isogeometric Methods, Instructor Rating: 6.0/6.0
- Spring 2014: Turbulent Flows, Instructor Rating: 5.8/6.0
- Fall 2013: Fluid Mechanics, Instructor Rating: 4.5/6.0

Delft University of Technology, Delft, The Netherlands
Department of Applied Mathematics

- May 2016: Intensive Course on Isogeometric Analysis

The University of Texas at Austin, Austin, Texas USA
Department of Aerospace Engineering and Engineering Mechanics

- Spring 2013: Stabilized and Multiscale Methods in CFD
- Fall 2012: Introduction to Computer Programming

POSTDOCTORAL
ADVISEES

Christian Messe, Research Associate, February 2018 to December 2018
Project: *Adaptive Level Set Topology Optimization*
Primary Advisor: Professor Kurt Maute
Next Position: Research Engineer, German Aerospace Center

Tobias Gleim, Research Associate, January 2017 to April 2018
Project: *Adaptive Level Set Topology Optimization*
Primary Advisor: Professor Kurt Maute
Next Position: Research Scientist, University of Kassel

Craig Michoski, Research Associate, November 2014 to August 2015
Project: *Blended Isogeometric Discontinuous Galerkin Methodologies*
Next Position: Research Scientist, The University of Texas at Austin

PH.D. ADVISEES

Thomas Kava, Aerospace Engineering Sciences, Expected Graduation Date: 08/23
Thesis: *High Performance Simulation of Wall-Bounded Hypersonic Flows*
Secondary Advisor: Professor Iain Boyd

James Wright, Aerospace Engineering Sciences, Expected Graduation Date: 08/23
Dissertation: *Improvement of Scale-Resolving Simulations for Favorable and Adverse Pressure Gradient Flows*
Primary Advisor: Professor Kenneth Jansen

Aviral Prakash, Aerospace Engineering Sciences, Expected Graduation Date: 08/23
Dissertation: *Data-Driven Subgrid Scale Stress Closure for Favorable and Adverse Pressure Gradient Flows*
Secondary Advisor: Professor Kenneth Jansen

Basu Parmar, Aerospace Engineering Sciences, Expected Graduation Date: 08/23
Dissertation: *Data-Driven Reynolds Stress Closure for Favorable and Adverse Pressure Gradient Flows*

David Gunderman, Applied Mathematics, Graduation Date: 08/21
Dissertation: *Exact Intersections and Moments of Bernstein-Bézier Elements*
Secondary Advisor: Bengt Fornberg

DeAnna Sewell, Aerospace Engineering Sciences, Expected Graduation Date: 08/21
Dissertation: *Automated Hydrodynamics Modeling from Geospatial Data Sources*

Corey Nelson, Mechanical Engineering, Expected Graduation Date: 08/20
Dissertation: *Free-Form Geometric Modeling and Immersive Simulation*

Eric Peters, Aerospace Engineering Sciences, Graduation Date: 08/19
Dissertation: *Advanced Discretizations and Data Driven Modeling for Turbulent Flows*
Next Position: Systems Engineer, Ball Aerospace

Joseph Benzaken, Applied Mathematics, Graduation Date: 08/18
Dissertation: *Propagation and Control of Geometric Variation in Engineering Structural Design and Analysis*
Next Position: Research Scientist, Walt Disney Animation Studios

Luke Engvall, Mechanical Engineering, Graduation Date: 05/18
Dissertation: *Geometrically Exact and Analysis Suitable Mesh Generation using Rational Bernstein-Bézier Elements*
Next Position: Software Engineer, Coreform LLC

Christopher Coley, Aerospace Engineering Sciences, Graduation Date: 08/17
Dissertation: *Residual-Based Large Eddy Simulation of Turbulent Flows using Divergence-Conforming Discretizations*
Next Position: Aeronautical Engineer, United States Air Force

M.S. ADVISEES **Guoxiang Tong**, Mechanical Engineering, Expected Graduation Date: 05/20
Thesis: *Skeleton-Stabilized Divergence-Conforming B-spline Discretizations for Viscous Incompressible Fluid Flow*

Daniel Lee, Aerospace Engineering Sciences, Graduation Date: 05/20
Thesis: *Physics-Informed Statistical Tolerance Allocation*
Next Position: Mechanical Engineer, Sandia National Laboratories

Arvind Dudi Raghunath, Aerospace Engineering Sciences, Graduation Date: 08/19
Thesis: *Fast System Formation and Assembly for Isogeometric Analysis*

Ansel Rothstein-Dowden, Aerospace Engineering Sciences, Graduation Date: 05/18
Thesis: *Isogeometric Analysis of Subsonic Aerodynamic Flows with Application to Shape Optimization*
Next Position: Software Systems Engineer, NASA Jet Propulsion Laboratory

UNDERGRADUATE RESEARCH ADVISEES **Emily Jordan**, Mechanical Engineering, November 2019 to Present
Project: *Surrogate Modeling with Isogeometric Deep Neural Networks*

Lucas Calvert, Aerospace Engineering Sciences, May 2018 to April 2019
Project: *An Interactive Graphical User Interface for Design Space Exploration*
Next Position: M.S. Student, University of Colorado Boulder

Thad Gleason, Aerospace Engineering Sciences, May 2018 to April 2019
Project: *Hybridized Discontinuous Galerkin Methods for Magnetohydrodynamics*
Next Position: Aeronautical Engineer, United States Navy

Nicholas Moore, Aerospace Engineering Sciences, May 2017 to April 2018
Project: *Geometrically Exact Mesh Generation for Finite Element Analysis*
Next Position: Avionics Software Engineer, Ball Aerospace

Ryan Aronson, Aerospace Engineering Sciences, May 2017 to April 2018
Project: *Developing Improved Turbulence Models for Complex Flow Problems*
Next Position: Ph.D. Student, Stanford University

Matthew Hurst, Aerospace Engineering Sciences, May 2016 to April 2017
Project: *Multi-Fidelity Modeling for Turbulent Incompressible Flows*
Primary Advisor: Professor Alireza Doostan
Next Position: Marshall Scholar, UCL/Cambridge University

Ansel Rothstein-Dowden, Aerospace Engineering Sciences, May 2016 to April 2017
Project: *Optimal Design of Airfoils for Aerodynamic Performance*
Next Position: M.S. Student, University of Colorado Boulder

Bryan Doyle, Applied Mathematics, May 2015 to August 2015
Project: *An Interactive Software Platform for Curvilinear Mesh Generation*
Next Position: Ph.D. Student, Rice University

VISITING STUDENT ADVISEES **Elias Barroso**, September 2018 to August 2019
Ph.D. Student, Computer Science, Federal University of Ceará

Project: *Generation of Isogeometric Surface Meshes*

Frits de Prenter, November 2017 to March 2018

Ph.D. Student, Mechanical Engineering, Eindhoven University of Technology

Project: *Multigrid Methods for Immersed Finite Element Discretizations*

STUDENT AWARDS AND PRIZES David Gunderman - LLNL High Energy Density Physics Fellowship - 2019
Ryan Aronson - NSF Graduate Research Fellowship - 2018
Matthew Hurst - Marshall Scholarship - 2017
Matthew Hurst - Astronaut Scholarship - 2016
Luke Engvall - NSF Graduate Research Fellowship - 2014

PH.D.
COMMITTEE
MEMBERSHIPS

33. **Steven Isaacs**, Mechanical Engineering, University of Colorado
Advisor: Professor Peter Hamlington, Defense: 01/10/20
32. **Zachary Grey**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Paul Constantine, Defense: 10/4/19
31. **Ryan Darragh**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Peter Hamlington, Proposal: 08/28/19
30. **Felix Scholz**, Mathematics, Johannes Kepler University Linz
Advisor: Bert Jüttler, Defense: 07/23/19
29. **Katharina Birner**, Mathematics, Johannes Kepler University Linz
Advisor: Bert Jüttler, Defense: 07/23/19
28. **Frits de Prenter**, Mechanical Engineering, Eindhoven University of Technology
Advisor: Harald van Brummelen, Defense: 06/27/19
27. **Benjamin Bercovici**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Jay McMahon, Defense: 04/15/19
26. **Paul Diaz**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Alireza Doostan, Proposal: 4/05/19
25. **Joseph Straccia**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Proposal: 3/6/19
24. **Riccardo Balin**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Ken Jansen, Proposal: 12/18/18
23. **Markus Geiss**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 12/14/18
22. **Toshiki Nagai**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 06/21/18
21. **Alberto Roper Pol**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Axel Brandenburg, Proposal: 06/22/18
20. **Cody Allard**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Hanspeter Schaub, Defense: 06/19/18
19. **Arash Mehraban**, Computer Science, University of Colorado
Advisor: Professor Henry Tufo, Proposal: 05/23/18
18. **Ethan Culler**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Defense: 05/08/18

17. **Ryan Skinner**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kenneth Jansen, Proposal: 01/24/18
 16. **Scott Wieland**, Mechanical Engineering, University of Colorado
Advisor: Professor Peter Hamlington, Defense: 12/06/17
 15. **Jorge Barrera Cruz**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Proposal: 11/27/17
 14. **Xiaodong Wei**, Mechanical Engineering, Carnegie Mellon University
Advisor: Professor Jessica Zhang, Defense: 11/01/17
 13. **Ashesh Sharma**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 10/27/17
 12. **Romik Khajetourian**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Mahmoud Hussein, Defense: 05/23/17
 11. **Dimitri Krattiger**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Mahmoud Hussein, Defense: 05/09/17
 10. **Alan Hsieh**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Sedat Biringen, Defense: 04/12/17
 9. **Farhad Shahabi**, Civil Engineering, University of Colorado
Advisor: Professor Richard Regueiro, Defense: 11/14/16
 8. **Matthew Lawry**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 08/16/16
 7. **Kangkang Hu**, Mechanical Engineering, Carnegie Mellon University
Advisor: Professor Jessica Zhang, Defense: 07/05/16
 6. **Eric Brown-Dymkoski**, Mechanical Engineering, University of Colorado
Advisor: Professor Oleg Vasilyev, Defense: 04/05/16
 5. **Meredith Purser**, Mechanical Engineering, University of Colorado
Advisor: Professor Kenneth Jansen, Defense: 04/04/16
 4. **Nurlybek Kasimov**, Mechanical Engineering, University of Colorado
Advisor: Professor Oleg Vasilyev, Defense: 01/08/16
 3. **Peter Coffin**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 08/18/15
 2. **Nicholas Jenkins**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 05/06/15
 1. **James Westfall**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 08/14/13
-
- M.S. COMMITTEE MEMBERSHIPS
11. **Kevin Bieri**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kenneth Jansen, Defense: 11/15/19
 10. **Adam Binswanger**, Applied Mathematics, University of Colorado
Advisor: Professor Mark Hoefer, Defense: 07/11/19
 9. **Nathanial O'Neill**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kurt Maute, Defense: 04/17/19

8. **Torfinn Jonsrud**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Jeffrey Thayer, Defense: 04/12/19
7. **Lucas Droste**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Defense: 04/08/19
6. **Daniel Sinner**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Defense: 11/14/18
5. **Daniel Bateman**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Defense: 11/14/17
4. **Nishant Agarwal**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor John Farnsworth, Defense: 04/12/17
3. **Navid Shervani-Tabar**, Mechanical Engineering, University of Colorado
Advisor: Professor Oleg Vasilyev, Defense: 12/09/15
2. **David Pope**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Kenneth Jansen, Defense: 07/17/15
1. **Alan Hsieh**, Aerospace Engineering Sciences, University of Colorado
Advisor: Professor Sedat Biringen, Defense: 04/11/14

CONFERENCES,
SYMPOSIA, AND
WORKSHOPS
ORGANIZED

Local Organizing Committee Member, North American High Order Methods Conference 2021 (Boulder, Colorado), Summer 2021.

Scientific Committee Member, 9th International Conference on Computational Methods for Coupled Problems in Science and Engineering (Chia Laguna, Italy), Summer 2021.

Local Organizing Committee Member, 14th World Congress of Structural and Multidisciplinary Optimization (Boulder, Colorado), June 13-18, 2021.

Conference Co-Chair, 2020 USACM Thematic Conference on Isogeometric Analysis (Banff, Canada), October 18 - October 22, 2020.

Scientific Committee Member, 14th World Congress on Computational Mechanics (Paris, France), July 19-24, 2020.

Program Committee Member, Geometric Modeling and Processing 2020 (Okinawa, Japan), May 13-15, 2019.

Scientific Committee Member, 2019 International Conference on Isogeometric Analysis (Munich, Germany), September 18-20, 2019.

Symposia Organizer, *Variational Stabilization, Structure- and Positivity-Preserving Techniques for Complex Flows* within the 15th United States National Congress on Computational Mechanics (Austin, Texas), July 28 - August 1, 2019.

Program Committee Member, Eurographics Symposium on Geometry Processing 2019 (Milan, Italy), July 8-10, 2019.

Program Committee Member, Geometric Modeling and Processing 2019 (Vancouver, Canada), June 19-21, 2019.

Scientific Committee Member, 8th International Conference on Computational Methods for Coupled Problems in Science and Engineering (Sitges, Spain), June 3-5, 2019.

Symposia Organizer, *Variational Stabilization, Structure- and Positivity-Preserving Techniques for Complex Flows* within the 20th International Conference on Finite Elements in Flow Problems (Chicago, Illinois), March 29 - April 4, 2019.

Workshop Organizer, Workshop on Interface Modeling and Formulations, University of Colorado Boulder (Boulder, CO), March 15, 2019.

Workshop Organizer, Workshop on Isogeometric Splines: Theory and Applications, Banff International Research Station (Banff, Canada), February 24 to March 1, 2019.

Topic Organizer, *Multiscale Modeling for CFD and FSI* within the 2018 International Mechanical Engineering Congress and Exposition (Pittsburgh, Pennsylvania), November 9-15, 2018.

Symposia Organizer, *Fluids and Fluid-Structure Interaction* within the 2018 USACM Thematic Conference on Isogeometric Analysis (Austin, Texas), October 10-12, 2018.

Scientific Committee Member, 2018 USACM Thematic Conference on Isogeometric Analysis (Austin, Texas), October 10-12, 2018.

Symposia Organizer, *Immersed Methods for CFD and Fluid-Structure Interaction* within the 31th World Congress on Computational Mechanics (New York City, New York), July 22-27, 2018.

Scientific Committee Member, Isogeometric Analysis and Applications 2018 (Delft, The Netherlands), April 23-27, 2018.

Program Co-Chair, Geometric Modeling and Processing 2018 (Aachen, Germany), April 9-11, 2018.

Local Organizing Committee Member, American Physical Society Division of Fluid Dynamics 70th Annual Meeting (Denver, Colorado), November 19-21, 2017.

Scientific Committee Member, 2017 International Conference on Isogeometric Analysis (Pavia, Italy), September 11-13, 2017.

Symposia Organizer, *Mathematical Aspects of Splines and Isogeometric Methods* within the 2017 International Conference on Isogeometric Analysis (Pavia, Italy), September 11-13, 2017.

Symposia Organizer, *Isogeometric Methods for Complex and Multi-physics Systems* within the 14th United States National Congress on Computational Mechanics (Montreal, Canada), July 17-20, 2017.

Symposia Organizer, *Isogeometric Design and Analysis* within the 2017 Society for Industrial and Applied Mathematics Conference on Industrial and Applied Geometry (Pittsburgh, Pennsylvania), July 10-12, 2017.

Symposia Organizer, *Isogeometric Methods for Coupled Problems on Complex Geometries* within the 7th International Conference on Computational Methods for Cou-

pled Problems in Science and Engineering (Rhodes Island, Greece), June 12-14, 2017.

Symposia Organizer, *Stabilized, Multiscale, and Isogeometric Methods in CFD* within the 19th International Conference on Finite Elements in Flow Problems (Rome, Italy), April 5-7, 2017.

Scientific Committee Member, 2016 USACM Conference on Isogeometric Analysis and Meshfree Methods (San Diego, California), October 10-12, 2016.

Symposia Organizer, *Mathematical Aspects of IGA and Meshfree Methods* within the 2016 USACM Conference on Isogeometric Analysis and Meshfree Methods (San Diego, California), October 10-12, 2016.

Symposia Organizer, *IGA and Meshfree Methods for Fluids, Turbulence, and Transport Phenomena* within the 2016 USACM Conference on Isogeometric Analysis and Meshfree Methods (San Diego, California), October 10-12, 2016.

Symposia Organizer, *Mathematical Advances in Isogeometric Analysis* within the 2016 European Congress on Computational Methods in Applied Sciences and Engineering (Crete Island, Greece), June 5-10, 2016.

Symposia Organizer, *Isogeometric Methods for Complex and Multi-physics Systems* within the 13th United States National Congress on Computational Mechanics (San Diego, California), July 26-30, 2015.

Symposia Organizer, *Stabilized, Multiscale, and Isogeometric Methods in Computational Fluid Dynamics* within the 18th International Conference on Finite Elements in Flow Problems (Taipei, Taiwan), March 16-18, 2015.

Symposia Organizer, *Structure-Preserving and Polyhedral Discretizations* within the 11th World Congress on Computational Mechanics (Barcelona, Spain), July 20-25, 2014.

Symposia Organizer, *Geometric Methods in Computational Mechanics* within the 12th United States National Congress on Computational Mechanics (Raleigh, North Carolina), July 22-25, 2013.

PROFESSIONAL
AFFILIATIONS

American Institute of Aeronautics and Astronautics (AIAA); American Physical Society (APS); American Society of Mechanical Engineers (ASME); Society for Industrial and Applied Mathematics (SIAM); United States Association for Computational Mechanics (USACM).

PROFESSIONAL
LEADERSHIP

Member, ASME AMD Committee on Fluid-Structure Interaction (CFSI), 2014 to Present.
Member, USACM Committee on Isogeometric Analysis, 2015 to Present.
Member, USACM Committee on Computational Fluid Dynamics, 2015 to Present.

PROFESSIONAL
JOURNAL REFEREE

Computer Methods in Applied Mechanics and Engineering, Journal of Computational Physics, International Journal for Numerical Methods in Engineering, Computational Mechanics, Computers and Mathematics with Applications, Engineering with Computers, Journals of Fluids and Structures, Computer-Aided Design, Structural and Multidisciplinary Optimization, SIAM Journal on Scientific Computing, Numerische Mathematik, IMA Journal of Numerical Analysis, Modélisation Mathématique et Analyse Numérique, Mathematics of Computation, ESAIM: Mathematical Modelling and Numerical Analysis, Constructive Approximation, Journal of Foundation of Computational

Mathematics, Journal of Applied Mathematics and Computing, Applied Mathematical Modeling, Complex Variables and Elliptic Equations.

GRANT REVIEWER United States Army Research Office.
United States Corp of Engineers.
European Science Foundation College of Expert Reviewers.
European Research Council Advanced Grants.
European Research Council Starting Grants.
Dutch Research Council.
Austrian Science Fund.
Hong Kong Research Council Grants.

UNIVERSITY
SERVICE

University of Colorado Boulder, Boulder, Colorado, USA
Department of Aerospace Engineering Sciences

- Member, AES Instructor Search Committee, Fall 2019 to Present.
- Member, Computing Committee, Fall 2019 to Present.
- Fluids Lead, AES Undergraduate Committee for Curriculum, Fall 2019 to Present.
- Member, AES Strategic Vision Committees, Fall 2018 to Present.
- Member, AES Undergraduate Committee, Fall 2014 to Spring 2015, Fall 2018 to Summer 2019.
- Fluids Lead, AES Graduate Committee, Fall 2016 to Summer 2018.
- Member, AES Distinguished Lecture Selection Committee, Fall 2013 to Fall 2017.
- Member, AES Tenure-Track Search Committee, Fall 2015 to Spring 2016.

College of Engineering and Applied Science

- Member, Engineering/Applied Math Partnership, Summer 2017 to Present.
- Mentor, GoldShirt Program, Fall 2016 to Present.
- Reviewer, Balsells Fellowship, Spring 2018.
- Interviewer, GoldShirt Program, Spring 2014, Spring 2017, and Spring 2018.
- Member, Silver Medal Award Committee, Spring 2014.

University of Colorado Boulder Campus

- Reviewer, Astronaut Scholarship, Spring 2018 and Spring 2019.
- Reviewer, Innovative Seed Grant Program, Spring 2014 and Spring 2019.