

Michael A. Scott

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RESEARCH INTERESTS	Computational Fluid and Structural Mechanics · Scientific Computing · Computer Aided Geometric Design · Structure-Preserving Discretizations · Isogeometric Analysis · Spline Theory · Numerical Methods	
EDUCATION	Ph.D., Computational Science, Engineering, and Mathematics, August 2011 The University of Texas at Austin, Austin, Texas, U.S.A. M.S., Computational and Applied Mathematics, May 2008 The University of Texas at Austin, Austin, Texas, U.S.A. M.S., Civil Engineering, May 2006 Brigham Young University, Provo, Utah, U.S.A. B.S., Civil Engineering, May 2005 Brigham Young University, Provo, Utah, U.S.A.	
ACADEMIC EXPERIENCE	<i>2012 - Present:</i> Assistant Professor, Civil Engineering, Brigham Young University <i>2011 - 2012:</i> Postdoctoral Fellow, ICES, The University of Texas at Austin	
AWARDS	<i>2011:</i> Robert J. Melosh Medal Finalist <i>2006 - 2010:</i> ICES Computational and Applied Mathematics Fellowship <i>2006:</i> National Science Foundation Graduate Research Fellowship, Honorable Mention	
PROFESSIONAL SERVICE	Symposia Organizer , <i>Isogeometric Representation and Analysis</i> within the SIAM Conference on Geometric and Physical Modeling (Denver, Colorado, 2013). Symposia Organizer , <i>Geometric Methods in Computational Mechanics</i> within the 12 th United States National Congress on Computational Mechanics (Rayleigh, North Carolina, 2013). Symposia Organizer , <i>Isogeometric and Higher-Order Boundary Element Methods</i> within the 11 th World Congress on Computational Mechanics (Barcelona, Spain, 2014). Symposia Organizer , <i>Isogeometric Methods</i> within the 11 th World Congress on Computational Mechanics (Barcelona, Spain, 2014). Invited Lecturer for the short course <i>Isogeometric Methods in Numerical Simulation</i> within the International Center for Mechanical Sciences (Udine, Italy, 2012). Regular reviewer for <i>Computer Aided Geometric Design</i> , <i>International Journal for Numerical Methods in Engineering</i> , <i>Computer Methods in Applied Mechanics and Engineering</i> , and <i>ACM Transactions on Graphics</i> .	
REFEREED JOURNAL ARTICLES	23. R. N. Simpson, M. A. Scott, M. Taus, D. Thomas, and H. Lian, “Acoustic isogeometric boundary element analysis,” <i>Computer Methods in Applied Mechanics and Engineering</i> , in press, 2013.	

22. M. A. Scott, D. C. Thomas, E. J. Evans, "Isogeometric spline forests," *Computer Methods in Applied Mechanics and Engineering*, in press, 2013.
21. L. Liu, Y. Zhang, T. J. R. Hughes, M. A. Scott, and T. W. Sederberg, "Volumetric T-spline construction using boolean operations," *Engineering with Computers*, in press, 2013.
20. R. Dimitri, L. De Lorenzis, M. A. Scott, P. Wriggers, R. L. Taylor, and G. Zavarise, "Isogeometric large deformation frictionless contact using T-splines," *Computer Methods in Applied Mechanics and Engineering*, in press, 2013.
19. D. Schillinger, J. A. Evans, M. A. Scott, A. Reali, and T. J. R. Hughes, "Isogeometric collocation: Cost comparison with Galerkin methods and extension to adaptive hierarchical NURBS discretizations," *Computer Methods in Applied Mechanics and Engineering*, Vol. 267, 170 – 232, 2013.
18. X. Li and M. A. Scott, "Analysis-suitable T-splines: characterization, refineability, and approximation," *Mathematical Models and Methods in Applied Sciences*, in press, 2013.
17. 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*, Vol. 254, 197–221, 2013.
16. Y. Bazilevs, M.-C. Hsu, and M. A. Scott, "Isogeometric fluid-structure interaction analysis with emphasis on non-matching discretizations, and with application to wind turbines," *Computer Methods in Applied Mechanics and Engineering*, Vols. 249–252, 28–41, 2012.
15. D. Schillinger, L. Dede, 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*, Vols. 249–252, 116–150, 2012.
14. M. J. Borden, C. V. Verhoosel, M. A. Scott, C. M. Landis, and T. J. R. Hughes, "A phase-field description of dynamic brittle fracture," *Computer Methods in Applied Mechanics and Engineering*, Vols. 217–220, 77–95, 2012.
13. M. A. Scott, X. Li, M. J. Borden, T. W. Sederberg, and T. J. R. Hughes, "Local refinement of analysis-suitable T-splines," *Computer Methods in Applied Mechanics and Engineering*, Vol. 213, 206–222, 2012.
12. X. Li, J. Zheng, T. W. Sederberg, M. A. Scott, and T. J. R. Hughes. "On the linear independence of T-splines," *Computer Aided Geometric Design*, Vol. 29, 63–76, 2012.
11. W. Wang, Y. Zhang, M. A. Scott, and T. J. R. Hughes, "Converting unstructured quadrilateral meshes to standard T-spline surfaces," *Computational Mechanics*, Vol. 48, 477–498, 2011.
10. M. A. Scott, M. J. Borden. C. V. Verhoosel, and T. J. R. Hughes, "Isogeometric finite element data structures based on Bézier extraction of T-splines," *International Journal for Numerical Methods in Engineering*, Vol. 88, 126–156, 2011.
9. C. V. Verhoosel, M. A. Scott, T. J. R. Hughes, and R. de Borst, "An isogeometric analysis approach to gradient damage models," *International Journal for Numerical Methods in Engineering*, Vol. 86, 115–134, 2010.

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*, Vol. 87, 15–47, 2010.
7. C. V. Verhoosel, M. A. Scott, R. de Borst, and T. J. R. Hughes, "An isogeometric approach to cohesive zone modeling," *International Journal for Numerical Methods in Engineering*, Vol. 87, 336–360, 2010.
6. D. J. Benson, Y. Bazilevs, E. De Luycker, M.-C. Hsu, M. A. Scott, T. J. R. Hughes, and T. Belytschko, "A generalized finite element formulation for arbitrary basis functions: From isogeometric analysis to XFEM," *International Journal for Numerical Methods in Engineering*, Vol. 83, 765–785, 2010.
5. 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 using T-splines," *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 229–263, 2010.
4. M. A. Scott, M. N. Earp, and S. E. Benzley, "Adaptive sweeping techniques," *Engineering with Computers*, Vol. 26, 317–325, 2010.
3. M. L. Staten, S. E. Benzley, and M. A. Scott, "A methodology for quadrilateral finite element mesh coarsening," *Engineering with Computers*, Vol. 24, 241–251, 2008.
2. M. A. Scott, S. E. Benzley, and S. J. Owen, "Improved many-to-one sweeping," *International Journal for Numerical Methods in Engineering*, Vol. 65, 332–348, 2006.
1. S. E. Benzley, N. J. Harris, M. A. Scott, M. J. Borden, and S. J. Owen, "Conformal refinement and coarsening of unstructured hexahedral meshes," *Journal of Computing and Information Science in Engineering*, Vol. 5, 330–338, 2005.

BOOK CHAPTERS

3. "Isogeometric Failure Analysis," C. V. Verhoosel, M. A. Scott, M. J. Borden, R. de Borst, T. J. R. Hughes, in *Recent Developments and Innovative Applications in Computational Mechanics* (D. Mueller-Hoeppe et al., editors), Springer-Verlag Publications, Berlin, Germany, Chapter 31, pp. 275-281, 2011.
2. "Isogeometric Analysis: A Calculus for Computational Mechanics," D.J. Benson, R. de Borst, T.J.R. Hughes, M.A. Scott, C.V. Verhoosel, in *Developments and Applications in Engineering Computational Technology* (B.H.V. Topping et al., editors), Saxe-Coburg Publications, Stirlingshire, U.K., Chapter 1, pp. 1-17, 2010.
1. "Isogeometric Analysis: Toward Unification of CAD and FEA," Y. Bazilevs, V.M Calo, J.A. Cottrell, J.A. Evans, T.J.R. Hughes, S. Lipton, M.A. Scott, T.W. Sederberg, in *Trends in Engineering Computational Technology* (B.H.V. Topping et al., editors), Saxe-Coburg Publications, Stirlingshire, U.K., Chapter 1, pp. 1-16, 2008.

CONFERENCE PUBLICATIONS

5. L. Liu, Y. Zhang, T. J. R. Hughes, M. A. Scott, and T. W. Sederberg, "Volumetric T-spline construction using boolean operations," 22nd International Meshing Roundtable, submitted, 2013.
4. 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 Sixth European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)*, 2012.

3. D. J. Benson, R. de Borst, T. J. R. Hughes, M. A. Scott, and C. V. Verhoosel, "Isogeometric analysis: A calculus for computational mechanics," Proceedings of the Seventh International Conference on Engineering Computational Technology, 2010.
2. R. de Borst, T. J. R. Hughes, M. A. Scott, C. V. Verhoosel, "Isogeometric failure analysis," Workshop on Multiscale and Multiphysics Processes in Geomechanics, 2010.
1. M. A. Scott, M. N. Earp, S. E. Benzley and M. B. Stephenson, "Adaptive sweeping techniques," Proceedings of the Fourteenth International Meshing Roundtable, 417 – 432, 2005.