THE UNIVERSITY OF TEXAS AT AUSTIN
Cockrell School of Engineering
Resume

FULL NAME: **Thomas J.R. Hughes**   TITLE: Professor

ENDOWED POSITIONS:
John O. Hallquist Distinguished Chair in Computational Mechanics
Peter O'Donnell Jr. Chair in Computational and Applied Mathematics

DEPARTMENT: Aerospace Engineering and Engineering Mechanics

EDUCATION:

Pratt Institute	Mechanical Engineering	B.E.	1965
Pratt Institute	Mechanical Engineering	M.E.	1967
University of California-Berkeley	Mathematics	M.S.	1974
University of California-Berkeley	Engineering Science	Ph.D.	1974

PROFESSIONAL REGISTRATION: Registered – State of Texas (2004)

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

Assistant Research Engineer, University of California, Berkeley, 1974-76.
Lecturer, University of California, Berkeley, Department of Civil Engineering, 1975-76
Assistant Professor, California Institute of Technology, Structural Mechanics, 1976-78
Associate Professor, California Institute of Technology, Structural Mechanics, 1978-80
Associate Professor, Stanford University, Mechanical Engineering, 1980-82
Professor, Stanford University, Mechanical Engineering, 1983-2002
Chairman, Stanford University, Division of Applied Mechanics, 1984-88
Professor, Stanford University, Civil and Environmental Engineering by Courtesy, 1985-2002
Chairman, Stanford University, Department of Mechanical Engineering, 1988-89
Chairman, Stanford University, Division of Applied Mechanics, 1994-96
Chairman, Stanford University, Division of Mechanics and Computation, 1996-2002
Mary and Gordon Crary Professor of Engineering, Stanford University, 1998-2002
Mary and Gordon Crary Professor of Engineering Emeritus, Stanford University, 2002-present
Faculty, ROSE School, European School for Advanced Studies in Reduction of Seismic Risk, Istituto Universitario di Studi Superiori di Pavia & Universita degli Studi di Pavia, Pavia, Italy, 2002-present.
Professor, The University of Texas at Austin, Department of Aerospace Engineering and Engineering Mechanics, September 2002-present.
Adjunct Professor, Rice University, Mechanical Engineering and Materials Science, 2002-present.
Computational and Applied Mathematics Chair III, The University of Texas at Austin, September 2002-2015.
Peter O'Donnell Jr. Chair in Computational and Applied Mathematics, The University of Texas at Austin 2015-present.
John O. Hallquist Chair in Computational Mechanics, The University of Texas at Austin, 2022-present

OTHER PROFESSIONAL EXPERIENCE:
Mechanical Design Engineer, Grumman Aircraft Engineering, Bethpage, Long Island, NY, 1965-66
Research and Development Engineer, General Dynamics, Electric Boat, Groton, CN, 1967-69
Director, MARC Analysis Research Corporation, Palo Alto, CA, 1989
Founder, President and CEO, Centric Engineering Systems, Sunnyvale, CA, 1990-92
Chairman of the Board of Directors, Centric Engineering Systems, Sunnyvale, CA, 1990-99

Director, Aerosonix, Santa Clara, CA, 1995-96
Scientific Advisor, HeartFlow, Inc., Redwood City, CA, 2010-2014.
Scientific Advisor, Coreform, LLC, Orem, Utah, 2016 – present.

CONSULTING:
1. Civil Engineering Laboratory, Port Hueneme
2. URS/John Blume Engineers, San Francisco, CA
3. University of California, Berkeley, CA
4. Shell Oil Company, Houston, TX
5. Lawrence Livermore National Laboratory, Livermore, CA
6. Agbabian Associates, El Segundo, CA
7. System Development Corporation, Santa Monica, CA
8. Advance Machine Corporation, Los Angeles, CA
9. Lockheed Palo Alto Research Laboratory, Palo Alto, CA
10. Rockwell International, Autonetics Division, Anaheim, CA
11. Jet Propulsion Laboratory, Pasadena, CA
12. MacNeal-Schwendler Corporation, Los Angeles, CA
13. Fugro, Long Beach, CA
14. Sandia National Laboratory, Albuquerque, NM
15. SRI International, Menlo Park, CA
16. Mobil Research Center, Dallas, TX
17. Engineering Systems International, Paris, France
18. MARC Analysis Research Corp., Palo Alto, CA
19. Hitachi-Zosen Shipbuilding and Engineering Co., Osaka, Japan
20. Borg Warner Corporation, Chicago, IL
21. Grumman Aircraft Engineering, Bethpage, NY
22. General Electric Corporate Research Center, Schenectady, NY
23. Weidlinger Associates, Palo Alto, CA
24. BDM Corporation, McLean, VA
25. Lockheed Missles and Space Company, Sunnyvale, CA
26. Naval Underwater Systems Center, New London, CN
27. Computerized Structural Analysis and Research Corporation, Northridge, CA
28. Trans-Science Corporation, La Jolla, CA
29. Anamet Laboratories, San Carlos, CA
30. Avions Marcel Dassault et Breguet Aviation, St. Cloud, France
31. AT&T Bell Laboratories, Murray Hill, NJ
32. Mohr, Davidow Ventures, Menlo Park, CA
33. Hutchinson, Paris, France
34. General Motors, Detroit, MI
35. Livermore Software Technology, Livermore, CA
36. Motor Vehicle Research Association, Detroit, MI
37. ZACE Services, Lausanne, Switzerland
38. Centric Engineering Systems, Sunnyvale, CA
39. ANSYS, Pittsburgh, PA
40. Object Reservoir, Austin, TX
41. Cooley-Godward L.L.P., San Francisco, CA
42. Senior Advisor, Coreform LLC
43. Scientific Advisor, HeartFlow, Inc.

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:
U.S. National Academy of Sciences
U.S. National Academy of Engineering
American Academy of Arts and Sciences
The Academy of Medicine, Engineering and Science of Texas (TAMEST)
Foreign Member, Royal Society of London

Foreign Member, Austrian Academy of Sciences
Foreign Member, Istituto Lombardo Accademie di Scienze e Lettere (Mathematics Section)
Fellow, International Association for Computational Mechanics (IACM)
Fellow, American Society of Mechanical Engineers (ASME)
Fellow, American Society of Civil Engineers (ASCE)
Distinguished Member, American Society of Civil Engineers (ASCE)
Fellow, American Institute of Aeronautics and Astronautics (AIAA)
Fellow, American Academy of Mechanics (AAM)
Fellow, American Association for the Advancement of Science (AAAS)
Fellow, Society for Industrial and Applied Mathematics (SIAM)
Fellow, United States Association for Computational Mechanics (USACM)
Fellow, Engineering Mechanics Research Institute (ASCE)
New York Academy of Sciences
American Mathematics Society (AMS)
Society of Engineering Science (SES)
Association for Structural Mechanics in Reactor Technology (IASMiRT)
Sigma XI
Phi Beta Kappa

PRESENT AND PAST PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES, AND EDITORIAL BOARDS:

Societies/Committees

1. Member, Computational Mechanics Committee (National Research Council, NAS)
2. Chairman, Mathematical Methods Committee of the Engineering Mechanics Division (ASCE)
3. Member, Programs Committee of the Engineering Mechanics Division (ASCE)
4. Member, Publications Committee of the Engineering Mechanics Division (ASCE)
5. Member, Fellow Award Committee, Aerospace Sciences (AIAA)
6. Chairman, Committee on Computing in Applied Mechanics, (ASME)
7. Chairman, Executive Committee, Applied Mechanics Division (ASME)
8. Chairman Drucker Medal Committee (Past Chairman) (ASME)
9. Chairman, Koiter Medal Committee (ASME)
10. Chairman, Timoshenko Medal Committee (ASME)
11. Chairman, General Committee, Applied Mechanics Division (ASME)
12. Member, Thurston Lecture Committee (ASME)
13. Member at Large, Applied Mechanics Division/Basic Engineering Group (ASME)
14. Member, Committee on Fluid-Structure Interaction (ASME)
15. Chairman, Awards Committee (IACM)
16. Chairman, Committee on Integration of JACM with JACES, the Japanese Societies of Computational Mechanics (IACM)
17. President, International Association for Computational Mechanics Executive Council (IACM)
18. Member, Committee on Computational Methods (SES)
19. Member, Theodore von Karman Prize Committee (SIAM)
20. Chairman, Program Committee, The Academy of Medicine, Engineering and Science of Texas (TAMEST)
21. Member, Research Committee, The Academy of Medicine, Engineering and Science of Texas (TAMEST)
22. Member, Board of Directors, The Academy of Medicine, Engineering and Science of Texas (TAMEST)
23. Secretary, Executive Committee, Board of Directors, The Academy of Medicine, Engineering and Science of Texas (TAMEST)
24. Chairman, Awards Committee (USACM)
25. Member, Richard Gallagher Young Investigator Award Committee (USACM)
26. Member, Computational Structural Mechanics Award Committee (USACM)
27. Chair, Fellows Award Committee (USACM)
28. Chair, John von Neumann Award Committee (USACM)
29. President, United States Association for Computational Mechanics Executive Council (USACM)
30. Chairman, United States National Committee on Theoretical and Applied Mechanics (USNC/TAM)

31. Member at Large, United States National Committee on Theoretical and Applied Mechanics (USNC/TAM)
32. Chairman, Selection Committee for the Award for Distinguished Service in Applied Mechanics (American Academy of Mechanics)
33. Member, Panel on Plasticity Theory (Defense Advanced Research Projects Agency)
34. Member, Panel on Advanced Silo Hardening (Defense Nuclear Agency)
35. Member, Computational Fluid Mechanics Focus Group, Maui Supercomputer Center
36. Chairman, Peer Review Committee, Minnesota Supercomputer Institute, University of Minnesota
37. Member, Research Management Team, Army High Performance, Computing Research Center, University of Minnesota
38. Co-chairman, Department of Mechanical Engineering Peer Review Committee, Northwestern University
39. Member, International Association for Computational Mechanics Executive Council (Past President)
40. Member, Advisory Board, Aachen Institute for Advanced Study in Computational Engineering Science, Aachen, Germany.
41. Member, International Advisory Board, Center for Multiphysics Simulations and Technological Applications, Buenos Aires, Argentina, (Argentinian Government organization).
42. Member, Advisory Board, "Computational Mechanics and Advanced Materials," Ph.D. Program at the Istituto Universitario di Studi Superiori di Pavia & Universita degli Studi di Pavia, Pavia, Italy.
43. Member, International Advisory Council of the PhD Program in Computational Engineering, Instituto Superior Técnico/UTL, Lisbon, Portugal.
44. Member, Research Board of the Austrian Academy of Sciences, Vienna, Austria.
45. Member, Selection Committee, William Benter Prize in Applied Mathematics, Liu Bie Ju Centre for Mathematical Sciences, City University of Hong Kong, China.
46. Member, Peer Review Committee, Department of Structural Engineering, University of California, San Diego.
47. Oden Institute Contact, Cooperative Scientific Agreement, International Center for Numerical Methods in Engineering, Polytechnic University of Catalunya, Barcelona, Spain.
48. Member, Advisory Board, Department of Mathematics, University of Rome, "Tor Vergata," Rome, Italy.
49. Advisory Board, United States Association for Computational Mechanics Female Researcher Group (USACM-FRG).
50. Member, Scientific Advisory Board, Juelich Aachen Research Alliance, Center for Simulation and Data Sciences, JARA-CSD, RWTH Aachen University, Aachen, Germany.
51. Member at Large, USACM TTA on Modeling and Simulation of Infectious Disease.
52. Member, Centennial Celebration Committee, Brooklyn Technical High School, largest STEM high school in the U.S.
53. Member, O.C. Zienkiewicz PACM Medal Chapter, Polish Association for Computational Mechanics.
54. Member, STEM Centennial Task Force, Brooklyn Technical High School, largest STEM high school in the U.S.
55. Member, International Advisory Board, Zienkiewicz Institute for Modeling, Swansea University, Swansea, Wales, U.K.
56. Member, Advisory board to Future World Vison STEM Pathways Consortium and Future World Vision project, largest STEM high school in the U.S.
57. Board Member, United States Association for Computational Mechanics Foundation (Past President), 2022-2025
58. Member, Monie A. Ferst Prize Selection Committee, Sigma Xi National Research Honor Society, Georgia Tech, 2023.
59. Director, United States Association for Computational Mechanics
60. Advisory Board, United States Association for Computational Mechanics Female Researcher Group (USACM-FRG)
61. Founding Director, United States Association for Computational Mechanics Foundation, 2024-

Editorial Boards

Editor Emeritus, *Computer Methods in Applied Mechanics and Engineering* (served as editor 1980- 2022)

Co-editor, *Encyclopedia of Computational Mechanics*

Advisory Editor, *Journal of Visualization*

Associate Editor*, International Journal for Multiscale Computational Engineering*

Honorary Editor, *International Journal of Computational Methods*

Editorial Boards:

Numerische Mathematik, International Journal for Numerical Methods in Engineering, International Journal for Numerical Methods in Fluids, Future Generation Computer Systems, Engineering Computations, Numerical Methods for Partial Differential Equations, Archives on Computational Methods in Engineering, Theory and Engineering Applications of Computational Methods (Book Series), *Computers and Structures, International Journal of Computational and Numerical Analysis and Applications, International Journal of Biomechanics and Modeling in Mechanobiology, Engineering with Computers, International Journal of Computational Vision and Biomechanics, Computational Mechanics, Interaction and Multiscale Mechanics: an International Journal, Mathematical Models and Methods in Applied Sciences (M³AS), Journal of the Serbian Society for Computational Mechanics, Mechanics Research Communications, CIMNE-Springer Series on Lecture Notes in Numerical Methods in Engineering and Science, International Journal for Numerical Methods in Biomedical Engineering, Computing and Visualization in Science, Lecture Notes in Computational Vision and Biomechanics* (Book Series)*, Advanced Modelling and Simulation in Engineering Sciences, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, Modeling and Simulation in Science, Engineering and Technology book series (Springer), Journal of Mechanical Engineering (Strojnícky časopis), Proceedings of the National Academy of Sciences*

Conferences Organization (from 2002)

1. International Scientific Committee, Conference on Numerical Methods in Applied Sciences and Engineering, Guanajuato, Mexico, January 17-19, 2002.
2. Scientific Advisory Board, Fifth World Congress on Computational Mechanics (WCCM V), Vienna, Austria, July 7-12, 2002.
3. International Program Committee, 6th Biennial Conference on Engineering Systems Design and Analysis, Istanbul, Turkey, July 8-11, 2002.
4. International Organizing Committee, Twelfth International Conference on Finite elements in Flow Problems (FEF 03), Meijo University, Nagoya City, Japan, April 1-3, 2003.
5. International Scientific Committee, 15th International Committee on Computer Methods in Mechanics, CMM-2003, Gliwice/Szczyrk, Poland, June 3-6, 2003.
6. Scientific Program Committee, Seventh U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July 27-31, 2003.
7. Co-organizer, NSF Workshop on Simulation Based Engineering Science, Arlington, VA, April 15-16, 2004.
8. Co-organizer, Symposium on Stabilized and Multiscale Finite Element Methods, European Community on Computational Methods in Applied Sciences (ECCOMAS), Conference, Jyvaskla, Finland, July 24-28, 2004.
9. Co-organizer, Symposium on Stabilized and Multiscale Finite Element Methods, 6th World Congress on Computational Mechanics, Beijing, China, Sept. 5-10, 2004.
10. Editorial Board of CST2004: The 7th International Conference on Computational Structures Technology, Lisbon, Portugal, Sept. 7-9, 2004.
11. Chairman, Elsevier Editors' Conference, Sante Fe, NM, October 30, 2004.
12. Co-organizer, Symposium on Challenges and Advances in Flow Simulation and Modeling, ASME International Mechanical Engineering Congress and Exposition (IMECE 2004), Anaheim, CA, November 13-19, 2004.
13. International Advisory Committee, International Conference on Computational Mechanics and Simulation (ICCMS-04), IIT Kanpur, India, Dec. 9-12, 2004.
14. International Advisory Panel, International Conference on Computational Methods (ICCM2004), Singapore, Dec. 15-17, 2004.

15. Organizing Committee, 3rd SIAM Conference on Computational Science and Engineering, Lake Buena Vista, FL, Feb. 10-15, 2005.
16. International Organizing Committee, 13th Finite Elements in Fluids Conference (FEF05), University of Wales, Swansea, April 4-6, 2005.
17. Co-organizer, Symposium on Stabilized/Multiscale Methods in Computational Fluid Dynamics, 13th Finite Elements in Fluids Conference (FEF05), University of Wales, Swansea, April 4-6, 2005
18. Technical Advisory Panel, Computational Methods for Coupled Problems in Science and Engineering, ECCOMAS Thematic Conference, Island of Santorini, Greece, May 25-28, 2005.
19. Co-organizer, Symposium on Advanced Computational Methods for Shells, 5th International Conference on Computation of Shell and Spatial Structures, Salzburg, Austria, June 1-4, 2005.
20. Organizing Committee, 8th U.S. National Congress on Computational Mechanics, Austin, TX, July 24-28, 2005.
21. International Scientific Committee, 16th International Conference on Computer Methods in Mechanics (CMM-2005), Czestochowa, Poland, June 14-17, 2005.
22. Scientific Program Committee, 8th U.S. National Congress on Computational Mechanics, Austin, TX, July 24-28, 2005.
23. Co-organizer, Symposium on Stabilized and Multiscale Finite Element Methods, 8th U.S. National Congress on Computational Mechanics, Austin, TX, July 24-28, 2005.
24. Organizer, Drucker Medal Symposium, ASME International Engineering Conference and Exposition, Walt Disney World, Dolphin Hotel, Orlando, FL, November 5-11, 2005.
25. International Advisory Committee, Challenges in Computational Mechanics, Ecole Normale Superiore de Cachan, Cachan, France, May 10-12, 2006.
26. Advisory Committee, The 4th International Symposium on Computational Wind Engineering (CWE 2006), Pacifico Yokohama, Yokohama, Japan, July 16-19, 2006.
27. Co-organizer, Symposium on "Computational Geometry and Analysis," 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.
28. Co-organizer, Symposium on "Advances in Large Eddy Simulation of Turbulent Flows," 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.
29. Scientific Advisory Board, 7th World Congress on Computational Mechanics, Century Plaza Hotel and Spa, Los Angeles, California, July 16-22, 2006.
30. International Advisory Committee, EASEC-10, Tenth East Asia-Pacific Conference on Structural Engineering & Construction, Bangkok, Thailand, August 3-5, 2006.
31. Editorial Board, 8th International Conference on Computational Structures Technology, Las Palmas de Gran Canaria, September 12-15, 2006.
32. Scientific Committee, CompIMAGE, Computational Modelling of Objects Represented in Images - Fundamentals, Methods and Applications, Coimbra, Portugal, October 20-21, 2006.
33. International Advisory Committee, 2nd International Congress on Computational Mechanics and Simulation (ICCMS – 04), Indian Institute of Technology, Guwahati, India, 8-10 December 2006.
34. Program Chairman, The Academy of Medicine, Engineering and Science of Texas (TAMEST), Annual Meeting, Renaissance Hotel, Austin, Texas, January 4-5, 2007.
35. Co-organizer, Symposium on "Turbulence Simulation: Methods and Applications," FEF '07, 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
36. Co-organizer, Symposium on "Stabilized Multiscale and Multiphysics Methods," FEF '07, 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
37. Scientific Committee, International Workshop on Higher-order Finite Element Methods, Herrsching am Ammersee (near Munich), Germany, May 17-19, 2007.
38. Technical Advisory Panel, Second Conference on Computational Methods for Coupled Problems in Science and Engineering (Coupled 2007), Santa Eulalia, Ibiza Island, Spain, May 21-23, 2007.
39. Local Organizing Committee, McMat '07, ASME Applied Mechanics and Materials Conference, UT Austin, Texas, June 3-7, 2007.
40. International Advisory Board, Computational Methods in Structural Dynamics and Earthquake Engineering, (COMPDYN), Rethymnon, Crete, Greece, June 13-15, 2007
41. International Scientific Committee, 17th International Conference on Computer Methods in Mechanics, CMM-2007, Lodz, Poland, June 19-22, 2007
42. Co-organizer, Symposium on "Bioimaging and Visualization," 8th World Congress on Computational Mechanics, Venice, Italy, June 30 to July 5, 2008.

43. Co-organizer, Symposium on "Computational Geometry and Analysis," U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.
44. Co-organizer, Symposium on "Stabilized, Multiscale and Multiphysics Methods," U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.
45. Co-organizer, Symposium on "Turbulence Simulation: Methods and Applications," U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.
46. Co-organizer, Symposium on "Models and Methods in Computational Vascular and Cardiovascular Mechanics," U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.
47. Technical Advisory Board, Ninth U.S. National Congress on Computational Mechanics, San Francisco, California, July 22-26, 2007.
48. Organizing Committee, International Conference on Theoretical and Numerical Fluid Dynamics III, Pacific Institute of Mathematical Sciences, Vancouver, B.C., Canada, August 11-17, 2007.
49. Scientific Committee, First ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing, University of Porto, Porto, Portugal, October 2007.
50. Advisory Committee, International Conference on Computer Aided Engineering, Chennai (Madras), India, December 13-15, 2007.
51. International Advisory Committee, IASS-IACM 2008, International Conference and Shell and Spatial Structures, Cornell University, Ithaca, New York, May 28-31, 2008.
52. International Scientific Committee, 18th International Conference on Computer Methods in Mechanics, University of Zielona Gora, Zielona Gora, Poland, May 18th-21st, 2009.
53. Scientific Committee, United States National Congress on Computational Mechanics, Columbus, Ohio, July 2009.
54. International Advisory Committee, First African Conference on Computational Mechanics, Sun City, Africa, January 7-11, 2009.
55. Scientific Committee, Ti 2009, 2nd International Conference on Turbulence and Interactions, Martinique (France), June 1-6, 2009.
56. Technical Advisory Council, Coupled 2009, Coupled Problems in Science and Engineering, Ischia, Italy, June 8-11, 2009.
57. Technical Advisory Panel, Marine 2009, Computational Methods in Marine Engineering, Trondheim, Norway, June 15-17, 2009.
58. International Advisory Committee, Computational Structural Engineering CSE 2009, Shanghai, China, June 22-24, 2009.
59. Scientific Committee, COMPDYN 2009, Computational Methods in Structural Dynamics and Earthquake Engineering, Rhodes, Greece, June 22-24, 2009.
60. Executive Committee, 1st International Conference on Computational & Mathematical Biomedical Engineering, Swansea University, Swansea, Wales, June 29th to July 1st, 2009.
61. Advisory Committee, PACAM XI, Eleventh Pan American Congress of Applied Mechanics, Itaipu Technological Park, Foz do Iguacu, Brazil, January 2010.
62. International Advisory Board, ECCM 2010, Fourth European Conference on Computational Mechanics (Solids, Structures and Coupled Problems in Engineering), Paris, May 16-21, 2010.
63. Scientific Committee, Seventh SMAI-AFA Conference on "Curves and Surfaces," Avignon, France, June 24-30, 2010.
64. Scientific Committee, ECCOMAS 2012, European Congress on Computational Methods in Applied Sciences and Engineering, Vienna University of Technology (TU Wien), Vienna, Austria, September 10-14, 2012.
65. Editorial Board, Tenth International Conference on Computational Structures Technology, Valencia, Spain, September 14-17, 2010.
66. Conference Co-chairman, NEMB 2010, ASME 2010 First Global Congress on Nanoengineering for Medicine and Biology, Advancing Health Care Through Nanoengineering and Computing, Houston, Texas, February 7-10, 2010.
67. Scientific Committee, Fifth European Conference on Computational Fluid Dynamics (ECCOMAS CFD 2010), National Civil Engineering Laboratory, Lisbon, Portugal, June 14-17, 2010.
68. Scientific Committee, Maths and Air, Instituto Universitario de investigacion en Matematicas y Aplicaciones (IUMA), Facultad de Ciencias, Universidad de Zaragoza, June 16-18, 2010.
69. International Advisory Committee, International Conference in Computational Methods (ICCM) 2010, Zhangjiajie, Hunan Province, China, November 2010.

70. Scientific Committee, COMPDYN 2011, 3rd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, ECCOMAS Thematic Conference, Corfu, Greece, May 26-28, 2011.
71. Technical Advisory Panel, COUPLED 2011, 4th International Conference on Coupled Problems in Science and Engineering, ECCOMAS Thematic Conference, Kos, Greece, June 20-22, 2011.
72. Scientific Committee, International Conference on Recent Developments on Wavelet and Multiscale-based Methods, Edmonton, Canada, July 25-29, 2011.
73. International Advisory Board, 19th International Conference on Computer Methods in Mechanics (CMM 2011), Warsaw, Poland, May 9-12, 2011.
74. Scientific Organizing Committee, USNCCM-11, U.S. National Congress on Computational Mechanics, Minneapolis, MN, July 25-29, 2011.
75. Scientific Committee, 10th World Congress on Computational Mechanics, Sao Paulo, Brazil, July 8-13, 2012.
76. International Advisory Committee, 16th International Conference on Finite Elements in Flow Problems, FEF2011, Munich, Germany, March 23-25, 2010.
77. Organizing Committee, National Academy of Engineering (NAE) Regional Meeting, "Engineering the Future of Health Care," Austin, Texas, April 7th, 2011.
78. Scientific Advisory Board, ISCM III-CSE II, Third International Symposium on Computational Mechanics (ISCM III) in conjunction with the Second Symposium on Computational Structural Engineering (CSE II), Taipei, Taiwan, December 5-7, 2010.
79. Scientific Committee, Workshop on Reduced Basis, POD and PGD Model Reduction Techniques: a Breakthrough in Computational Engineering, École Normale Supérieure de Cachan, Cachan, France, November 16-18, 2011.
80. Organizer, IGA 2011, Isogeometric Analysis Conference, ICES, University of Texas at Austin, Austin, Texas, January 13-15, 2011.
81. Program Committee, SIAM/ACM Joint Conference on Geometric and Physical Modeling, Orlando, Florida, October 24-27, 2011.
82. Scientific Committee, Eighth Conference on Mathematical Methods for Curves and Surfaces, Oslo, Norway, June 28 to July 3, 2012.
83. Scientific Committee, 12th United States National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-15, 2013.
84. Editorial Board, ECT2012: The Eighth International Conference on Engineering Computational Technology, Dubrovnik, Croatia from 4-7 September 2012.
85. International Scientific Committee, IWCMM: International Workshop on Computational Mechanics of Materials, Johns Hopkins University, Baltimore, Maryland, September 24-26, 2012.
86. Advisory Committee, ICCMS 2012, 4th International Congress on Computational Mechanics and Simulation, December 10-12, 2012.
87. Scientific Committee, COMPDYN 2013, 4th International Conference on Structural Dynamics and Earthquake Engineering, Island of Kos, Greece, June 12-14, 2013.
88. Scientific Committee, COUPLED 2013, 5th International Conference on Computational Methods for Coupled Problems in Science and Engineering, Ibiza, Spain, June 17-19, 2013.
89. Chair of the Scientific Committee, 2014 U.S. National Congress on Theoretical and Applied Mechanics, Michigan State University, Lansing, Michigan, June 15-20, 2014.
90. International Scientific Committee, APCOM 2013, Asian-Pacific Conference on Computational Mechanics, Singapore, December 2-15, 2013.
91. Scientific Advisory Committee, 2nd International Workshop, Reduced Basis, POD and PGD Model Reduction Techniques: a Breakthrough in Computational Engineering, Blois Castle, France, November 3-6, 2013.
92. Co-organizer, Mini-symposium, Phase-field modeling and simulation in fluid mechanics, solid mechanics and life sciences, WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.
93. Co-organizer, Mini-symposium, Recent Developments in Isogeometric Analysis, WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.
94. Scientific Committee, Sixth International Workshop on Higher-order Finite Element Methods and Isogeometric Analysis, Frauenchiemsee Island, July 14-18, 2014.

95. Scientific Committee on Computational Fluid Dynamics, WCCM-ECCM-ECFD 2014, 11th World Congress on Compuational Mechanics (WCCM XI), 5th European Congress on Computational Methods (ECCM V), 6th European Conference on Computational Fluid Dynaimcs (ECFD VI), Barcelona, Spain, July 20-25, 2014.

96. International Advisory Committee, 3rd African Conference on Computational Mechanics (AfriComp), Livingston, Zambia, July 30 to August 2, 2013.

97. International Program Committee, "International Congress on Neurotechnology, Electronics and Informatics" – NEUROTECHNIX 2013, Vilamoura, Algarve, Portugal, September 19-21, 2013.

98. International Advisory Committee, COMPSAFE2014, 1st International Conference on Computational Engineering and Science for Safety and Environmental Problems, Sendai, Japan, April 13-16, 2014.

99. International Scientific Committee, PANACM-2015, Pan-American Congress on Computational Mechanics, Buenos Aires, Argentina, April 27-29, 2015.

100. Organizer, IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin, Texas, January 7-10, 2014.

101. Advisory Committee, ICPER 2014, 4th International Conference on Production, Energy and Reliability, Kuala Lumpur Convention Center, Kuala Lumpur, June 3-5, 2014.

102. Chairman, Scientific Committee, 17th U.S. National Congress on Theoretical and Applied Mechanics, Michigan State University, East Lansing, Michigan, June 15-20, 2014

103. Editorial Board, Twelfth International Conference on Computational Structures Technology (CST2014), Naples, Italy, September 2-5, 2014.

104. Editorial Board, Twelfth International Conference on Engineering Computational Technology (ECT2014), Naples, Italy, September 2-5, 2014.

105. Scientific Committee, Sixth International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2015), San Servolo Island, Venice, Italy, May 18-20, 2015.

106. Scientific Committee, COMPLAS XIII, Thirteenth International Conference on Computational Plasticity, Barcelona, Spain, September 1-3, 2015.

107. Scientific Committee, MARINE 2015, Sixth International Conference on Computational Methods in Marine Engineering, Rome, Italy, May 15-17, 2015.

108. Steering Committee, IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

109. Scientific Committee, Workshop on Reduced Basis, POD and PGD Model Reduction Techniques, École Normale Supérieure de Cachan, Paris, France, November 4-6, 2015.

110. Scientific Committee, Second International Conference on Biomedical Technology (ICBT 2015), Hannover, Germany, October 28-30, 2015.

111. Co-organizer, Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, February 7-13, 2016.

112. Scientific Committee, HOFEIM 2016, International Workshop on High-Order Finite Element and Isogeometric Methods," Mishkenot Shaananim Conference Center, Jerusalem, Israel, May 30-June2, 2016.

113. Co-organizer, Minisymposium on the Mathematics of IGA, ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris' Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

114. Co-organizer, Minisymposium on Tumor Growth Modeling and the Mathematics of Cancer, ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris' Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

115. Co-organizer, Minisymposium on Innovative Non-Boundary-Fitted Discretization Methods, ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris' Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

116. Co-organizer, ECCAM Advanced School on Isogeometric Methods, ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris' Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

117. Scientific Committee, Finite Element Methods in Fluids, FEF2017, Rome, Italy, April 5-7, 2017.

118. Scientific Committee, Seventh International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2017), Rhodes Island, Greece, June 12-14, 2017.

119. Scientific Committee, COMPLAS XIV, Fourteenth International Conference on Computational Plasticity, Barcelona, Spain, September 5-7, 2017.

120. Scientific Committee, MARINE 2017, 7th International Conference on Computational Methods in Marine Engineering, Nantes, France, May 15-17, 2017.
121. Scientific Committee, COMPDYN 2017, 6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Rhodes Island, Greece, June 15-17, 2017.
122. Co-organizer, Minisymposium on Isogeometric Methods, COMPLAS XIV, Fourteenth International Conference on Computational Plasticity, Barcelona, Spain, September 5-7, 2017.
123. Scientific Organizing Committee, 14th U.S. National Congress on Computational Mechanics, USNCCM14 2017, Montreal, Canada, July 17-20, 2017.
124. Scientific Board, International Conference on Biomedical Technology, Hannover, Germany, November 6-8, 2017.
125. Scientific Committee, 6th European Conference on Computational Mechanics (Solids, Structures and Coupled Problems), Glasgow, Scotland, June 11-15, 2018.
126. Scientific Board, ECCOMAS Thematic Conference on Modern Finite Element Technologies, Bad Honnef, Germany, August 21-23, 2017.
127. Organizer, From Turbulence to Uncertainty Quantification: A Symposium in honor of Professor Robert Moser on his 60th Birthday, AT&T Executive Education and Conference Center, the University of Texas at Austin, August 15-16, 2016. Scientific Committee, Finite Element Methods in Fluids, FEF2017, Rome, Italy, April 5-7, 2017.
128. Scientific Committee, Seventh International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2017), Rhodes Island, Greece, June 12-14, 2017.
129. Scientific Committee, MARINE 2017, 7th International Conference on Computational Methods in Marine Engineering, Nantes, France, May 15-17, 2017.
130. Co-organizer, Minisymposium on Isogeometric Methods in Computational Mecahnics, EMI 2017, Engineering Mechanics Institute Conference, San Diego, June 4-7, 2017.
131. Scientific Committee, COMPDYN 2017, 6th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Rhodes Island, Greece, June 15-17, 2017.
132. Scientific Organizing Committee, 14th U.S. National Congress on Computational Mechanics, USNCCM14 2017, Montreal, Canada, July 17-20, 2017.
133. Scientific Committee, 6th European Conference on Computational Mechanics (Solids, Structures and Coupled Problems), Glasgow, Scotland, June 11-15, 2018.
134. Scientific Board, ECCOMAS Thematic Conference on Modern Finite Element Technologies, Bad Honnef, Germany, August 21-23, 2017.
135. Scientific Board, Symposium on Multiscale Computational Analysis of Complex Materials, Copenhagen, Denmark, August 29-31, 2017.
136. Scientific Committee, COMPLAS XIV, Fourteenth International Conference on Computational Plasticity, Barcelona, Spain, September 5-7, 2017.
137. Co-organizer, Minisymposium on Isogeometric Methods, COMPLAS XIV, Fourteenth International Conference on Computational Plasticity, Barcelona, Spain, September 5-7, 2017.
138. Scientific Board, International Conference on Biomedical Technology, Hannover, Germany, November 6-8, 2017.
139. Scientific Board of the 3rd International Conference on Multiscale Computational Methods for Solids and Fluids 2017, Ljubljana, Slovenia, November 6-8, 2017.
140. Scientific Committee, IGAA - Isogeometric Analysis and Applications, Delft, The Netherlands, Delft University of Technology, Delft, The Netherlands, April 23-27, 2018.
141. Co-orgainizer, Minisymposium on Isogemetric Methods, 6th European Conference on Computational Mechanics (Solids, Structures and Coupled Problems) – ECCM6, and the 7th European Conference on Computational Fluid Dynamics – ECFD7, Glasgow, UK, June 11-15, 2018.
142. Editorial Board, The Tenth International Conference on Engineering Computational Technology (ECT2018), Sitges, Barcelona, Spain, September 4-6, 2018.
143. Conference Chair and Local Organizer, IGA 2018 – Integrating Design and Analysis, October 10-12, 2018.
144. Scientific Committee, FEF 2019, IACM – 20th International Finite Elements in Fluids Conference, March 29 - April 4, 2019, Chicago, USA.
145. Scientific Committee, "New Trends in Dynamics of Structures," 37th InternationalConference on VIBROENGINEERING, 25-26 April, 2019, Bratislava, Slovakia.
146. Scientific Committee, MARINE 2019, 8th International Conference on Computational Methods in Marine Engineering, Göteborg, Sweden, May 13-15, 2019.

147. Scientific Committee, HOFEIM 2019, Higher-order Finite Element and Isogeometric Methods, Pavia, Italy, May 28-31, 2019.
148. Scientific Committee, COUPLED PROBLEMS 2019, Eighth International Conference on Computational Methods for Coupled Problems in Science and Engineering, Sitges, Spain, June 3-5, 2019.
149. Scientific Committee, COMPDYN 2019, Computational Methods in Structural Dynamics and Earthquake Engineering, Crete, Greece, June 22-24, 2019.
150. Co-organizer, Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, July 15-20, 2019.
151. Scientific Organizing Committee, 15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.
152. Local Organizing Committee, 15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.
153. Co-organizer, Minisymposium on "Isogeometric Methods," 15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.
154. Co-organizer, Minisymposium on Isogeometric Methods, COMPLAS 2019, Fifteenth International Conference on Computational Plasticity, Barcelona, Spain, September 3-5, 2019.
155. Scientific Committee, COMPLAS 2019, Fifteenth International Conference on Computational Plasticity, Barcelona, Spain, September 3-5, 2019.
156. Scientific Committee, IGA 2019, VII International Congress on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.
157. Co-organizer, G.I. Taylor Medal Symposium, 56th Annual Meeting of the Society of Engineering Science, October 13-15, 2019, Washington University, St. Louis, October 13-15, 2019.
158. Scientific Committee Panel, "Reduced Basis, POD and PGD Model Reduction Techniques," ENS de Paris-Saclay, 20-22, November 2019.
159. Co-organizer, Minisymposium on "Isogeometric Methods," WCCM XIV–ECCOMAS 2020, 14th World Congress on Computational Mechanics and 8th European Congress on Computational Methods in Applied Sciences and Engineering, Paris, France, July 19-24, 2020.
160. International Scientific Committee, WCCM XIV–ECCOMAS 2020, 14th World Congress on Computational Mechanics and 8th European Congress on Computational Methods in Applied Sciences and Engineering, Paris, France, July 19-24, 2020.
161. Scientific Committee, XVI International Conference on Computational Plasticity. Fundamentals and Applications, COMPLAS 2021, Barcelona, Spain. September 7- 10, 2021.
162. Mini-symposium co-organizer on "Isogeometric Analysis," XVI International Conference on Computational Plasticity. Fundamentals and Applications, COMPLAS 2021, Barcelona, Spain. September 7- 10, 2021.
163. Scientific Committee, MARINE 2021, 9th International Conference on Computational Methods in Marine Engineering, Edinburgh, Scotland, UK, 2-4 June 2021.
164. Scientific Committee, COMPDYN 2021,8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering,
Athens, Greece, 21-23 June 2021.
165. International Scientific Committee, US Association for Computational Mechanics (USACM) 16th US National Congress on Computational Mechanics (USNCCM-16), Chicago, July 25-29, 2021.
166. Co-organizer, Minisymposium on "Isogeometric Methods," US Association for Computational Mechanics (USACM) 16th US National Congress on Computational Mechanics (USNCCM-16), Chicago, July 25-29, 2021.
167. Technical Advisory Board Member, CMBBE 2021, 17th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and 5th Conference on Imaging and Visualization, Bonn, Germany, September 7–9, 2021.
168. Co-organizer, Minisymposium on "Isogeometric Methods," Sixteenth International Conference of Computational Plasticity (COMPLAS 2021), Barcelona, September 7-10, 2021.
169. Scientific Committee, COMPLAS 2021, Sixteenth International Conference on Computational Plasticity, Barcelona, Spain, September 7-9, 2021.
170. Co-organizer, Mini-symposium on "Phase Field Modeling," XVI International Conference on Computational Plasticity. Fundamentals and Applications, COMPLAS 2021, Barcelona, Spain. September 7- 10, 2021.

171. Co-organizer, Mini-symposium on "Image-informed Computational Models and Methods for Prediction of Cancer Growth and Treatment Response," 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022) June 5-9, 2022, Oslo, Norway.
172. Co-organizer, Mini-symposium on "Isogeometric Methods," 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022) June 5-9, 2022, Oslo, Norway.
173. Executive Committee, USNC/TAM 2022, 19th U.S. National Congress on Theoretical and Applied Mechanics, June 19-24, 2022.
174. Co-organizer, Mini-symposium on "Isogeometric Analysis," WCCM-APCOM 2022, 15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics, Yokohama, Japan, July 31 to August 5, 2022.
175. Co-organizer, Mini-symposium on "Modeling and Simulation of Multiphase Flows,"
176. 22nd IACM Computational Fluids Conference – CFC 2023, Palais des Festival et des Congrès, Cannes, France, April 25-28 2023.
177. Scientific Committee, COUPLED PROBLEMS 2023, Chania, Crete, Greece, June 5-7, 2023.
178. Scientific Committee, MARINE 2023, 10th International Conference on Computational Methods in Marine Engineering, Madrid, Spain, June 27-29, 2023.
179. Scientific Committee, COMPDYN 2023, 9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering,
Athens, Greece, 12-14 June 2023.
180. Scientific Committee, IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21, June 2023.
181. Steering Committee, IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21, June 2023.
182. Co-organizer, Mini-symposium on "Isogeometric and other advanced discretization methods for structural dynamics and transient problems," COMPDYN 2023, 9th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Athens, Greece, 12-14 June 2023.
183. Member, Scientific Committee, "High-Order Finite Element and Isogeometric Methods 2023," May 29 - June 1, 2023, Larnaca, Cyprus
184. Scientific Organizing Committee, U.S. Association for Computational Mechanics (USACM) 17th U.S. National Congress on Computational Mechanics (USNCCM17), Albuquerque, New Mexico, July 23-27, 2023.
185. Co-organizer, Mini-symposium on "Data-informed computational models and methods for prediction of cancer growth and treatment response," U.S. Association for Computational Mechanics (USACM) 17th U.S. National Congress on Computational Mechanics (USNCCM17), Albuquerque, New Mexico, July 23-27, 2023.
186. Co-organizer, Mini-symposium on "Isogeometric Analysis," COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023.
187. Co-organizer, Mini-symposium on "Phase Field Modeling and Engineering Applications in Solid Mechanics," COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023.
188. Scientific Committee, COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023
189. Scientific Committee, ECCOMAS 2024, the 9th European Congress on Computational Methods in Applied Sciences and Engineering Mechanics, Lisbon, Portugal, 3-7 June, 2024.
190. Co-organizer, Mini-symposium on "Isogeometric Analysis," ECCOMAS 2024, the 9th European Congress on Computational Methods in Applied Sciences and Engineering Mechanics, Lisbon, Portugal, 3-7 June, 2024.
191. Co-organizer, Mini-symposium on "Computational models and methods for predicting cancer progression and treatment response," (Guillermo Lorenzo, Ryan Woodall, David A. Hormuth II, Michael R. A. Abdelmalik, Russell C. Rockne, Alessandro Reali, Thomas E. Yankeelov, Thomas J. R. Hughes) Track Number 300 - Biomechanics and Mechanobiology, 9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2024), June 3-7, 2024, Lisbon, Portugal.
192. Co-organizer, Mini-symposium on "Isogeometric Analysis," 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), July 21 – July 26, 2024, Vancouver, BC, Canada.

193. Co-organizer, Mini-symposium on "Computational models and methods for predicting cancer progression and treatment response," (Guillermo Lorenzo, Ryan Woodall, David A. Hormuth II, Michael R. A. Abdelmalik, Russell C. Rockne, Alessandro Reali, Thomas E. Yankeelov, Thomas J. R. Hughes), 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), July 21 – July 26, 2024, Vancouver, BC, Canada.
194. International Scientific Committee, 16th World Congress on Computational Mechanics (WCCM2024) and 4th Pan American Congress on Computational Mechanics (PANACM2024), July 21 – July 26, 2024, Vancouver, BC, Canada.
195.

OTHER PROFESSIONAL HIGHLIGHTS

Licensed Professional Engineer, Registered, State of Texas, 2004-present

Initiated joint ICES–Department of Mechanical Engineering program in Cardiovascular Engineering, January 2006.

As of September 24, 2024, there are 1146,487citations to my published work and my h-index is 158 (Reference: Google Scholar for "Hughes TJR"), and 63,063 citations and h-index of 124 (Reference: General Search, All Databases, ISI Web of Knowledge, for "Hughes TJR"). Here is the web address for current Google Scholar citations: http://scholar.google.com/citations?user=6tPdlYAAAAAJ&hl=en

In the spring of 2016 successfully led UT Austin effort to bring HeartFlow, Inc., to Austin. HeartFlow is the first Computational Medicine company to receive FDA approval for its noninvasive coronary artery disease diagnosis technology. HeratFlow's presence in Austin will provide a great opportunity for research collaborations with UT Austin faculty and job opportunities for graduates. Among other things, I arranged for meetings of HeartFlow executives with President Fenves, Dean Johnston of the Dell Medical School, Director of ICES J. Tinsley Oden, Chairs of the Departments of Computer Science and Biomedical Engineering, and representatives of the Chamber of Commerce. HeartFlow established its second production and research center in Austin June 1st 2016, and began production shortly thereafter. (Full disclosure: I am a shareholder and a former Scientific Advisor to HeartFlow.)

Graduate Portfolio Program in Computational Medicine

I co-led a Working Group of faculty from the Oden Institute, the Dell Medical School, the Cockrell School of Engineering, and the College of Natural Sciences to develop a plan for a Graduate Portfolio Program in Computational Medicine. I was the principal architect of the Portfolio and drafted the proposal submitted to the Graduate School. Over 100 signatures of approval were required from participating stakeholders engendering numerous modifications, enhancements and rewrites of the proposal. This three-year effort culminated with the establishment of the Portfolio effective Fall 2022. The Portfolio is highly interdisciplinary in nature with participation from 17 different units across campus. Enrolled graduate students will be able to obtain credentials in cross-disciplinary areas of Computational Medicine during their masters or doctoral degree. https://www.oden.utexas.edu/academics/computational-medicine-portfolio/

Worked with my friend, John O. Hallquist, Founder and former CEO of Livermore Software Technology, to secure a $3 million donation to the Oden Institute for Computational Engineering and Sciences for an endowed chair in Computational Mechanics, August 2022.

UNIVERSITY COMMITTEES/ADMINISTRATIVE ASSIGNMENTS:

University Committees

Member, ICES Search Committee, Computational and Applied Mathematics Chair II, 2002-03
Member, ICES Search Committee, Distributed and Grid Computing Chair, 2002-2007
Member, ICES VIGRE Fellowship Representative to Mathematics Department, 2002-2007
Member, ICES Computational and Applied Mathematics Admissions and Fellowship Committee, 2002-2014
Member, ICES Advisory Board, 2002-2019
Member, ICES Computational Engineering, Science and Mathematics Graduate Studies Committee, 2004-present

Member, ICES Industrial Partners Task Force, 2005 – present
Member, ICES Undergraduate Concentration and Certificate Program Committee, 2006 – present.
Member, ICES Strategic Planning Committee
Member, Division of Statistics and Scientific Computation, Steering Committee, 2007 – present.
Member, ICES Director Succession Plan Committee, Summer 2007- Fall 2008.
Chair, ICES Computational Cardiovascular Engineering Search Committee, 2009-2011.
Member, ICES Moncrief Faculty Fellowship Program Committee, 2009-present.
Member, ICES Moncrief Grand Challenge Faculty Awards Program Committee, 2009-present.
Member, ICES CSEM Committee on Advisors, 2011.
Member, ICES Predictive Science and Uncertainty Quantification Search Committee, 2011-2019.
Member, Moncrief Grand Challenge Awards Selection Committee, 2012.
Member, Committee to Draft a Memorial Resolution for Professor Graham Carey, 2012.
Member, ICES, Computational Mathematics Search Committee, 2012-2019.
Member, ICES, CSEM Admissions Committee, 2013-2014, 2018
Member, President's NAS/NAE Membership Committee, 2015-2016
Member, ICES CSEM Graduate Studies Committee, 2004-2019.
Member, ICES Faculty Search Committee, Computational Manufacturing, 2016-2019.
Member, ICES Faculty Search Committee, Computational Medicine, 2015-2019.
Member, Search Committee for Director of ICES, 2016-2018.
Member, University Cooperative Career Award Committee, 2017.
Member, Beckman Scholars Award Proposal Review Committee, 2017.
Oden Institute Contact, Cooperative Scientific Agreement, International Center for Numerical Methods in Engineering, Polytechnic University of Catalunya, Barcelona, Spain.
Member, 2019 University Co-op Research Excellence Awards Committee.
Member, Oden Institute Advisory Board, 2002-present.
Member, Oden Institute CSEM Graduate Studies Subcommittee, 2004-present.
Co-chair, DMS/Oden Institute Computational Medicine Program Planning Working Group, 2019-2022
Member, SURA Distinguished Scientist Awards Review Committee, 2019.
Member, University Co-op Career Research Excellence Award Committee for Calendar year 2021.

Cockrell School of Engineering Committees
Member, School of Natural Science Search Committee, Director of Computational Biology, 2002-03
Member, Mathematics Department Instructor's Committee, 2002-2007
Member, Cockrell School of Engineering, Faculty Promotions Committee, 2003-2004
Member, Cockrell School of Engineering, Mathematics and Science Committee, 2003-present
Member, Joe J. King Professional Engineering Achievement Award Selection Committee, 2011
Member, ASE/EM Chair Search Committee, 2012
Member, Billy & Claude R. Hocott Distinguished Centennial Engineering Research Award Selection Committee, 2013, 2016
Member, Joe J. King Professional Engineering Achievement Award Selection Committee, 2013
Member, Billy & Claude R. Hocott Distinguished Centennial Engineering Research Award Selection Committee, 2016

Department Committees
Member, ASE/EM Committee to Evaluate Hans Mark and Ivo Babuska, 2003
Member, ASE/EM Promotion Committee for Jeff Bennighof, 2003
Member, ASE/EM Senior Exit Survey Committee, 2003
Member, ASE/EM Promotion Review Committee for L. Raja, 2004
Member, ASE/EM Awards Committee, 2004-06
Chairman, ASE/EM Awads Committee, 2006-07
Member, ASE/EM Post-Tenure Review Committee, 2007-2008
Member, ASE/EM Structural Dynamics Search Committee, 2008.
Member, ASE/EM Budget Council Committee, 2002-present
Member, ASE/EM Graduate Studies Committee, 2002-present
Member, ASE/EM Faculty Evaluation Committee, 2003-present

Member, ASE/EM PhD Written Qualifying Exam Committee (Dynamics), 2004-present
Peer Teaching Reviewer for Cesar Ocampo and Sean Buckley, Fall 2008.
Member, ASE/EM Faculty Workload Sub-committee, 2010-present.
Member, Promotion and Tenure Evaluation Sub-committee for Venkat Raman, 2010
Member, Third Year Review Committee for Charles Tinney, 2010-2011
Member, Post Tenure Review Committtee for Jeff Bennighof, 2010-2011
Member, Belinda Marchand Tenure Review Subcommittee, 2011
Member, Post Tenure Review Committee, 2011-2012
Member, Post Tenure Review Committee, 2011-2012
Member, Strategic Planning Committee, 2011-present
Member, Post Tenure Review Committee for J.T. Oden and K. Ravi-Chandar, 2011-2012
Member, ASE/EM PhD Written Qualifying Exam Committee (Mathematics), 2012-present
Mentor, Efstathios Bakolas, 2011-2016
Member, ASE/EM Faculty Search Committee, Computational Mechanics, 2012-2014
Member, ASE/EM Faculty Search Committee, Controls, 2013-2014
Peer Teaching Reviewer of Todd Humphrey, Spring 2014
Member, ASE/EM Promotion Committee for Maruthi Akella, 2014
Member, ASE/EM Post-tenure Review, Mary Wheeler, Fall 2014
Peer Teaching Reviewer of Tan Bui-Thanh, Spring 2015
Member, ASE/EM Faculty Search Committee, Soft/Biomaterials, 2015-2016
Member, ASE/EM 3rd Year Review Committee, Dr. Tan Bui-Thanh, 2016
Member, ASE/EM Faculty Annual Review Committee, 2016-2017
ASE/EM Peer Teaching Reviewer of Dr. Brandan Jones, 2016
Chair, ASE/EM Comprehensive Periodic Review Committee for Professor J.T. Oden, 2017-2018
Chair, ASE/EM Tenure Committee for Dr. Tan Bui-Thanh, 2018
Member, ASE/EM Search Committee in Mechanics, 2019-2020
Member, ASE/EM Search Committee in Mechanics, 2019-2020
Peer Teaching Review of Dr. Louis Sentis, 2019
Member, ASE/EM Computational Engineering (COE) Curriculum Committee 2020-
Peer Teaching Review of Dr. Ann Chen, 2020
Member, ASE/EM Computational Engineering (COE) Curriculum Committee 2020-2023.
Mentor, Dr. Moriba Jah, 2020-2022
Member, Honors and Awards Committee, 2021-2022
Member, Senior Advisory Council (SAC), 2022-
Member, Promotion Committee for Dr. Ufuk Topcu, 2022
Member, Faculty Annual Review Committee, 2022-present
Member, Graduate Mathematics Courses Committee, 2023
Member, Promotion Committee to Full Professor, Dr. Moriba Jah, 2023
Member, Periodic Comprehensive Review Committee, Dr. Noel Clemens, 2023
Member, Tan Bui Tanh Promotion to Full Professor Committee, 2024

HONORS AND AWARDS:
1957   General Excellence Medal, Good Shepherd School
1961   New York State Scholarship in Science and Engineering
1961   Dean's Scholarship, Pratt Institute
1971   Popert Fellowship in Civil Engineering, University of California, Berkeley
1975   Bernard Friedman Memorial Prize in Applied Mathematics, University of California, Berkeley
1978   Walter L. Huber Civil Engineering Research Prize, ASCE
1979   Melville Medal, ASME
1982   Fellow, American Academy of Mechanics
1985   Fellow, ASME
1986   AGARD Lecturer (von Karman Institute of Fluid Dynamics, Rhode-Saint-Genese, Belgium)
1987   AGARD Lecturer (various research laboratories and universities in and around Paris, e.g., Ecole
           Polytechnique, ONERA, Universite de Paris, VI, etc.)
1992   AGARD Lecturer (von Karman Institute of Fluid Dynamics, Rhode-Saint-Genese, Belgium)

1992   AGARD Lecturer (NASA Ames Research Center)
1993   Computational Mechanics Award, Japan Society of Mechanical Engineers
1993   Cited by Industry Week Magazine as one of the "50 individuals whose achievements are shaping the future of our industrial culture and America's technology policy," December 20, 1993
1995   Member, National Academy of Engineering
1995   Fellow, USACM
1995   Associate Fellow, AIAA
1995   Co-authored paper that was co-winner of Robert J. Melosh Competition at Duke University
1995   Technical Achievement Award, National Academy of Engineering
1996   Fellow, AAAS
1997   Von Neumann Medal, USACM
1997   Dean's Award for Academic Accomplishment, Stanford University
1998   Fellow, IACM
1998   Gauss-Newton Medal, IACM
1998   Dean's Distinguished Lecture, U.C. Davis
1998   Endowed Chair, Mary and Gordon Crary Professor of Engineering, Stanford University
1998   Worcester Reed Warner Medal, ASME
1999   Cattedra Galileiana (Galileo Galilei Chair), Scuola Normale Superiore, Pisa, Italy. I was the first engineer to hold the Cattedra Galileiana.
1999   Honorary Member, Brazilian Association for Computational Mechanics
2000   Eshbach Professor, Northwestern University, Evanston, Illinois
2000   Eshbach Distinguished Lecture, Northwestern University, Evanston, Illinois
2001   Paul M. Chung Distinguished Lecture, University of Illinois at Chicago
2001   Designated ISI Highly Cited Researcher (One of the original 100 most cited engineers in the world).
2002   Designated one of the top 15 individuals in citations by Thompson Institute for Scientific Information/Web of Science in the field of Scientific Computing, based on total citations indexed from 1991 to 2001, Montreal, Canada.
2003   Doctorat honoris causa, Universite catholique de Louvain, Belgium.
2003   One of seven U.T. Austin engineering faculty identified as most highly cited in the world by ISI Thompson.
2004   Member, Texas Academy of Medicine, and Engineering and Science.
2004   Advances in Computational Mechanics, A Conference Celebrating the 60th Birthday of Thomas J.R. Hughes, Rice University, Houston, TX, April 7-9, 2004.
2004   Honorary Member, World Innovation Foundation, July 2004
2004   *Finite Element Methods: 1970's and Beyond* – A book dedicated to Thomas J.R. Hughes, (eds., L.P. Franca, T.E. Tezduyar and A. Masud), CIMNE, Barcelona, Spain, 2004.
2004   Michael A. Sadowsky Distinguished Lecturer in Applied Mechanics, Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY October 22, 2004.
2004   Samuel D. Conte Distinguished Lecturer in Computer Science, Purdue University, Lafayette, IN, October 25, 2004
2005   Fellow, American Society of Civil Engineers, January 2005
2006   Fellow, American Institute of Aeronautics and Astronautics, April 2006.
2006   Served on the National Science Foundation Blue Ribbon Panel on Simulation-Based Engineering Science
2006   A Tribute to Thomas J. R. Hughes on the Occasion of his 60th Birthday (eds. A. Masud and T.E. Tezduyar), Special Issue, *Computer Methods in Applied Mechanics and Engineering*, Volume 195, Issues 13-16, pp. 1,281-1,910, 2006.
2007   Fellow, American Academy of Arts and Sciences, October 6, 2007.
2007   Doctorate honoris causa, University of Pavia, Pavia, Italy, September 24, 2007.
2007   Timoshenko Medal, American Society of Mechanical Engineering, IMECE '07, Seattle, Washington, November 13, 2007.
2007   Doctorate honoris causa, University of Padua, Padua, Italy, November 20, 2007.
        URL: http://caronte.dic.unipd.it/addc/index.php?option=com_content&task=view& id=327&Itemid=88
2007   Newmark Distinguished Lecture, Department of Civil Engineering, University of Illinois, Urbana-Champaign, Illinois, November 5, 2007.
2007   Elected a Foreign Member of the Istituto Lombardo Accademia di Scienze e Lettere, Milan, Italy, October 4, 2007.
2008   JSCES Grand Prize, Japan Society of Computational Engineering, Sendai, Japan, May 19, 2008.

2008   The *Special Achievement Award for Young Investigators in Applied Mechanics* is an award given annually by the Applied Mechanics Division of the American Society of Mechanical Engineers (ASME). The award is presented at the Applied Mechanics Annual Dinner at the ASME Congress. In 2008, this award was renamed the *Thomas J.R. Hughes Young Investigator Award*.

2009   Symposium Celebrating the 65th Birthday of Thomas J.R. Hughes: Fluid-Structure Interactions and Moving Boundaries and Interfaces," FEF09, 15TH International Conference on Finite Elements in Flow Problems, Tokyo, Japan, April 1-3, 2009.

2009   Alexander von Humboldt Research Award for Senior Scientists, Alexander von Humboldt Foundation, Germany, 2009.

2009   Theodore von Karman Medal, American Society of Civil Engineers, Joint ASCE-ASME-SES Conference on Mechanics and Materials, Virginia Tech, Blacksbury, VA, June 24-27, 2009.

2009   Fellow, Society of Industrial and Applied Mathematics (SIAM).

2009   Most Cited Author Award, Elsevier. (The award was received for the most cited paper published during the years 2005-2008 in the journal *Computer Methods in Applied Mechanics and Engineering*. ("Isogeometric Analysis: CAD, finite elements, NURBS, exact geometry and mesh refinement, " by T.J.R. Hughes, J.A. Cottrell and Y. Bazilevs, Vol. 194, 4135-4195, 2005.)

2009   Elected to the U.S. National Academy of Sciences, April 28, 2009.

2009   Doctorate honoris causa, Norwegian University of Science and Technology, Trondheim, June 3, 2009.

2009   Synergies in Computational Mechanics and Geometry: A Symposium in Honor of Professor Thomas J. R. Hughes's 65th Birthday, USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

2009   Zienkiewicz Lecture, Keynote Plenary Lecture at AfriComp 2009, 1st African Conference on Computational Mechanics, Sun City, South Africa, January 7-11, 2009.

2009   Aziz Lecture, Department of Mathematics, University or Maryland, College Park, October 12, 2009.

2009   World Class University Distinguished Invited Professor, School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, October 17 - November 7, 2009, March 20 - April 3, 2010, July 10-24, 2010.

2010   Special Issue of *Computational Mechanics* celebrating the 65th Birthday of Thomas J.R. Hughes, (edited by A. Masud, Y. Bazilevs and T.E. Tezduyar), Vol. 46, pp. 1-211, June 2010.

2010   One of six new members selected to deliver a Research Briefing to the membership and guests of the National Academy of Sciences at its Annual Meeting in Washington, DC, April 24-27, 2010. I was the representative of Academy Class III, consisting of the Engineering Sciences, Applied Mathematical Sciences, Applied Physical Sciences, and Computer and Information Sciences Sections. Title of presentation, "Patient Specific Modeling and the Predictive Paradigm in Medicine." Presentation at the web address: <http://2010video.nasonline.org.s3.amazonaws.com/2010am-hughes_thomas.html>

2010   Elected Foreign Member of the Austrian Academy of Sciences, April 23, 2010.

2010   Honorary Doctorate, Northwestern University, June 18, 2010.

2010   Invited Plenary Lecture, representing the field of Numerical Analysis, ICM 2010, International Congress of Mathematicians, International Mathematics Union, Hyderabad, India, August 19-27, 2010. (This is the most important event in the field of mathematics every four years and being invited to give a plenary is considered the equivalent of a major award in mathematics.) I was only the second engineer ever to deliver a plenary lecture. Theodore von Karman was the first in 1928. For a list of plenary speakers, see <http://www-groups.dcs.st-and.ac.uk/~history/Societies/ICM.html>.)   Presentation at the web address: <http://player.bitgravity.com/debug/embedcode.php?ap=true&video=http%3A//bitcast-a.bitgravity.com/highbrow/livearchive40009/26aug-9.00to10.00.flv>

2010   World Class University Distinguished Invited Professor, School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, South Korea, September 25-October 23, 2010.

2010   Elected Ordinary Member of the General Council by the Executive Council of the International Association of Computational Mechanics

2011   World Class University Distinguished Invited Professor, School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, South Korea, March 4-20, May 11-20, August 8-26, 2011.

2011   Elected a Foreign Member of the Royal Society, May 19, 2011. Inducted July 15, 2011. Title of New Fellows Lecture: "Patient Specific Modeling and the Predictive Paradigm in Medicine." Audio file of lecture at the web address: <http://downloads.royalsociety.org/audio/misc/new_fellows_2011/Hughes.mp3>

2011   ICES Grand Challenge Award, Institute for Computational Engineering and Sciences, University of Texas, Austin, Fall Semester, 2011.

2011   Winston Chen Distinguished Lecture, Harvard School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, October 19, 2011.

2011   Fowler Distinguished Lecture, Department of Mechanical Engineering, Texas A&M University, College Station, Texas, November 16, 2011.

2011   Joe J. King Professional Engineering Achievement Award, Cockrell School of Engineering, University of Texas, Austin, December 3, 2011.

2012   John A. Blume Distinguished Lecture, Stanford University, Stanford, California, March 1, 2012.

2012   Elsevier Distinguished Lecture in Mechanics, New Jersey Institute of Technology, Newark, New Jersey, April 11, 2012.

2012   World Class University Distinguished Invited Professor, School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, South Korea, March 4-10, May 5-30, August 11-28, 2012.

2012   The Computational Fluid Mechanics Award of the United States Association of Computational Mechanics was renamed the *Thomas J.R. Hughes Medal*.

2012   "Isogeometric Analysis," Charlemagne Distinguished Lecture, Aachen Institute for Advanced Study in Computational Engineering Science, (AICES), RWTH – Aachen University, Aachen, Germany, October 24, 2012.

2013   ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

2013   World Class University Distinguished Invited Professor, School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, South Korea, March 7-22, May 6-26, and August 9-26, 2013.

2013   "Isogeometric Analysis," Raymond D. Mindlin Distinguished Lecture, Department of Civil Engineering and Engineering Mechanics, Davis Auditorium, Shapiro Center, Columbia University, April 25, 2013.

2013   Doctorate Honoris Causa, University of A Coruña, Spain, June 21, 2013.

2013   "Isogeometric Methods: A Symposium Celebrating the 70th Birthday of Professor Thomas J.R. Hughes," USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013. 2013   Elected Fellow, Engineering Mechanics Institute, American Society of Civil Engineers, August 2013.

2013   Fellow, Engineering Mechanics Institute, September 2013.

2013   "Isogeometric Analysis, Phase Field Modeling and Fracture," Ted Belytschko Lecture (inaugural annual lecture honoring Ted Belytschko), Northwestern University, November 25, 2013.

2014   ICES Moncrief Grand Challenge Award, to pursue research in "MRI-based computational modeling of blood flow and nanomedicine deposition in patients with peripheral arterial disease: insights into disease management."

2014   JACM Computational Mechanics Award, "For his distinguished achievements in the field of computational mechanics" from the Japanese Association for Computational Mechanics (JACM) on July 22nd, 2014 at their meeting, which was held during the World Congress on Computational Mechanics in Barcelona, Spain. This is JACM's highest award.

2014   Identified as Thompson-Reuters Highly Cited Researcher 2014 in Computer Science for 2002-2012. One of seven UT Austin Cockrell School of Engineering Faculty to be so identified as Highly Cited Researchers 2014.

2014   Six of Thomas J.R. Hughes's former PhD students named as Highly Cited Researchers 2014 for 2002-2012 by Thompson-Reuters (W.K. Liu, T.E. Tezduyar, Y. Bazilevs, J.A. Cottrell, V. Calo, A. Reali).

2014   "Biomedical Fluid Mechanics and Fluid-structure Interaction," Special Issue of *Computational Mechanics,* published in recognition of "Tom Hughes's contributions and impact in biomedical fluid mechanics and fluid-structure interaction." *Comput Mech* (2014) 54:893, DOI 10.1007/s00466-014-1056-7, published online July 15, 2014.

2014   Elected to the Research Board of the Austrian Academy of Sciences.

2015   Elected to Distinguished Membership in the American Society of Civil Engineers, the highest honor ASCE bestows. http://blogs.asce.org/hughes-elected-to-the-grade-of-asce-distinguished-member/

2015   International Scientific Career Award, Argentinian Association for Computational Mechanics (AMCA). Presented at the PANACM 2015 Conference, Buenos Aires, Argentina, April 28, 2015. https://www.ae.utexas.edu/news/832-hughes-argentinian-award

2014   Wilhelm Exner Medal, Austrian Association für SME (Öesterreichischer Gewerbeverein, OGV), Vienna, Austria, November 18, 2014. https://www.ices.utexas.edu/about/news/342/

2015   Named Peter O'Donnell, Jr. Chair in Computational and Applied Mathematics, ICES, UT.

2015   Billy and Claude R. Hocott Distinguished Centennial Engineering Research Award, Cockrell School of Engineering. The objective of the award is to recognize faculty members who have made significant contributions in advancing the profession of engineering through documented research conducted while affiliated with The University of Texas at Austin. It is important that the recipient's work brought significant credit to the engineering profession and is determined exemplary by the recipient's peers.
http://www.engr.utexas.edu/faculty/awards/6402-hocott

2015   Identified as Thomson-Reuters Highly Cited Researcher 2015 in Computer Science. One of five UT Austin Cockrell School of Engineering Faculty to be so identified as Highly Cited Researchers 2015.
http://www.engr.utexas.edu/news/8021-highlycited2015

2015   Five of Thomas J.R. Hughes's former PhD students named as Highly Cited Researchers 2015 by Thomson-Reuters (T.E. Tezduyar, Y. Bazilevs, J.A. Cottrell, V. Calo, A. Reali).

2015   "Fluid-structure Interaction," Special Issue of *Computational Mechanics,* published in recognition of Tom Hughes's contributions to the broad area of fluid-structure interaction. *Comput Mech* (2015) 55:1057–1058, DOI 10.1007/s00466-015-1162-1.

2016   "Isogeometric Analysis: Present, Past, and Future," Householder Distinguished Seminars, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 8-9, 2016.

2016   Identified as Thomson-Reuters Highly Cited Researcher 2016. "Highly Cited Researchers 2016 represents some of world's most influential scientific minds. About three thousand researchers earned this distinction by writing the greatest number of reports officially designated by Essential Science Indicators as Highly Cited Papers — ranking among the top 1% most cited for their subject field and year of publication, earning them the mark of exceptional impact."

2016   Eight of Thomas J.R. Hughes's former graduate students named as Highly Cited Researchers 2016 by Thomson-Reuters (Y. Bazilevs, J.A. Cottrell, V. Calo, J.A. Evans, M.-C. Hsu, A. Reali, M.A. Scott, T.E. Tezduyar)

2016   Slovak University of Technology Medal, October 3rd, 2016. On the occasion I presented an invited lecture entitled "Patient Specific Computer Modeling and the Predictive Paradigm in Cardiovascular Medicine," Slovak University of Technology, Bratislava, Slovakia, October 3rd, 2016.
http://www.sjf.stuba.sk/docs//docs/aktuality/hughes-1_oznam.pdf

2016   Thomas J.R. Hughes delivered the inaugural Ernst Melan Distinguished Lecture in Engineering Science, Vienna University of Technology, Vienna, Austria, October 5th, 2016.
http://www.imws.tuwien.ac.at/fileadmin/mediapool-
werkstoffe/Diverse/Lehre/Einladung_ErnstMelanLecture_Tom_Hughes_Oct2016.pdf

2016   University Co-op Career Research Excellence Award, Blanton Museum, Hamilton Awards Banquet, University of Texas at Austin, October 25, 2016 https://www.ices.utexas.edu/about/news/434/

2017   Thomas J.R. Hughes presented a Lindbergh Lecture, entitled "Isogeometric Analysis: Past, Present, Future," at the Department of Mechanical Engineering, University of Wisconsin, Madison, February 9th, 2017.

2017   SIAM/ACM Prize in Computational Science and Engineering, SIAM Conference on Computational Science and Engineering, Atlanta, Georgia, March 2, 2017.
https://sinews.siam.org/Details-Page/thomas-j-r-hughes-receives-the-siamacm-prize-in-cse

2017   Southeastern Universities Research Association (SURA) Distinguished Scientist Award, Louisiana State University, Baton Rouge, Louisiana, April 19, 2017
http://www6.sura.org/wp-content/uploads/2014/09/ScientistAward17.pdf

2017   "Isogeometric Analysis: Past, Present, Future," Invited Plenary Lecture, EMI 2017, Engineering Mechanicz Institute Conference, San Diego, June 4-7, 2017.

2017   "Isogeometric Finite Elements," Invited Keynote Plenary Lecture, ECCOMAS Thematic Conference on Modern Finite Element Technologies, Mathematical and Mechanical Aspects (MFET 2017), Physikzentrum, Bad Honnef, Germany, August 21-23, 2017.

2017   Identified as Clarivate Analytics Web of Science (formerly Thomson-Reuters Web of Science) Highly Cited Researcher 2017. "Highly Cited Researchers 2016 represents some of world's most influential scientific minds. About three thousand researchers earned this distinction by writing the greatest number of reports officially designated by Essential Science Indicators as Highly Cited Papers — ranking among the top 1% most cited for their subject field and year of publication, earning them the mark of exceptional impact."

2017   Eight of Thomas J.R. Hughes's former graduate students named as Highly Cited Researchers 2017 by Clarivate Analytics Web of Science (formerly Thomson-Reuters Web of Science). (Y. Bazilevs, J.A. Cottrell, V. Calo, J.A. Evans, M.-C. Hsu, A. Reali, M.A. Scott, T.E. Tezduyar).

2017   Piola Lecture, First Inaugural Piola Lecture, University of Pavia, Pavia, Italy, September 14, 2017.
2017 "Phase Field Modeling of Brittle and Ductile Fracture, Corrosion and Fatigue," (with Chad M. Landis, Michael J. Borden, Deepesh Toshniwal, Amin Anvari, and Isaac Lee), Invited Plenary Lecture, COMPLAS, 2017, Fourteenth International Conference on Computational Plasticity – Fundamentals and Applications, Barcelona, Spain, September 5-7, 2017
2017 "Phase Field Modeling of Brittle and Ductile Fracture, Corrosion and Fatigue," (with Chad M. Landis, Michael J. Borden, Deepesh Toshniwal, Amin Anvari, and Isaac Lee), Invited Plenary Lecture, COMPLAS 2017, Fourteenth International Conference on Computational Plasticity – Fundamentals and Applications, Barcelona, Spain, September 5-7, 2017.
2018 "The Isogeometric Approach to Analysis," Keynote Plenary Lecture, IGAA 2018 – Isogeometric Analysis and Applications, Delft University of Technology, Delft, The Netherlands, April 23-27, 2018.
2018 "The Isogeometric Approach to Analysis," Keynote Plenary Lecture, *Advances in Fluid Structure Interaction, and Flow Simulation, A Conference in Honor of the 75th Birthday of Thomas J.R. Hughes*, Banff Springs, Canada, May 2-4, 2018.
2018 *Advances in Fluid Structure Interaction, and Flow Simulation, A Conference in Honor of the 75th Birthday of Thomas J.R. Hughes*, Banff Springs, Canada, May 2-4, 2018.
2018 "Isogeometric Analysis," Plenary Lecture, International Congress on Applied Mathematics, Hong Kong City University, China, June 3-8, 2018.
2018 "The Isogeometric Approach to Analysis," Keynote Plenary Lecture, LS-DYNA International Conference and User Meeting, Edward Hotel and Conference Center, Dearborn, MI, June 10-12, 2018.
2018 "The Isogeometric Approach to Analysis," Plenary Lecture, ICOSAHOM 2018, International Conference on Spectral and Higher-Order Methods, London, England, July 9-13, 2018.
2018 Honorary Chair, 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 "The Isogeometric Approach to Analysis," Semi-Plenary Lecture, 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 *Thomas J.R. Hughes, Appreciation in Honor of his 75th Birthday,* a book of letters from students and colleagues at a banquet to honor Thomas J.R. Hughes on his 75th Birthday, presented Wednesday, July 25th, at the 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 Symposium in Honor of Thomas J.R. Hughes on his 75th Birthday, 53 presentations at the 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 Isogeometric Methods – A Symposium in Honor of Tom Hughes, 32 presentations at the 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 Stabilized, Multiscale and Multiphysics Methods – A Symposium in Honor of Professor Thomas J.R. Hughes, 9 presentations at the 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.
2018 Plenary Lecture, International Symposium on Isogeometric Analysis and Mesh Generation, (IGA & Mesh 2018), Hi Chance (Dalian) Science & Technology Center, Dalian, China, August 3-5, 2018.
2018 Honorable Chair, International Symposium on Isogeometric Analysis and Mesh Generation, (IGA & Mesh 2018), Hi Chance (Dalian) Science & Technology Center, Dalian, China, August 3-5, 2018.
2018 Alumni Achievement Award, Pratt Institute, Brooklyn, New York, Saturday, September 29, 2018.
2018 Identified as Clarivate Analytics Web of Science (formerly Thomson-Reuters Web of Science) Highly Cited Researcher 2018. "Highly Cited Researchers 2018 represents some of world's most influential scientific minds. About three thousand researchers earned this distinction by writing the greatest number of reports officially designated by Essential Science Indicators as Highly Cited Papers — ranking among the top 1% most cited for their subject field and year of publication, earning them the mark of exceptional impact."
2018 **ASME Medal,** the highest award of the American Society of Mechanical Engineers, presented at the ASME International Mechanical Engineering Congress & Exposition (IMECE), November 9-15, 2018.
2018 "The Isogeometric Approach to Analysis," **Plenary Lecture,** Mechanics of Solids, Structures and Fluids Track, ASME IMECE 2018, The American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition, David L. Lawrence Convention Center, Pittsburgh, Pennsylvania, November 9-15, 2018.

2019 "An Almost Meshless Talk about Mesh-based Isogeometric Analysis," **Keynote Plenary Lecture,** Meshless Methods and Advances in Computational Mechanics – In Celebration of Professor J.S. Chen's 50th Birthday, Pleasanton Marriott Hotel, Pleasanton, California, March 10th–12th, 2019.

2019 "Some Applications of Isogeometric Analysis," **Keynote Plenary Lecture,** Advances in Computational Fluid-Structure Interaction and Flow Simulation – A Conference on New Methods and Challenging Computations (AFSI 2019), Okinawa, Japan, June 24-26, 2019.

2019 "Mathematical Aspects of Isogeometric Analysis and Applications: A Status Report," **Keynote Plenary Lecture,** Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, July 15-20, 2019.

2019 "The Isogeometric Approach to Phase Field Modeling of Fracture," **Invited Keynote Plenary Lecture,** COMPLAS 2019, 15th International Conference on Computational Methods in Plasticity, Barcelona, Spain, September 3-5, 2019.

2019 **O.C. Zienkiewicz Medal,** Polish Association for Computational Mechanics (PACM), Crakow, Poland, September 9th, 2019. "The Medal for foreign scientists, for their particular merit in the development of computational mechanics in Poland."

2019 "The Isogeometric Approach to Analysis," **Invited Keynote Plenary Lecture,** PCM-CMM, 4th Polish Congress on Mechanics, 23rd International Conference on Computer Methods in Mechanics, September 8-12, 2019.

2019 "Isogeometric Analysis: Crossing the Finish Line," **Invited Keynote Plenary Lecture,** IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

2019 "Isogeometric Analysis," Invited Lecture, **Tedari-Callinan Distinguished Lecture,** University of Pennsylvania, Philadelphia, October 1, 2019.

2019 "Stabilized and Variational Multiscale Methods: A brief history of ideas and origins," **Invited Keynote Lecture**, G.I. Taylor Medal Symposium: Variational Multiscale Methods in Mechanics, 56th Annual Meeting of the Society of Engineering Science, Washington University in St. Louis, October 13-15, 2019.

2019 "Isogeometric Analysis," Invited Lecture, **Purdue College of Engineering Distinguished Lecture,** Purdue University, December 5-6, 2019.

2019 Identified as Clarivate Analytics Web of Science (formerly Thomson-Reuters Web of Science) Highly Cited Researcher 2019. "Highly Cited Researchers 2019 represents some of world's most influential scientific minds. About three thousand researchers earned this distinction by writing the greatest number of reports officially designated by Essential Science Indicators as Highly Cited Papers — ranking among the top 1% most cited for their subject field and year of publication, earning them the mark of exceptional impact."

2019 Six of my former graduate students and postdocs identified as Web of Science Highly Cited Researchers 2019 (Y. Bazilevs, J.A. Evans, M.-C. Hsu, G. Sangalli, M.A. Scott).

2019 Thomas J.R. Hughes has been ranked first in Applied Mathematics, and second in Engineering (all fields) in a worldwide citation survey based on data for 6 million scientists in 22 major fields. The rankings, published by the journal PLOS Biology, come from a worldwide citation survey based on data from the abstract and citation database, Scopus. It covers 6 million scientists in 22 major fields and 176 subfields. The survey calculated citations deposited in Mendeley Data between 1996–2017 and ranks and sorts 100,000 scientists by a composite point index. The index excludes self-citations and is filtered by six different weights that take account of the first, last or corresponding author, the number of authors per paper, reciprocal citations, etc., to determine quality, value and impact of research output. In the rankings, Hughes's primary subfield was identified as Applied Mathematics and secondary subfield was identified as Mechanical Engineering. The study can be obtained from the following link:
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000384

2020   "Isogeometric Analysis: Recent Progress and New Directions," **Invited Keynote Plenary Lecture,** Ansys Simulation World Event, Virtual Conference, June 10-11, 2020. (Recorded Zoom lecture.)

2020   "Isogeometric Analysis: Recent Progress and New Directions," **Invited Keynote Plenary Lecture,** VIGA Virtual Isogeometric Analysis conference, August 11-12, 2020. (Recorded Zoom lecture.)

2020   **Announcement of the Thomas J.R. Hughes Travel Fellowship Program of the National Academies** The United States National Committee on Theoretical and Applied Mechanics (USNC/TAM) of the National Academies is proud to announce the establishment of a new travel fellowship program. These fellowships, named the **Thomas J. R. Hughes Travel Fellowships from the USNC/TAM** will provide travel support for doctoral and/or post-doctoral students enrolled at universities in the United States to attend the U.S. National Congress for Theoretical and Applied Mechanics or the International Congress of Theoretical and Applied Mechanics. The intent of such fellowships is to attract and recruit qualified

individuals into the field of mechanical science and engineering and to broaden participation from underrepresented groups. A total of five fellowships will be awarded to each of these meetings; selections will be made by a subcommittee of the USNC/TAM. We plan to send the inaugural class of five **Hughes Fellows** (doctoral and post-doctoral students) to Milan, Italy in August 2020 to present their work at the 25th International Congress of Theoretical and Applied Mechanics. This biennial fellowship program will also support travel fellowships to the US National Congress of Theoretical and Applied Mechanics in 2022 and beyond. A call for applications for the 2020 fellowship program for travel to the ICTAM in Milan, Italy will be issued in January 2020. (This was the original announcement before Covid-19 changed everything.)

2020   **A.C. Eringen Medal,** Society for Engineering Science (SES), 2020. The award is given annually by the Society of Engineering Science (SEC) to recognize sustained outstanding achievements in engineering science. Awarded to Thomas J.R. Hughes "for pioneering development of the finite element method, used world-wide in science, medicine and engineering, and for creating entirely new fields of research including mathematically rigorous stabilized methods, variational multiscale approaches, and isogeometric analysis."

2020   "My 50+ Years in Mechanics and Computation," **Invited Keynote Plenary Lecture (A.C. Eringen Medal Lecture)**, Virtual Technical Meeting, Society of Engineering Science, September 29 to October 1, 2020.

2020   **A.C. Eringen Medal Sympsium,** 15 invited lectures honoring Thomas J.R. Hughes on the occasion of his receiving the 2020 A.C. Eringen Medal, Virtual Technical Meeting, Society of Engineering Science, September 29 to October 1, 2020.

2020   **Oden Institute Moncrief Grand Challenge Faculty Award,** for "Uncovering the Secrets of the Glymphatic System and Implications for Neurodegenerative Disease: A Computational Medicine Approach," Notified April 13, 2020. The award is for the Fall Semester 2020.

2021   "Isogeometric Analysis: Origins, Status, Recent Progress, and Structure Preserving Methods," **Opening Plenary Colloquium,** Colloquia of the Excellence Project, Department of Mathematics, University of Rome, Tor Vergata, April 26th, 2021.

2021   "My 50+ Years in Mechanics and Computation," **Sandia National Laboratories' Center for Computing Research Distinguished Lecture,** Sandia National Laboratories, Albuquerque, NM, January 27, 2021.

2021   Identified as Clarivate Analytics Web of Science (formerly Thomson-Reuters Web of Science) **Highly Cited Researcher 2020**. "Each year the Web of Science Group identifies the world's most influential researchers. The select few who have been most frequently cited by their peers over the last decade. In 2020, fewer than 6,200, or about 0.1%, of the world's researchers, 21 research fields, have earned this exclusive distinction. You are among this elite group recognized for your exceptional research influence, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in *Web of Science*."

2021   Two of my former graduate students and postdocs identified as Web of Science Highly Cited Researchers 2020 (M.-C. Hsu, M.A. Scott).

2021   "Isogeometric Analysis and Mesh Generation, "**Opening Plenary Lecture (virtual), International Meshing Round Table,** June 22nd, 2021.

2021   "Isogeometric Analysis: Mathematical and Engineering Perspectives," **Opening Plenary Lecture (virtual),** "Workshop on the Theory and Application of Isogeometric Analysis," Tianyuan Mathematical Center in Northeast China, Jilin University, Changchun, China, July 20-22, 2021.

2021   Ralph E. Kleinman Prize, Society for Industrial and Applied Mathematics, SIAM Annual Meeting, July 21st, 2021. Awarded every two years, the Ralph E. Kleinman Prize is given to one individual for outstanding research that bridges the gap between mathematics and applications. Work using high-level mathematics and/or the invention of new mathematical tools to solve applied problems from engineering, science, and technology is most sought after from the selection committee. Dr. Hughes was specifically recognized for his "influential and profound contributions to computational science and engineering and their impact on engineering design and simulation, while creating entirely new fields of mathematical research."

2021   Named Honorary Co-Chair of the 16th U.S. National Congress on Computational Mechanics (USNCCM), Chicago, Ill., July 25-19, 2021.

2021   "My 50+ Years in Computational Mechanics," **Plenary Lecture in Celebration of USACM's 30th Anniversary,** 16th US National Congress on Computational Mechanics, Chicago, IL, July 25-29, 2021.

2021   Honorary Member of JACM (Japan Association for Computational Mechanics), July 28, 2021. (One of only two non-Japanese to ever receive this distinction.)

2021   "FEA and IGA in Nonlinear Computational Mechanics," **Invited Plenary Lecture (virtual),** COMPLAS 2021, XVI International Conference on Computational Plasticity – Fundamentals and Applications, Barcelona, Spain, September 7-9, 2021.

2021   "Isogeometric Analysis: Status and Trends," **Opening Plenary Lecture,** VIGA 2020, Virtual International Conference on Isogeometric Analysis, Lyon, France, September 27, 2021.

2021   "Isogeometric Analysis: Motivation, Status and Current Directions," **Opening Keynote Lecture,** High Performance Computing Modernization Program (HPCMP), User Group Meeting (UGM), September 22nd, 2021.

2021   **Identified as Clarivate Analytics Web of Science Highly Cited Researcher 2021.** "Each year the Web of Science Group identifies the world's most influential researchers. The select few who have been most frequently cited by their peers over the last decade. In 2020, fewer than 6,700, or about 0.1%, of the world's researchers, 21 research fields, have earned this exclusive distinction. You are among this elite group recognized for your exceptional research influence, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in *Web of Science*," November 16, 2021.

2022   **William Benter Prize in Applied Mathematics, Liu Bie Ju Centre for Mathematical Sciences, City University of Hong Kong.** From the website: The prize recognizes outstanding mathematical contributions that have had a direct and fundamental impact on scientific, business, finance and engineering applications. It will be awarded to a single person for a single contribution, for a body of related contributions of his/her research, or for his/her lifetime achievement. The Prize recipient will be expected to come to City University Hong Kong to receive his/her award in person and to give a presentation of his/her work. The prize will be given once every two years. The prize amount is US $100,000. The William Benter Prize in Applied Mathematics has been set up by the Liu Bie Ju Centre for Mathematical Sciences at City University of Hong Kong in honor of Mr. William Benter for his dedication and generous support to the enhancement of the University's strength in mathematics. The Liu Bie Ju Centre for Mathematical Sciences was established in 1995 with the aim of conducting first-class research in applied mathematics and in computational mathematics. As a leading research center in the Asia-Pacific region, its basic objective is to strive for excellence in applied mathematical sciences. For more information, visit: https://www.cityu.edu.hk/lbj/

2022   **Monie A. Ferst Award, Sigma Xi, The Scientific Research Honor Society.** Since 1977 this national award has honored science and engineering teachers who have inspired their students to significant research achievements. The award is sponsored by the Georgia Institute of Technology Chapter of Sigma Xi and recognizes those who have made "notable contributions to the motivation and encouragement of research through education." The award consists of a medal and $10,000. An appealing feature is its presentation during a day-long symposium focusing on the achievements of the winner's former students. The Monie A. Ferst Award recipient is selected by a committee made up of Sigma Xi's Southeast Regional Director, a Ferst family member, the current president and immediate-past president of the Georgia Tech Chapter, plus several members-at-large, including previous Ferst Award recipients, based on the nominees' areas of expertise.

2022   "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," **Opening Plenary Lecture,** 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022.

2022   "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," **Distinguished Lecture,** Chinese Association for Computational Mechanics, June 29, 2022 (virtual).

2022   "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," ***The General Lecture (plenary),*** European Solid Mechanics Conference, Galway Ireland, July 7, 2022.

2022   "The Finite Element Method and Computational Mechanics: Past, Present and Future," Plenary Lecture, Monie A. Ferst Award Symposium, Georgia Institute of Technology, October 3, 2022.

2022   "The Finite Element Method, Computational Mechanics, and Isogeometric Analysis: Past, Present and Future," **Opening Plenary Lecture,** IGA 2022, 10th International Conference on Isogeometric Analysis, Banff, Canada, 6-9 November 2022.

2022   **Identified as Clarivate Analytics Web of Science Highly Cited Researcher 2022.** "Each year the Web of Science Group identifies the world's most influential researchers. The select few who have been most frequently cited by their peers over the last decade. In 2022, fewer than 6,700, or about 0.1%, of the world's researchers, 21 research fields, have earned this exclusive distinction. You are among this elite group

recognized for your exceptional research influence, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in Web of Science."

2023   **Elsevier Oden-Hughes Award:**   The journal *Computer Methods in Applied Mechanics and Engineering* has announced an award in honor of J. Tinsley Oden and Thomas J.R. Hughes. The Oden-Hughes Award for Best Paper was established in commemoration of Dr. Oden's retirement from the journal on January 1st of 2022 and Dr. Hughes' retirement on January 1st of 2023. Collectively, Oden and Hughes served for more than 80 years as Editors of *Computer Methods in Applied Mechanics and Engineering* (CMAME). In recognition of their "outstanding contributions to Computational Science and Engineering, as well as to their dedication to CMAME for over 80 collective years," publishing company Elsevier has established and named this $5,000.00 prize for them.

2023   "Computational Modeling of Prostate Cancer," **Opening Keynote Lecture,** Expanding Texas Leadership in Computational Oncology Throughout the Cancer Continuum: A CPRIT Symposium, Dell Medical School, University of Texas at Austin, Austin, Texas, April 20, 2023.

2023   **Elected Fellow of the Asia-Pacific Artificial Intelligence Association**, May 17, 2023.

2023   "The Finite Element Method and Isogeometric Analysis: Mathematical and Engineering Perspectives," **Plenary Lecture,** ICAM 2023, International Conference on Applied Mathematics, City University of Hong Kong, 30 May through 3 June, 2023.

2023   "Isogeometric Analysis, Progress and Opportunity," **Opening Plenary Lecture,** IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21 June, 2023.

2023   **"*Isogeometric Methods – A Symposium in Honor of Thomas J.R. Hughes*"** (MS code: 101; description: https://17.usnccm.org/101) USNCCM17, 17th United States National Congress on Computational Mechanics, Albuquerque, New Mexico, July 23-27, 2023.

2023   "Phase-field Fracture: From the Small to the Large," **Plenary Lecture,** COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023.

2023   "Phase-field Fracture: From the Small to the Large," **Plenary Lecture,** Emerging Topics in Mechanics, a conference celebrating the 60th birthday of Huajian Gao, Houston, Texas, September 13-15, 2023.

2023   **Advances in Computational Mechanics, A Conference Celebrating the 80th Birthday of Thomas J.R. Hughes,** AT&T Conference Center, University of Texas at Austin, October 22-25, 2023. (over 250 attendees) https://oden.utexas.edu/news-and-events/news/ACM-2023-conference-spotlights-thomas-jr-hughes-legacy-and-80th-birthday/

2023   *Frontiers in Computational Fluid-Structure Interaction and Flow Simulation,* **Research from Lead Investigators Under Forty,** (Tayfun E. Tezduyar, Editor), ISSN 2164-3679, Modeling and Simulation in Science, Engineering and Technology, ISBN 978-3-031-36941-4, https://doi.org/10.1007/978-3-031-36942-1, 2023 (580-page book "Dedicated to Thomas J.R. Hughes on his 80th birthday.")

2023   **A Special Issue in Honor of the Lifetime Achievements of T. J. R. Hughes,** (Edited by Manolis Papadrakakis, TarekZohdi), *Computer Methods in Applied Mechanics and Engineering,* Volume 417, Part B, 15 December 2023. (47 papers authored by Tom's former students and postdocs) https://www.sciencedirect.com/journal/computer-methods-in-applied-mechanics-and-engineering/vol/417/part/B

2024   **Thomas J.R. Hughes ranked #2 in the world and #2 in the United States in the field of Mechanical and Aerospace Engineering in the 2024 Edition of the Research.com Ranking of Top Scientists: https://research.com/scientists-rankings/mechanical-and-aerospace-engineering. Also recognized with Research.com Mechanical and Aerospace Engineering Leader Award for 2024.**

2024   "Phase Fields and Computational Mechanics," **Plenary Lecture,** 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, WCCM-PANACM 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada, July 21–26, 2024.

2024   "An Overview of Some Mathematical Results in Isogeometric Analysis," **Opening Plenary Lecture,** AFSI 2024. Advances in Computational Fluid-Structure Interaction and Flow Simulation, A Conference Celebrating the 70th Birthday of Tayfun Tezduar, Sapporo, Japan, August 19th, 2024.

2024   "The Finite Element Method and Isogeometric Analysis: Past, Present, Future" **Laufer Distinguished Lecture,** Aerospace and Mechanical Engineering Department, Viterbi School of Engineering, University of Southern California, August 28, 2024.

PUBLICATIONS:

Refereed Journal Publications

1. "Finite Element Method for Piezoelectric Vibration" (with H. Allik), *International Journal for Numerical Methods in Engineering*, 151-157 (1970).
2. "On the One-Dimensional Theory of Blood Flow in the Larger Vessels" (with J. Lubliner), *Mathematical Bioscience,* Vol. 18, 161-170 (1973).
3. "Reduction Scheme for Some Structural Eigenvalue Problems by a Variational Theorem," *International Journal for Numerical Methods in Engineering*, Vol. 10, 845-852 (1976).
4. "A Finite Element Method for a Class of Contact-Impact Problems" (with R. L. Taylor, J. L. Sackman, A. Curnier, W. Kanoknukulchai), *Computer Methods in Applied Mechanics and Engineering*, Vol. 8, 249-276 (1976).
5. "Stability, Convergence and Growth and Decay of Energy of the Average Acceleration Method in Nonlinear Structural Dynamics," *Computers and Structures*, Vol. 6, 313-324 (1976).
6. "A Reduction Scheme for Problems of Structural Dynamics" (with H. M. Hilber and R.L. Taylor), *International Journal of Solids and Structures*, Vol. 12, 749-767 (1976).
7. "A Note on the Stability of Newmark's Algorithm in Nonlinear Structural Dynamics," *International Journal for Numerical Methods in Engineering,* Vol. 11, 383-386 (1977).
8. "Well-Posed Quasi-Linear Second-Order Hyperbolic Systems with Applications to Nonlinear Elastodynamics and General Relativity" (with T. Kato and J. E. Marsden), *Archive for Rational Mechanics and Analysis*, Vol. 63, 273-294 (1977).
9. "Unconditionally Stable Algorithms for Nonlinear Heat Conduction," *Computer Methods in Applied Mechanics and Engineering,* Vol. 10, 135-139 (1977).
10. "Improved Numerical Dissipation for Time Integration Algorithms in Structural Dynamics" (with H. M. Hilber and R. L. Taylor), *Earthquake Engineering and Structural Dynamics*, Vol. 5, 283-292, 1977.
11. "A Simple and Efficient Finite Element for Plate Bending" (with W. Kanoknukulchai and R. L. Taylor), *International Journal for Numerical Methods in Engineering*, Vol. 11, 1529-1543 (1977).
12. "Some Applications of Geometry in Continuum Mechanics" (with J. E. Marsden), *Reports on Mathematical Physics*, Vol. 12, 35-44 (1977).
13. "Equivalence of Finite Elements for Nearly Incompressible Elasticity," *Journal of Applied Mechanics*, Vol. 99, 181-183 (1977).
14. "Classical Elastodynamics as a Linear Symmetric Hyperbolic System" (with J. E. Marsden), *Journal of Elasticity*, Vol. 8, 97-110 (1978).
15. "Collocation, Dissipation and 'Overshoot' for Time Integration Schemes in Structural Dynamics" (with H. M. Hilber), *Earthquake Engineering and Structural Dynamics*, Vol. 6, 99-118 (1978).
16. "Finite Element Methods for Nonlinear Elastodynamics Which Conserve Energy" (with T. K. Caughey and W. K. Liu), *Journal of Applied Mechanics*, Vol. 45, 366-370 (1978).
17. "Implicit-Explicit Finite Elements in Transient Analysis: Stability Theory" (with W. K. Liu), *Journal of Applied Mechanics*, Vol. 45, 371-374 (1978).
18. "Implicit-Explicit Finite Elements in Transient Analysis: Implementation and Numerical Examples" (with W. K. Liu), *Journal of Applied Mechanics*, Vol. 45, 375-378 (1978).
19. "Mixed Finite Element Methods -- Reduced and Selective Integrations Techniques: A Unification of Concepts" (with D. S. Malkus), *Computer Methods in Applied Mechanics and Engineering*, Vol. 15, 63-81 (1978).
20. "Product Formulas and Numerical Algorithms" (with A. J. Chorin, M. F. McCracken and J. Marsden), *Communications on Pure and Applied Mathematics*, Vol. 31, 205-256 (1978).
21. "Reduced and Selective Integration Techniques in the Finite Element Analysis of Plates" (with M. Cohen and M. Haroun), *Nuclear Engineering and Design*, Vol. 46, 203-222 (1978).
22. "A Simple Scheme for Developing 'Upwind' Finite Elements," *International Journal for Numerical Methods in Engineering*, Vol. 12, 1359-1365 (1978).
23. "Unconditionally Stable Algorithms for Quasi-Static Elasto/Visco-Plastic Finite Element Analysis" (with R. L. Taylor), *Computers and Structures*, Vol. 8, 169-173 (1978).
24. "Consistent Linearization in Mechanics of Solids and Structures" (with K. S. Pister), *Computers and Structures*, Vol. 8, 391-397 (1978).

25. "The 'Heterosis' Finite Element for Plate Bending" (with M. Cohen), *Computers and Structures*, Vol. 9, 445-450 (1978).
26. "Implicit-Explicit Finite Elements in Nonlinear Transient Analysis" (with K. S. Pister and R. L. Taylor), *Computer Methods in Applied Mechanics and Engineering*, Vol. 17/18, Part 1, 159-182 (1979).
27. "Review of Finite Element Analysis of Incompressible Viscous Flows by the Penalty Function Formulation" (with W. K. Liu and A. Brooks), *Journal of Computational Physics*, Vol. 30, 1-60 (1979).
28. "Lagrangian-Eulerian Finite Element Formulation for Incompressible Viscous Flows" (with T. Zimmermann and W. K. Liu), *Computer Methods in Applied Mechanics and Engineering*, Vol. 29, 329-349 (1981).
29. "Analysis of Gravity Offshore Structure Foundations" (with J. H. Prevost and M. F. Cohen), *Journal of Petroleum Engineering*, SPE, pp. 199-209, February 1980.
30. "Techniques for Developing 'Special' Finite Element Shape Functions with Particular Reference to Singularities" (with J. E. Akin), *International Journal for Numerical Methods in Engineering*, Vol. 15, 733-751 (1980).
31. "Convergence of Implicit-Explicit Algorithms in Nonlinear Transient Analysis" (with R. A. Stephenson), *International Journal of Engineering Science*, Vol. 19,295-302 (1981).
32. "Offshore Gravity Structures: Analysis" (with J. H. Prevost, B. Cuny and R. F. Scott), *Journal of Geotechnical Engineering Division*, Vol. 107, 143-165, February 1981.
33. "Recent Developments in Computer Methods for Structural Analysis," *Nuclear Engineering & Design*, Vol. 57, No. 2, 427-439 (1980).
34. "A Large Deformation Formulation for Shell Analysis by the Finite Element Method" (with W. Kanoknukulchai and R. L. Taylor), *Computers and Structures*, Vol. 13, 19-30 (1981).
35. "Some Current Trends in Finite Element Research," *Applied Mechanics Reviews*, Vol. 33, No. 11, 1467-1477 (1980).
36. "Finite Rotation Effects in Numerical Integration of Rate Constitutive Equations Arising in Large-Deformation Analysis" (with J. Winget), *International Journal for Numerical Methods in Engineering*, Vol. 15, 1862-1867 (1980).
37. "Nonlinear Finite Element Analysis of Shells: Part I - Three-Dimensional Shells" (with W. K. Liu), *Computer Methods in Applied Mechanics and Engineering*, Vol. 26, 331-362 (1981).
38. "Nonlinear Finite Element Analysis of Shells: Part II - Two-Dimensional Shells" (with W. K. Liu), *Computer Methods in Applied Mechanics and Engineering*, Vol. 27, 167-181 (1981).
39. "Generalization of Selective Integration Techniques to Nonlinear and Anisotropic Media," *International Journal for Numerical Methods in Engineering*, Vol. 15, No. 9, 1413-1418 (1980).
40. "Finite Element Solution of Elastic-Plastic Boundary Value Problems" (with J. H. Prevost), *Journal of Applied Mechanics*, Vol. 48, 69-74, March 1981.
41. "Finite Elements Based Upon Mindlin Plate Theory with Particular Reference to the Four-Node Bilinear Isoparametric Element" (with T. E. Tezduyar), *Journal of Applied Mechanics*, 587-596, September 1981.
42. "Streamline Upwind/Petrov-Galerkin Formulation for Convection Dominated Flows with Particular Emphasis on the Incompressible Navier-Stokes Equations," (with A. N. Brooks), *Computer Methods in Applied Mechanics and Engineering*, Vol. 32, 199-259 (1982).
43. "Nonlinear Finite Element Shell Formulation Accounting for Large Membrane Strains" (with E. Carnoy), *Computer Methods in Applied Mechanics and Engineering*, Vol. 39, 69-82 (1983).
44. "Unconditionally Stable Element-by-Element Implicit Algorithms for Heat Conduction Analysis" (with I. Levit and J. Winget), *Journal of Engineering Mechanics*, ASCE, Vol. 109, No. 2, 576-585, April 1983.
45. "A Profile Solver for Specially Structured Symmetric-Unsymmetric Equation Systems" (with J. Winget), *Advances in Engineering Software*, Vol. 4, No. 2, 64-67 (1982).
46. "Finite Element Analysis of the Secondary Buckling of a Flat Plate Under Axial Compression" (with E. G. Carnoy), *International Journal of Nonlinear Mechanics,* Vol. 36, No. 2, 241-254, 1983.
47. "An Element-by-Element Solution Algorithm for Problems of Structural and Solid Mechanics" (with I. Levit and J. Winget), *Computer Methods in Applied Mechanics and Engineering*, Vol. 36, 241-254, 1983.
48. "An Improved Treatment of Transverse Shear in the Mindlin Type Four-Node Quadrilateral Element" (with A. Tessler), *Computer Methods in Applied Mechanics and Engineering*, Vol. 39, 311-335 (1983).
49. "A Precis of Developments in Computational Methods for Transient Analysis," (with T. Belytschko), 50th Anniversary Issue of the *Journal of Applied Mechanics*, 1033-1041, December 1983.
50. "Analysis of Some Fully-Discrete Algorithms for the One-Dimensional Heat Equation" (with T. E. Tezduyar), *International Journal for Numerical Methods in Engineering*, Vol. 21, 163-168 (1985).

51. "Stability and Accuracy Analysis of Some Fully-Discrete Algorithms for the One-Dimensional Second-Order Wave Equation" (with T. E. Tezduyar), *Computers and Structures*, Vol. 19, No. 4, 665-668 (1984).
52. "Finite Element Methods for First-Order Hyperbolic Systems with Particular Emphasis on the Compressible Euler Equations" (with T. E. Tezduyar), *Computer Methods in Applied Mechanics and Engineering*, Vol. 45, 217-284 (1984).
53. "Solution Algorithms for Nonlinear Transient Heat Conduction Analysis Employing Element-by-Element Iterative Strategies" (with J. M. Winget), *Computer Methods in Applied Mechanics and Engineering*, Vol. 52, 711-815 (1985).
54. "A Three-Node Mindlin Plate Element with Improved Transverse Shear" (with A. Tessler), *Computer Methods in Applied Mechanics and Engineering*, Vol. 50, 71-101 (1985).
55. "On the Variational Foundations of Assumed Strain Methods" (with J. Simo), *Journal of Applied Mechanics*, Vol. 53, 51-54, March 1986.
56. "A Petrov-Galerkin Finite Element Method for Convection Dominated Flows: An Accurate Upwinding Technique for Satisfying the Maximum Principle" (with A. Mizukami), *Computer Methods in Applied Mechanics and Engineering*, Vol. 50, 181-193 (1985).
57. "Element-by-Element and Global Preconditioners: A Survey" (with A. Muller), *Metodos Numericos para Calculo y Diseno en Ingenena,* Vol. 2, No. 1, 27-41 (1986).
58. "An Error Analysis of Truncated Starting Conditions in Step-by-Step Time Integration: Consequences for Structural Dynamics" (with G. M. Hulbert), *Earthquake Engineering and Structural Dynamics*, Vol. 15, 901-910 (1987).
59. "A New Finite Element Formulation for Computational Fluid Dynamics: I. Symmetric Forms of the Compressible Euler and Navier-Stokes Equations and the Second Law of Thermodynamics" (with L. Franca and M. Mallet), *Computer Methods in Applied Mechanics and Engineering*, Vol. 54, No. 2, 223-234 (1986).
60. "A New Finite Element Formulation for Computational Fluid Dynamics: II. Beyond SUPG" (with M. Mallet and A. Mizukami), *Computer Methods in Applied Mechanics and Engineering*, Vol. 54, No. 3, 341-355 (1986).
61. "Convergence of an Element-Partitioned Subcycling Algorithm for the Semi-Discrete Heat Equation" (with T. Belytschko and W. K. Liu), *Numerical Methods for Partial Differential Equations*, Vol. 3, 131-137 (1987).
62. "Pseudo-corner Theory: A Simple Enhancement of J2-flow Theory for Applications Involving Non-Proportional Loading" (with F. Shakib), *Engineering Computations*, Vol. 3, No. 2, June 1986.
63. "A New Finite Element Formulation for Computational Fluid Dynamics: V. Circumventing the Babuska-Brezzi Condition: A Stable Petrov-Galerkin Formulation of the Stokes Problem Accommodating Equal-order Interpolations" (with L. Franca and M. Balestra), *Computer Methods in Applied Mechanics and Engineering*, Vol. 59, pp 85-99 (1986).
64. "A New Finite Element Formulation for Computational Fluid Dynamics: III. The Generalized Streamline Operator for Multidimensional Advective-Diffusive Systems" (with M. Mallet), *Computer Methods in Applied Mechanics and Engineering*, Vol. 58, pp 305-328 (1986).
65. "A New Finite Element Formulation for Computational Fluid Dynamics: IV. A Discontinuity Capturing Operator for Multidimensional Advective-Diffusive Systems" (with M. Mallet), *Computer Methods in Applied Mechanics and Engineering*, Vol. 58, pp 329-336 (1986).
66. "Discussion of A Numerical Study of Localized Deformation in Bi-Crystals," by J. LeMonds, R. J. Asaro and A. Needleman," *Mechanics of Materials*, Vol. 4, 437-438 (1986).
67. "Petrov-Galerkin Formulations of the Timoshenko Beam Problem" (with A. F. D. Loula and L. P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 63, 115-132 (1987).
68. "Mixed Petrov-Galerkin Methods for the Timoshenko Beam Problem" (with A. F. D. Loula, L. P. Franca and I. Miranda), *Computer Methods in Applied Mechanics and Engineering*, Vol. 63, 133-154 (1987).
69. "A New Family of Stable Elements for Nearly Incompressible Elasticity Based on a Mixed Petrov-Galerkin Finite Element Formulation" (with L. P. Franca, A. F. D. Loula and I. Miranda) *Numerische Mathematik*, Vol. 53, 123-141 (1988).
70. "Stability, Convergence and Accuracy of a New Finite Element Method for the Circular Arch Problem" (with A. F. D. Loula, L. P. Franca and I. Miranda), *Computer Methods in Applied Mechanics and Engineering*, Vol. 63, 281-303 (1987).
71. "A New Finite Element Formulation for Computational Fluid Dynamics: VI Convergence Analysis of the Generalized SUPG Formulation for Linear Time-Dependent Multidimensional Advective-Diffusive Systems" (with L. P. Franca and M. Mallet), *Computer Methods in Applied Mechanics and Engineering*, Vol. 63, 97-112 (1987).

72. "Recent Progress in the Development and Understanding of SUPG Methods with Special Reference to the Compressible Euler and Navier-Stokes Equations," *International Journal for Numerical Methods in Fluids*, Vol. 7, 1261-1275, 1987.

73. "A New Finite Element Formulation for Computational Fluid Dynamics: VII. The Stokes Problem with Various Well-Posed Boundary Conditions: Symmetric Formulations that Converge for all Velocity/Pressure Spaces" (with L.P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 65, 85-96 (1987).

74. "Convergence of Transverse Shear Stresses in the Finite Element Analysis of Plates" (with L. P. Franca), *Communications in Applied Numerical Methods*, Vol. 4, 185-187 (1988).

75. "Space-Time Finite Element Methods for Elastodynamics: Formulations and Error Estimates" (with G.M. Hulbert), *Computer Methods in Applied Mechanics and Engineering*, Vol. 66, 339-363 (1987).

76. "A Mixed Finite Element Formulation for Reissner-Mindlin Plate Theory: Uniform Convergence of all Higher-order Spaces" (with L. P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 67, 223-240 (1988).

77. "An Improved Implicit-Explicit Time Integration Method for Structural Dynamics" (with I. Miranda and R. M. Ferencz), *Earthquake Engineering and Structural Dynamics*, Vol. 18, 643-653 (1989).

78. "Two Classes of Mixed Finite Element Methods" (with L.P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 69, 89-129 (1988).

79. "A New Finite Element Formulation for Computational Fluid Dynamics: VIII. The Galerkin/Least-Squares Method for Advective-Diffusive Equations" (with L.P. Franca and G.M. Hulbert), *Computer Methods in Applied Mechanics and Engineering*, Vol. 73, 173-189 (1989).

80. "On Drilling Degrees-of-Freedom" (with F. Brezzi), *Computer Methods in Applied Mechanics and Engineering*, Vol. 72, 105-121 (1989).

81. "On Mixed Finite Element Methods for Axisymmetric Shell Analysis" (with A.F.D. Louki, I. Miranda and L.P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 72, 201-231 (1989).

82. "A Multi-element Group Preconditioned GMRES Algorithm for Nonsymmetric Systems Arising in Finite Element Analysis" (with F. Shakib and Z. Johan), *Computer Methods in Applied Mechanics and Engineering*, Vol. 75, 415-456 (1989).

83. "Extended Comparison of the Hilber-Hughes-Taylor Alpha Method and the Theta-1 Method" (with C. Hoff, G. Hulbert and P. J. Pahl), *Computer Methods in Applied Mechanics and Engineering*, Vol. 76, 87-93 (1989).

84. "New Directions in Computational Mechanics," *Nuclear Engineering and Design*, Vol. 114, 197-210 (1989).

85. "Symmetrization of Conservation Laws with Entropy for High-temperature Hypersonic Computations" (with F. Chalot and F. Shakib), *Computing Systems in Engineering*, Vol. 1, 495-521 (1990).

86. "Design and Analysis of Finite Element Methods for the Helmholtz Equation in Exterior Domains" (with I. Harari), *Applied Mechanics Reviews*, Vol. 43(5), 2, 366-373, ASME (1990).

87. "Space-Time Finite Element Methods for Second-Order Hyperbolic Equations" (with G.M. Hulbert), *Computer Methods in Applied Mechanics and Engineering*, Vol. 84, 327-348 (1990).

88. "A New Finite Element Formulation for Computational Fluid Dynamics: X. The Compressible Euler and Navier-Stokes Equations" (with Z. Johan and F. Shakib), *Computer Methods in Applied Mechanics and Engineering*, Vol. 89, 141-219 (1991).

89. "A Globally Convergent Matrix-Free Algorithm for Implicit Time-Marching Schemes Arising in Finite Element Analysis in Fluids" (with Z. Johan and F. Shakib), *Computer Methods in Applied Mechanics and Engineering*, Vol. 87, 281-304 (1991).

90. "The Finite Element Method with Lagrange Multipliers on the Boundary: Circumventing the Babuska-Brezzi Condition" (with H.J.C. Barbosa), *Computer Methods in Applied Mechanics and Engineering*, Vol. 85, 109-128 (1991).

91. "A New Finite Element Formulation for Computational Fluid Dynamics: IX. Fourier Analysis of Space-Time Galerkin/Least-Squares Algorithms" (with F. Shakib), *Computer Methods in Applied Mechanics and Engineering*, Vol. 87, 35-58 (1991).

92. "Finite Element Methods for the Helmholtz Equation in an Exterior Domain: Model Problems" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 87, 59-96 (1991).

93. "Galerkin/Least-Squares Finite Element Methods for the Reduced Wave Equation with Non-reflecting Boundary Conditions in Unbounded Domains" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 98, 411-454 (1992).

94. "Circumventing the Babuska-Brezzi Condition in Mixed Finite Element Approximations of Elliptic Variational Inequalities" (with H.J.C. Barbosa), *Computer Methods in Applied Mechanics and Engineering*, Vol. 95, 277-288

(1992).

95. "Formulations of Finite Elasticity with Independent Rotations" (with J.C. Simo and D.D. Fox), *Computer Methods in Applied Mechanics and Engineering*, Vol. 95, 277-288 (1992).

96. "Stabilized Finite Element Methods: I. Application to the Advective-diffusive Model" (with L.P. Franca and S.L. Frey), *Computer Methods in Applied Mechanics and Engineering*, Vol. 95, 253-276 (1992).

97. "An Arbitrary Lagrangian-Eulerian Finite Element Method for Interaction of Fluid and a Rigid Body" (with T. Nomura), *Computer Methods in Applied Mechanics and Engineering*, Vol. 95, 115-138 (1992).

98. "What are C and h?: Inequalities for the Analysis and Design of Finite Element Methods" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 97, 157-192 (1992).

99. "A Cost Comparison of Boundary Element and Finite Element Methods for Problems of Time-harmonic Acoustics" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 97, 77-102 (1992).

100. "Analysis of Continuous Formulations Underlying the Computation of Time-Harmonic Acoustics in Exterior Domains" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 97, 103-124 (1992).

101. "A Data Parallel Finite Element Method for Computational Fluid Dynamics on the Connection Machine System" (with Z. Johan, K.K. Mathur and S.L. Johnsson), *Computer Methods in Applied Mechanics and Engineering*, Vol. 99, 113-134 (1992).

102. "Finite Element Methods in Wind Engineering" (with K. Jansen), *Journal for Wind Engineering*, Vol. 52, 32-48 (1992).

103. "Convergence Analyses of Galerkin/Least-Squares Methods for Symmetric Advective-diffusive Forms of the Stokes and Incompressible Navier-Stokes Equations" (with L.P. Franca), *Computer Methods in Applied Mechanics and Engineering*, Vol. 105, 285-298 (1993).

104. "Dynamic Analysis and Drilling Degrees of Freedom" (with I. Harari and A. Masud), *International Journal for Numerical Methods in Engineering*, Vol. 38, 3193-3210 (1995).

105. "Numerical Assessment of Some Membrane Elements With Drilling Degrees of Freedom" (with I. Harari and A. Masud), *Computers and Structures*, Vol. 55, 297-314 (1995).

106. "A Boundary Integral Modification of the Galerkin Least Squares Formulation for the Stokes Problem" (with J. J. Droux), *Computer Methods in Applied Mechanics and Engineering*, Vol. 113, 173-182 (1994).

107. "A Unified Approach to Compressible and Incompressible Flows" (with G. Hauke), *Computer Methods in Applied Mechanics and Engineering,* Vol. 113, 389-395 (1994).

108. "Boundary Lagrange Multipliers in Finite Element Methods: Error Analysis in Natural Norms" (with H.J.C. Barbosa), *Numerische Mathematik*, Vol. 62, 1-15 (1992).

109. "Implementation of a One-Equation Turbulence Model Within a Stabilized Finite Element Formulation of a Symmetric Advective-diffusive System" (with K. Jansen and Z. Johan), *Computer Methods in Applied Mechanics and Engineering*, Vol. 105, 405-433 (1993).

110. "A Consistent Equilibrium Chemistry Algorithm for Hypersonic Flows" (with F. Chalot), *Computer Methods in Applied Mechanics and Engineering*, Vol. 112, 25-40 (1994).

111. "A Matrix-Free Implicit Iterative Solver for Compressible Flow Problems" (with Z. Johan and F. Shakib), *Rend. Sem. Mat. Univers. Politecn., Torino, Fascicolo Special (1991) Numerical Methods.*

112. "An Efficient Communication Strategy for Finite Element Methods on the Connection Machine CM-5 System" (with Z. Johan, K. K. Mathur, and S. L. Johnsson), *Computer Methods in Applied Mechanics and Engineering*, Vol. 113, 363-387 (1994).

113. "Stabilized Finite Element Methods for Steady Advection-diffusion with Production" (with I. Harari), *Computer Methods in Applied Mechanics and Engineering*, Vol. 115, 165-191 (1994).

114. "Studies of Domain-based Formulations for Computing Exterior Problems of Acoustics" (with I. Harari), *International Journal for Numerical Methods in Engineering*, Vol. 37, 2935-2950 (1994).

115. "A Stabilized Finite Element Formulation for the Reynolds-averaged Navier-Stokes Equations" (with K. Jansen), *Surveys in Mathematics for Industry*, Vol. 4, 279-317 (1995).

116. "Scalability of Finite Element Applications on Distributed Memory Parallel Computers" (with Z. Johan, K. K. Mathur and S.L. Johnsson), *Computer Methods in Applied Mechanics and Engineering*, Vol. 119, 61-72 (1994).

117. "A Comparative Study of Different Sets of Variables for Solving Compressible and Incompressible Flows" (with G. Hauke), *Computer Methods in Applied Mechanics and Engineering*, Vol. 153, 1-44 (1998).

118. "A Space-Time Galerkin/Least-Squares Formulation of the Navier Stokes Equations for Moving Domain Problems" (with Arif Masud), *Computer Methods in Applied Mechanics and Engineering*, Vol. 146, 91-126 (1997).

119. "An A Posteriori Error Estimator and hp-Adaptive Strategy for Finite Element Discretizations of the

Helmholtz Equation in Exterior Domains" (with J. Stewart), *Finite Element Analysis and Design*, Vol. 25, 1-26 (1997).

120. "h-Adaptive Finite Element Computations of Time-Harmonic Exterior Acoustics Problems in Two Dimensions" (with J. Stewart), *Computer Methods in Applied Mechanics and Engineering*, Vol. 146, 65-89 (1997).

121. "A Case Study in Parallel Computation: Viscous Flow Around an ONERA M6 Wing" (with Z. Johan, K. Mathur and L. Johnsson), *International Journal for Numerical Methods in Fluids*, Vol. 21, 877-884 (1995).

122. "Computational Investigations in Vascular Disease" (with C.A. Taylor and C.K. Zarins), *Computers in Physics*, Vol. 10, No. 3, 224-232, May/June (1996).

123. "Recent Developments in Finite Element Methods for Structural Acoustics" (with I. Harari, K. Grosh, M. Malhotra, P.M. Pinsky, J.R. Stewart and L.L. Thompson), *Archives of Computational Methods in Engineering*, Vol. 3, 131-309 (1996).

124. "Explicit Residual-based A Posteriori Error Estimation for Finite Element Discretizations of the Helmholtz Equation: Computation of the Constant and New Measures of Error Estimator Quality" (with J. Stewart), *Computer Methods in Applied Mechanics and Engineering*, Vol. 131, 335-363 (1996).

125. "A Posteriori Error Estimation and Adaptive Finite Element Computation of the Helmholtz Equation in Exterior Domains" (with J. Stewart), *Finite Element Analysis and Design*, Vol. 22, 15-24 (1996).

126. "Multiscale Phenomena: Green's Functions, the Dirichlet-to-Neumann Formulation, Subgrid Scale Models, Bubbles, and the Origins of Stabilized Methods," *Computer Methods in Applied Mechanics and Engineering*, Vol. 127, 387-401 (1995).

127. "A Space-time Formulation of Multiscale Phenomena" (with J. Stewart), *Journal of Computational and Applied Mathematics,* Vol. 74, 217-229 (1996).

128. "b = int g" (with F. Brezzi, L.P. Franca and A. Russo), *Computer Methods in Applied Mechanics and Engineering*, Vol. 145, 329-339 (1997).

129. "Consistent Finite Element Calculations of Boundary and Internal Fluxes" (with M. Oshima and K. Jansen), *International Journal for Numerical Methods in Fluids*, Vol. 9, 227-235 (1998).

130. "High Performance Parallel Computing in Industry" (with M. Eldredge, R. M. Ferencz, S. Rifai, A. Raefsky and B. Herndon), *Parallel Computing*, Vol. 23, 1217-1233 (1997).

131. "Finite Element Modeling of Blood Flow in Arteries" (with C.A. Taylor and C.K. Zarins) *Computer Methods in Applied Mechanics and Engineering*, Vol. 158, 155-196 (1998).

132. "A Study of Strain Localization in a Multiple Scale Framework: The One-dimensional Problem" (with K. Garikipati), *Computer Methods in Applied Mechanics and Engineering*, Vol. 159, 193-222 (1998).

133. "A Tutorial in Elementary Finite Element Error Analysis: A Systematic Presentation of A Priori and A Posteriori Estimates" (with J. Stewart), *Computer Methods in Applied Mechanics and Engineering*, Vol. 158, 1-22 (1998).

134. "Finite Element Modeling of Three-dimensional Pulsatile Flow in an Idealized Abdominal Aorta: Relevance to Atherosclerosis" (with C.A. Taylor, D. Parker and C.K. Zarins), *Annals of Biomedical Engineering*, Vol. 26, No. 6, 975-987, November 1998.

135. "The Variational Multiscale Method: A Paradigm for Computational Mechanics" (with G. Feijoo, L. Mazzei and J.-B. Quincy), *Computer Methods in Applied Mechanics and Engineering*, Vol. 166, 3-24 (1998).

136. "Embedding a Micromechanical Law in the Continuum Formulation: A Multiscale Approach Applied to Discontinuous Solutions" (with K. Garikipati), *International Journal for Computational Civil and Structural Engineering*, Vol. 1, 64-78 (2000).

137. "Multiphysics Simulation of Flow-induced Vibrations and Aeroelasticity on Parallel Computing Platforms" (with S.M. Rifai, Z. Johan, W.-P. Wang and R.M. Ferencz), *Computer Methods in Applied Mechanics and Engineering*, Vol. 174, 393-417 (1999).

138. "A Variational Multiscale Approach to Strain Localization — Formulation for Multidimensional Problems" (with K. Garikipati), *Computer Methods in Applied Mechanics and Engineering*, Vol. 188, 39-60 (2000).

139. "Effect of Exercise on Hemodynamic Conditions in the Abdomininal Aorta" (with C.A. Taylor and C.K. Zarins), *Journal of Vascular Surgery*, Vol. 29, 1077-1089 (1999).

140. "Automotive Design Applications of Fluid Flow Simulation on Parallel Computing Platforms" (with S.M. Rifai, J.C. Buell and Z. Johan), *Computer Methods in Applied Mechanics and Engineering*, Vol. 184, 449-466 (2000).

141. "A Priori Error Analysis of a Finite Element Method with Residual-free Bubbles for Advecction Dominated Problems" (with F. Brezzi, D. Marini, A. Russo and E. Suli), *SIAM Journal of Numerical Analysis*, Vol. 36, 1933-1948, October 27, 1999.

142. "Computational Procedures for Determining Structural Acoustic Response Due to Hydrodynamic Sources" (with A.A. Oberai and F. Roknaldin), *Computer Methods in Applied Mechanics and Engineering*, Vol. 190, 345-361 (2000).

143. "Large Eddy Simulation and the Variational Multiscale Method" (with L. Mazzei and K. Jansen), *Computing and Vizualization in Science,* Vol. 3, No.1/2, 47-59 (2000).

144. "The Continuous Galerkin Method is Locally Conservative" (with G. Engel, L. Mazzei and M. Larson*), Journal of Computational Physics,* Vol. 163 (2), 467-488, September 20, 2000.

145. "On Modelling Thermal Oxidation of Silicon I: Theory" (with V.S. Rao), *International Journal for Numerical Methods in Engineering*, Vol. 47, 341-358 (2000).

146. "On Modelling Thermal Oxidation of Silicon II: Numerical Aspects" (with V.S. Rao and K. Garikipati), *International Journal for Numerical Methods in Engineering*, Vol. 47, 359-377 (2000).

147. "The Multiscale Formulation of Large Eddy Simulation: Decay of Homogeneous Isotropic Turbulence" (with L. Mazzei, A.A. Oberai and A. Wray), *Physics of Fluids*, Vol. 13, No. 2, 505-512 (2001).

148. "Large Eddy Simulation of Turbulent Channel Flows by the Variational Multiscale Method" (with A.A. Oberai and L. Mazzei), *Physics of Fluids*, Vol. 13, No. 6, 1784-1799 (2001).

149. "Variational Approximation of Flux in Conforming Finite Element Methods for Elliptic Partial Differential Equations: A Model Problem" (with F. Brezzi and E. Suli), *Atti dell'Accademia Nazionale dei Lincei,* s. 9, Vol. 12, 167-183 (2001).

150. "A One-dimensional Finite Element Method for Simulation-based Medical Planning for Cardiovascular Disease) (with J. Wan, B. Steele, S.A. Spicer, S. Strohband, G.R. Feijoo, and C.A. Taylor), *Computer Methods in Biomechanics and Biomedical Engineering*, Vol. 5(3), 195-206 (2002).

151. A Stabilized Mixed Finite Element Method for Darcy Flow" (with A. Masud) *Computer Methods in Applied Mechanics and Engineering*, Vol. 191, 4341-4370 (2002).

152. "Computation of Trailing-edge Noise due to Turbulent Flow over an Airfoil (with A.A. Oberai and F. Roknaldin), *AIAA Journal*, 40(11), 2206-2216 (2002).

153. "Quantification of Vessel Wall Cyclic Strain Using Cine Phase Contrast Magnetic Resonant Imaging" (with M.T. Draney, R.J. Herfkens, N.J. Pelc, C.K. Zarins, and C.A. Taylor), *Annals of Biomedical Engineering*, Vol. 30, No. 8, 1033-1045 (2002).

154. "Continuous/Discontinuous Finite Element Approximations of Fourth-order Elliptic Problems in Structural and Continuum Mechanics with Applications to Thin Beams and Plates, and Strain Gradient Elasticity" (with G. Engel, K. Garikipati, M.G. Larson, L. Mazzei, and R.L. Taylor), *Computer Methods in Applied Mechanics and Engineering*, Vol. 191, No. 34, 3669-3750 (2002).

155. "Calculation of Shear Stress in the Fourier-Galerkin Formulation of Turbulent Channel Flows: Projection, the Dirichlet Filter and Conservation" (with A.A. Oberai), *Journal of Computational Physics*, Vol. 188, 281-295 (2003).

156. "In vivo Validation of a One-dimensional Finite Element Method for Predicting Blood Flow in Cardiovascular Bypass Grafts" (with B.N. Steele, J. Wan, J.P. Ku, and C.A. Taylor), *IEEE Transactions on Biomedical Engineering,* Vol. 50, No. 6, 649-656 (2003).

157. "Research Directions in Computational Mechanics," (with I. Babuska, T. Belytschko and J. T. Oden), *Computer Methods in Applied Mechanics and Engineering*, Vol. 192, 913-922 (2003).

158. "Sensitivity of the Scale Partition for Variational Multiscale LES of Channel Flow" (with J. Holmen, A.A. Oberai and G.N. Wells), *Physics of Fluids*, Vol. 16, No. 3, pp. 824-827, 2004.

159. "Energy Transfers and Spectral Eddy Viscosity in Large Eddy Simulation of Homogeneous Isotropic Turbulence: Comparison of Dynamic Smagorinsky and Multiscale Models over a Range of Discretizations," (with G.N. Wells and A.A. Wray) *Physics of Fluids,* Vol. 16, No. 11, pp. 4044-4052, 2004.

160. "Mixed Discontinuous Galerkin Methods for Darcy Flow," (with F. Brezzi, L. D. Martini and A. Masud), *SIAM Journal of Scientific Computing,* Vol. 22, No. 1, pp. 119-145, 2005.

161. "Conservation Properties for the Galerkin and Stabilized Forms of the Advection Diffusion and Incompressible Navier-Stokes Equations," (with G. N. Wells), *Computer Methods in Applied Mechanics and Engineering*, Vol. 194, pp. 1141-1159, 2005.

162. "In Memorium: Professor John H. Argyris – 19 August 1913 to 2 April 2004," (with J.T. Oden and M. Papadrakakis), *Computer Methods in Applied Mechanics and Engineering*, Vol. 193, Nos. 36-38, pp. 3763-3766, 2004.

163. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," (with J.A. Cottrell and Y. Bazilevs), *Computer Methods in Applied Mechanics and Engineering*, Vol. 194, Nos. 39-41, pp.

4135-4195, 2005.

164. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow," (with A. Masud and J. Wan), *Computer Methods in Applied Mechanics and Engineering*, Vol. 195, Nos. 25-28, pp. 3347-3381, 2006.

165. "A Multiscale Discontinuous Galerkin Method with the Computational Structure of the Continuous Galerkin Method," (with G. Scovazzi, P. Bochev and A. Buffa), *Computer Methods in Applied Mechanics and Engineering*, Vol. 195, Nos. 19-22, pp. 2761-2787, 2006.

166. "A Coupled Momentum Method for Modeling Blood Flow in Three-dimensional Deformable Arteries," (with A. Figueroa, I. Vignon-Clementel, K.E. Jansen and C.A. Taylor), *Computer Methods in Applied Mechanics and Engineering*, Vol. 195, Nos. 41-43, pp. 5685-5706, 2006.

167. "Isogeometric Analysis of Structures: k-refinement, Invariant Frequency Spectra, Nonlinear Parametrization, Rotationless Bending Elements, and Application to an Exact Geometrical Model of the NASA Aluminum Testbed Cylinder," (with Y. Bazilevs, J.A. Cottrell and A. Reali), *Computer Methods in Applied Mechanics and Engineering*, Vol. 195, Nos. 41-43, pp. 5257-5296, 2006.

168. "Isogeometric Fluid-structure Interaction Analysis with Applications to Arterial Blood Flow," (with Y. Bazilevs, V.M. Calo and Y. Zhang), *Computational Mechanics*, Vol. 38, Nos. 4-5, pp. 310-322, September 2006.

169. "Isogeometic analysis: approximation, stability and error estimates for h-refined meshes," (with Y. Bazilevs, L. Beirao de Veiga, J.A. Cottrell, and G. Sangalli), *Mathematical Models and Methods in Applied Sciences (M³AS)*, Vol. 16, No. 7, pp. 1031-1090, July 2006.

170. "Analysis of a Multiscale Discontinuous Galerkin Method for Convection Diffusion Problems," (with A. Buffa and G. Sangalli), *SIAM Journal of Numerical Analysis*, Vol. 44, No. 4, pp. 1420-1440, 2006.

171. "Weak Imposition of Dirichlet Boundary Conditions in Fluid Mechanics," (with Y. Bazilevs), *Journal of Computers and Fluids*, Vol. 36, No. 1, pp. 12-26, 2007.

172. "Variational Multiscale Analysis: The Fine-scale Green's Function, Projection, Optimization, Localization, and Stabilized Methods," (with G. Sangalli), *SIAM Journal of Numerical Analysis,* Vol. 45, No. 2, pp. 539-557, 2007.

173. "Stabilized shock hydrodynamics: I. A Lagragian method," (with G. Scovazzi, M.A. Christon, and J.N. Shadid), *Computer Methods in Applied Mechanics and Engineering*, Vol. 196, Nos. 4-6, pp. 923-966, 2007.

174. "Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis of Blood Flow," (with Y.Zhang, Y. Bazilevs, S. Goswami, and C.L. Bajaj), *Computer Methods in Applied Mechanics and Engineering*, Vol. 196, Nos. 29-30, pp. 2943-2959, 2007.

175. "YZbeta discontinuity-capturing for advection-dominated processes in arterial drug delivery," (with Y.Bazilevs, V.M. Calo, T.E. Tezduyar), *International Journal for Numerical Methods in Fluids*, 54, pp. 593-608, 2007.

176. Studies of refinement and continuity in isogeometric structural analysis," (with J.A. Cottrell and A. Reali), *Computer Methods in Applied Mechanics and Engineering*, Vol. 196, Nos. 41-44, pp. 4160-4183, 2007.

177. "Weak Dirichlet boundary conditions for wall-bounded turbulent flows," (with Y. Bazilevs, C. Michler, V.M. Calo), *Computer Methods in Applied Mechanics and Engineering*, Vol. 196, 4853-4862, 2007.

178. "Variational multiscale residual-based turbulence modeling for large eddy simulation of incompressible flows," (with Y. Bazilevs, V.M, Calo, J.A. Cottrell, A. Reali, and G. Scovazzi) *Computer Methods in Applied Mechanics and Engineering*, Vol. 197, 173-201, 2007.

179. "The role of continuity in residual-based variational multiscale modeling of turbulence," (with I. Akkerman, Y. Bazilevs, V.M. Calo, and S. Hulshoff), *Computational Mechanics*, Vol. 41, 371-378, 2008.

180. "B-bar and F-bar Projection Methods for Nearly Incompressible Linear and Nonlinear Elasticity and Plasticity using Higher-order NURBS Elements," (with T. Elguedj, Y. Bazilevs, and V. Calo), *Computer Methods in Applied Mechanics and Engineering*, Vol. 197, 2732-2762, 2008.

181. "Isogeometric Analysis of the Cahn-Hilliard phase-field model," (with H. Gomez, V.M. Calo and Y. Bazilevs), *Computer Methods in Applied Mechanics and Engineering*, vol. 197, 4333-4352, 2008.

182. "N-widths, sup-infs, and optimality ratios for the k-version of the isogeometric finite element method", (with J.A. Evans, Y. Bazilevs, I. Babuska), *Computer Methods in Applied Mechanics and Engineering*, Vol. 198, 1726-1741, 2009.

183. "NURBS-based Isogeometric Analysis for the Computation of Flows about Rotating Components," (with Y. Bazilevs), *Computational Mechanics*, Vol. 43, 143-150, December, 2008.

184. "A multiphysics model for blood flow and drug transport with application to patient-specific coronary artery flow," (with V.M. Calo, N. Brasher, and Y. Bazilevs), *Computational Mechanics*, Vol. 43, 161-177, December, 2008.

185. "Isogeometric fluid-structure interaction: Theory, algorithms and computations," (with Y. Bazilevs, V.M. Calo,

and Y. Zhang), *Computational Mechanics*, Vol. 43, 3-37, December, 2008.

186. "Duality and Unified Analysis of Discrete Approximations in Structural Dynamics and Wave Propagation: Comparison of p-method Finite Elements with k-method NURBS," (with A. Reali and G. Sangalli), *Computer Methods in Applied Mechanics and Engineering*, Vol. 197, 4104-4124, 2008.

187. "Isogeometric Analysis using T-Splines," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, J. Evans, S. Lipton, M.A. Scott, and T.W. Sederberg), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 229-263, 2010.

188. "Patient-specific isogeometric fluid-structure interaction analysis of thoracic aortic blood flow due to implantation of the Jarvik 2000 left ventricular assist device", (with Y. Bazilevs, J.R. Gohean, R.D. Moser, and Y. Zhang), *Computer Methods in Applied Mechanics and Engineering*, Vol. 198, 3534-3550, 2009.

189. "Improving stability of stabilized and multiscale formulations of fluid flow at small time steps", (with M.C. Hsu, Y. Bazilevs, V.M. Calo, T.E. Tezduyar), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 828-840, 2010.

190. "Stabilized methods for compressible flows," (with G. Scovazzi and T.E. Tezduyar), *Journal of Scientific Computing*, Vol. 43, 343-368, 2010.

191. "Augmented Lagrangian Method for Constraining the Shape of Velocity Profiles at Outlet Boundaries for Three-Dimensional Finite Element Simulations of Blood Flow," (with H.J. Kim, C.A. Figueroa, K.E. Jansen, and C.A. Taylor), *Computer Methods in Applied Mechanics and Engineering*, Vol. 198, 3551-3566, 2009.

192. "Isogeometric variational multiscale modeling of wall-bounded turbulent flows with weakly-enforced boundary conditions on unstretched meshes", (with Y. Bazilevs, C. Michler and V.M. Calo), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 780-790, 2010.

193. "Efficient Quadrature for NURBS-based Isogeometric Analysis," (with A. Reali and G. Sangalli), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 301-313, 2010.

194. "Isogeometric Shell Analysis: The Reissner – Mindlin Shell," (with D.J. Benson, Y. Bazilevs and M.-C. Hsu), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 276-289, 2010.

195. "Robustness of Isogeometric Structural Discretizations Under Severe Mesh Distortion," (with S. Lipton, J.A. Evans, Y. Bazilevs, and T. Elguedj), *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, 357-373, 2010.

196. "Enforcement of Constraints and Maximum Principles in the Variational Multiscale Method," (with J.A. Evans and G. Sangalli), *Computer Methods in Applied Mechanics and Engineering,* Vol. 199, 61-76, 2009.

197. "[An automatic 3D mesh generation method for domains with multiple materials](#)," (with Y. Zhang and C.L. Bajaj), *Computer Methods in Applied Mechanics and Engineering,* Vol. 199, 405-415, 2010.

198. "Isogeometric analysis of the isothermal Navier-Stokes-Korteweg equations," (with H. Gomez, X. Nogueira and V.M. Calo), *Computer Methods in Applied Mechanics and Engineering,* Vol. 199, 1828-1840, 2010.

199. "Isogeometric Collocation Methods," (with F. Auricchio, L. Beirao da Veiga, A. Reali, and G. Sangalli), *Mathematical Models & Methods in Applied Sciences*, Vol. 20, 2075-2107, 2010.

200. "A Large Deformation, Rotation-free, Isogeometric Shell," (with D.J. Benson, Y. Bazilevs and M.-C. Hsu), *Computer Methods in Applied Mechanics and Engineering,* Vol. 200, 1367-1378, 2011.

201. "A generalized finite element formulation for arbitrary basis functions: From isogeometric analysis to XFEM," (with D.J. Benson, Y. Bazilevs, E. De Luycker, M.-C. Hsu, M. Scott, and T. Belytschko), *International Journal for Numerical Methods in Engineering,* Vol. 83, 765-785, 2010.

202. "Isogeometric Finite Element Data Structures based on Bezier Extraction of NURBS," (with M.J. Borden, M.A. Scott and J.A. Evans), *International Journal for Numerical Methods in Engineering,* Vol. 87, 15-47, 2011.

203. "An Isogeometric Approach to Cohesive Zone Modeling," (with C. Verhoosel, M.A. Scott and R. de Borst), *International Journal for Numerical Methods in Engineering,* Vol. 87, 336-360, 2011.

204. "An Isogeometric Analysis Approach to Gradient Damage Models," (with C. Verhoosel, M.A. Scott and R. de Borst), *International Journal for Numerical Methods in Engineering,* Vol. 86, 115-134, 2011.

205. "Contact Treatment in Isogeometric Analysis with NURBS," (with I. Temizer and P. Wriggers), *Computer Methods in Applied Mechanics and Engineering,* Vol. 20, 1100-1112, 2011.

206. "Provably Unconditionally Stable, Second-order Time-accurate, Mixed Variational Methods for Phase-field Models," (with H. Gomez), *Journal of Computational Physics,* Vol. 30, Issue 13, 5383 - 5398, 2011.

207. "On Linear Independence of T-splines," (with X. Li, T.W. Sederberg and M.A. Scott), *CAGD, Computer Aided Geometric Design,* Vol. 29, 63-76, 2011.

208. "Mathematical Modeling of Coupled Drug and Drug-encapsulated Nanoparticle Transport in Patient-specific Coronary Artery Walls," (with S.S. Hossain, S.F.A. Hosssainy, Y. Bazilevs, and V.M. Calo), *Computational Mechanics,* Vol. 49, 213-242, 2012.

209. "A Finite Strain Eulerian Formulation for Compressible and Nearly Incompressible Hyperelasticity using Higher-order NURBS Elements," (with R. Duddu, L.L. Lavier and V.M. Calo), *International Journal for Numerical Methods in Engineering,* Vol. 89, 762-785, 2012.

210. "New Rectangular Plate Elements Based on Twist-Kirchhoff Thin Plate Theory," (with F. Brezzi, J. Evans and L.D. Marini), *Computer Methods in Applied Mechanics and Engineering*, Vol. 200, 2547-2561, 2011.

211. "Isogeometric Finite Element Data Structures Based on Bezier Extraction of T-splines," (with M.A. Scott, M.J. Borden, C.V. Verhoosel, and T.W. Sederberg), *International Journal for Numerical Methods in Engineering,* Vol. 88, 126-156, 2011.

212. "Generalization of the Twist-Kirchhoff Theory of Plate Elements to Arbitrary Quadrilaterals and Assessment of Convergence," (with H.A.F.A. Santos and J.A. Evans), Vol. 209-212, 101-114, 2012.

213. "Converting an Unstructured Quadrilateral Mesh to a Standard T-spline Surface," (with W. Wang, Y. Zhang and M.A. Scott), *Computational Mechanics,* Vol. 48, 477-498, 2011.

214. "Local Refinement of Analysis-suitable T-splines," (with M.A. Scott, X. Li and T.W. Sederberg), *Computer Methods in Applied Mechanics and Engineering*, Vol. 213, 206-222, 2012.

215. "A phase-field description of dynamic brittle fracture," (with M.J. Borden, C.V. Verhoosel, M.A. Scott, and C.M. Landis), *Computer Methods in Applied Mechanics and Engineering*, Vol. 217-220, 77–95, 2012.

216. "Converting an Unstructured Quadrilateral/Hexahedral Mesh to a Rational T-Spline," (with W. Wang, Y. Zhang and G. Xu), *Computational Mechanics,* Vol. 50, 65-84, 2012.

217. "Three-dimensional mortar-based frictional contact treatment in isogeometric analysis with NURBS," (with I.Temizer and P. Wriggers), *Computer Methods in Applied Mechanics and Engineering*, Vol. 209, 115-128, 2012.

218. "Explicit Trace Inequalities for Isogeometric Analysis and Parametric Hexahedral Elements," (with J.A. Evans), *Numerische Mathematik,* Vol. 123, 259-290, 2013.

219. "Isogeometric Variational Multiscale Large-eddy Simulation of Fully-developed Turbulent Flow over a Wavy Wall," (with K. Chang and V.M. Calo), *Computers and Fluids*, Vol. 68, 94-204, 2012.

220. "Solid T-spline Construction from Boundary Representations for Genus-Zero Geometry," (with Y. Zhang and W. Wang), *Computer Methods in Applied Mechanics and Engineering,* Vol's. 249-252, 185-197, 2012.

221. "Isogeometric Divergence-conforming B-splines for the Darcy-Stokes-Brinkman Equations," (with J.A. Evans), *Mathematical Models & Methods in Applied Sciences*, Vol. 23, 671-741, 2013.

222. "A Simple Algorithm for Obtaining Nearly Optimal Quadrature Rules for NURBS-based Isogeometric Analysis," (with F. Auricchio, F. Calabro, A. Reali, and G. Sangalli), *Computer Methods in Applied Mechanics and Engineering*, Vol's. 249-252, 15-27, 2012. http://dx.doi.org/10.1016/j.cma.2012.04.014

223. "An Isogeometric Design-through-analysis Methodology based on Adaptive Hierarchical Refinement of NURBS, Immersed Boundary Methods, and T-spline CAD Surfaces," (with D. Schillinger, L. Dede, M.A. Scott, J.A. Evans, M.J. Borden, and E. Rank), *Computer Methods in Applied Mechanics and Engineering*, Vol's. 249-252,116-150, 2012.

224. "Isogeometric Collocation for Elastostatics and Explicit Dynamics," (with F. Auricchio, L. Beirao da Veiga, A. Reali, and G. Sangalli), *Computer Methods in Applied Mechanics and Engineering*, Vol's. 249-252, 2-14, 2012. http://dx.doi.org/10.1016/j.cma.2012.03.026

225. "Isogeometric Analysis for Topology Optimization with a Phase Field Model," (with L. Dede and M.J. Borden), *Archives of Computational Methods in Engineering,* Vol.19, 427-465, September 2012.

226. "in silico Vascular Modeling for Personalized Nanoparticle Delivery," (with S. Hossain, Y. Zhang, X. Liang, F. Hussein, M. Ferrari, and P. Decuzzi), *Nanomedicine,* Vol. 8(3), 343-357, 2012. Doi:10.2217/NNM.12.124

227. "Isogeometric Analysis of the Advective Cahn-Hilliard Equation: Spinodal Decomposition Under Shear Flow," (with J. Liu, L. Dede, J.A. Evans, and M.J.Borden), *Journal of Computational Physics,* Vol. 242, 321-350, 2013.

228. "Trivariate Solid T-spline Construction from Boundary Triangulations with Arbitrary Genus Topology," (with W. Wang, Y. Zhang and L. Liu), *Computer Aided Design,* Vol. 45, Issue 2, 351-360, 2012.

229. "Simulation of Laminar and Turbulent Concentric Pipe Flows with the Isogeometric Variational Multiscale Method," (with Y.G. Motlagh, H.T. Ahn and V.M. Calo), *Computers and Fluids,* Vol. 71, 146-155, 2013.

230. "Isogeometric Divergence-conforming B-splines for the Steady Navier-Stokes Equations," (with J.A. Evans), *Mathematical Models & Methods in Applied Sciences,* Vol. 23, 1421-1478, 2013.

231. "Isogeometric Divergence-conforming B-splines for the Unsteady Navier-Stokes Equations," (with J.A. Evans), *Journal of Computational Physics,* Vol. 241, 141-167, 2013.

232. "An inexact Gauss-Newton method for inversion of basal sliding and rheology parameters in a nonlinear Stokes ice sheet model," (with N. Petra, H. Zhu, G. Stadler, and O. Ghattas), *Journal of Glaciology,* Vol. 58, Issue 2, 889-903, 2012.

233. "Isogeometric boundary element analysis using unstructured T-splines," (with M.A. Scott, R.N. Simpson, J.A. Evans, S.P.A. Bordas, and T.W. Sederberg), *Computer Methods in Applied Mechanics and Engineering,* Vol. 254, 197-221, 2013.
234. "Conformal Solid T-spline Construction from Boundary T-spline Representations," (with Y. Zhang and W. Wang), *Computational Mechanics,* Vol. 51, 1051-1059, 2013.
235. "Blended Isogeometric Shells," (with D. Benson, S. Hartmann, Y. Bazilevs, and M.-C. Hsu), *Computer Methods in Applied Mechanics and Engineering,* Vol. 255, 133-146, 2013.
236. "Discrete Spectrum Analyses for Various Mixed Formulations of the Stokes Eigenproblem," (with John Evans), *Computation Mechanics,* Vol. 50, 667-674, 2012.
237. "Functional Entropy Variables: A New Methodology for Deriving Thermodynamically Consistent Algorithms for Complex Fluids, with Particular Reference to the Isothermal Navier-Stokes-Korteweg Equations," (with J. Liu, H. Gomez, J.A. Evans, and C. Landis), *Journal of Computational Physics*, Vol. 248, 47-86, 2013.
238. "Vascular Deposition Patterns for Nanoparticles in an Inflamed Patient-Specific Arterial Tree," (with S. S. Hossain and P. Decuzzi), *Biomechanics and Modeling in Mechanobiology*, August 2013, 10.1007/s10237-013-0520-1, Vol. 13, Issue 3, 585-597, 2014.
239. "Isogeometric Collocation: Cost Comparison with Galerkin Methods and Extension to Adaptive Hierarchical NURBS Discretizations," (with D. Schillinger, J.A. Evans, A. Reali, and M.A. Scott), *Computer Methods in Applied Mechanics and Engineering*, Vol. 267, 170-232, December 2013.
240. "Volumetric T-spline Construction Using Boolean Operations," (with L. Lei, Y. Zhang, M.A. Scott, and T.W. Sederberg), *Engineering with Computers*, Vol. 30, 425–439, 2014. Published online November 19, 2013, DOI 10.1007/s00366-013-0346-6.
241. "A higher-order phase-field model for brittle fracture: Formulation and analysis within the isogeometric analysis framework," (with M.J. Borden, C.M. Landis and C.V. Verhoosel), *Computer Methods in Applied Mechanics and Engineering*, Vol. 273, 100-118, May 2014.
242. "Amplitude-Phase Decompositions and the Growth and Decay of Solutions of the Incompressible Navier-Stokes and Euler Equations," *Mathematical Models & Methods in Applied Science,* Vol. 24, Issue 5, 1017-1035, May 2014.
243. "Finite element and NURBS Approximations of Eigenvalue, Boundary-value, and Initial-value Problems," (with J.A. Evans and A. Reali), *Computer Methods in Applied Mechanics and Engineering*, Vol. 272, 290-320, April 2014.
244. "A Collocated C^0 Finite Element Method: Reduced quadrature perspective, cost comparison with standard finite elements, and explicit structural dynamics," (with D. Schillinger, J.A. Evans, F. Frischmann, R. Hiemstra, and M.-C. Hsu), *International Journal for Numerical Methods in Engineering,* Vol. 102, Issue 3-4, 576-631, April 20, 2015.
245. "Isogeometric Boundary-element Analysis for the Wave-resistant Problem Using T-splines," (with A.-A.I. Ginnis, K.V. Kostas, C.G. Politis, P.D. Kaklis, K.A. Belibassakis, Th. P. Gerostathis, and M.A. Scott), *Computer Methods in Applied Mechanics and Engineering,* Vol. 279, 425-439, September 2014.
246. "Isogeometric Analysis of Nearly Incompressible Large Strain Plasticity," (with T. Elguedj), *Computer Methods in Applied Mechanics and Engineering*, Vol. 268, 388-416, January 2014.
247. "Magnetic resonance imaging-based computational modeling of blood flow and nanomedicine deposition in patients with peripheral arterial disease," (with Shaolie Hossain, Jessica Zhang, Xiaoyi Fu, Gerd Brunner, Jaykrishna Singh, Dipan Shah, and Paolo Decuzzi), *Journal of the Royal Society Interface*, Vol.12, Issue 106, Article Number 20150001, May 6, 2015. http://dx.doi.org/10.1098/rsif.2015.0001
248. "Reduced Bézier Element Quadrature Rules for Quadratic and Cubic Splines in Isogeometric Analysis," (with Dominik Schillinger and Shaikh J. Hossain), *Computer Methods in Applied Mechanics and Engineering*, Vol. 277, 1-45, August 2014.
249. "Isogeometric collocation: Neumann boundary conditions and contact," (with L. De Lorenzis, J.A. Evans and A. Reali), *Computer Methods in Applied Mechanics and Engineering,* Vol. 284, 21-54, February 1, 2015.
250. "USNCTAM Perspectives on Mechanics in Medicine," (with G. Bao, Y. Bazilevs, J.-H. Chung, P. Decuzzi, H.D. Espinosa, M. Ferrari, H. Gao, S.S. Hossain, R. D. Kamm, W.K. Liu, A. Marsden and B. Schrefler), *Journal of the Royal Society Interface*, 11: 20140301, May 28, 2014. http://dx.doi.org/10.1098/rsif.2014.0301
251. "Isogeometric contact: a review," (with Laura De Lorenzis and Peter Wriggers), *GAMM Mitteilungen,* Vol. 37, No. 1, 85-123, 2014. DOI 10.1002/gamm.201410005
252. "Patient-specific isogeometric structural analysis of aortic valve closure," (with S. Morganti, F. Auricchio, D.

Benson F.I. Gambarin, S. Hartmann, and A. Reali), *Computer Methods in Applied Mechanics and Engineering,* Vol. 284, 508-520, 2015.

253. "Selective and reduced numerical integration for NURBS-based isogeometric analysis," (with C. Adam, S. Bouabdallah, M. Zarroug, and H. Maitournam), *Computer Methods in Applied Mechanics and Engineering,* Vol. 284, 732-761, 2015.

254. "An immersogeometric variational framework for fluid-structure interaction: Application to bioprosthetic heart valves," (with D. Kamensky, M.-C. Hsu, D. Schillinger, J.A. Evans, A. Aggarwal, Y. Bazilevs, and M.S. Sacks), *Computer Methods in Applied Mechanics and Engineering,* Vol. 284, 1005-1053, 2015.

255. "Fluid–structure interaction analysis of bioprosthetic heart valves: Significance of arterial wall deformation," (with Ming-Chen Hsu, David Kamensky, Yuri Bazilevs, and Michael S. Sacks), *Computational Mechanics,* 2014 (DOI) 10.1007/s00466-014-1059-4. Published on line at: http://link.springer.com/article/10.1007/s00466-014-1059-4

256. "Single-variable formulations and isogeometric discretizations for shear deformable beams," (with J. Kiendl, F. Auricchio and A. Reali), *Computer Methods in Applied Mechanics and Engineering,* accepted for publication, 2014.

257. "Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement," (with X. Wei, Y. Zhang and M.A. Scott), *Computer Methods in Applied Mechanics and Engineering,* Vol. 291, 1‑20, July 2015.

258. "A locking-free model for Reissner-Mindlin plates: Analysis and isogeometric implementation via NURBS and triangular NURPS," (with L. Beirao da Veiga, J. Kiendl, C. Lovadina, J. Niiranen, A. Reali, and H. Speleers), *Mathematical Models & Methods in Applied Science,* Volume 25, Issue 8, 1519-1551, July 1, 2015.

259. "Isogeometric collocation for large deformation elasticity and frictional contact problems," (with R. Kruse, N. Nguyen-Thanh and L. De Lorenzis), *Computer Methods in Applied Mechanics and Engineering,* Vol. 296, 73-112, November 1, 2015.

260. "Extended Truncated Hierarchical Catmull-Clark Subdivision," (with Xiaodong Wei, Yongjie Jessica Zhang, and Michael A. Scott), *Computer Methods in Applied Mechanics and Engineering,* Vol. 299, 316–336, February 1, 2016.

261. "Isogeometric Analysis of Boundary Integral Equations: High-order Collocation Methods for the Singular and Hyper-singular Equations," (with Matthias Taus and Gregory J. Rodin), *Mathematical Models & Methods in Applied Science,* Vol. 26, 1447-1480, July 2016.

262. "Liquid-Vapor Phase Transition: Thermomechanical Theory, Entropy Stable Numerical Formulation, and Boiling Simulations," (with Ju Liu, Chad M. Landis and Hector Gomez), *Computer Methods in Applied Mechanics and Engineering,* Vol. 297, 476-553, December 1, 2015.

263. "A Palette of Fine-scale Eddy Viscosity and Residual-based Models for Variational Multiscale Formulations of Turbulence," (with A.A. Oberai), *Computational Mechanics,* Vol. 57, Issue 4, 629-635, April 2016.

264. "Inversion of geothermal heat flux in a thermomechanically coupled nonlinear Stokes ice sheet model," (with H. Zhu, N. Petra, G. Stadler, T. Isaac, and O. Ghattas), *The Cryosphere*, 10, 1477-1494, 2016, published July 13, 2016.

265. "Truncated T-splines: Fundamentals and Methods," (with Xiaodong Wei, Yongjie Jessica Zhang, and Lei Liu), *Computer Methods in Applied Mechanics and Engineering,* Vol. 316, 349-372, April 1, 2017.

266. "Immersogeometric cardiovascular fluid–structure interaction analysis with divergence-conforming B-splines" (with David Kamensky, Ming-Chen Hsu, Yue Yu, John A. Evans, and Michael S. Sacks), *Computer Methods in Applied Mechanics and Engineering,* 314, 408–472, February 1, 2017.

267. "Optimal and reduced quadrature rules for tensor product and hierarchically refined splines in isogeometric analysis," (with René R. Hiemstra, Francesco Calabrò, and Dominik Schillinger), *Computer Methods in Applied Mechanics and Engineering,* Vol. 316, 966-1004, April 1, 2017.

268. "Tissue-scale, patient-specific modeling and simulation of prostate cancer growth," (with Guillermo Lorenzo, Michael A. Scott, Kevin Tew, Yongjie Jessica Zhang, Lei Liu, Guillermo Vilanova, and Hector Gomez), *Proceedings of the National Academy of Sciences of the United States,* vol. 113, no. 48, E7663–E7671, November 29, 2016. (Published online ahead of print November 16, 2016.) doi: 10.1073/pnas.1615791113.

269. "A phase-field formulation for fracture in ductile materials: Finite deformation balance law derivation, plastic degradation, and stress triaxiality effects," (with Michael J. Borden, Chad M. Landis, Amin Anvari, and Isaac J. Lee), *Computer Methods in Applied Mechanics and Engineering,* Vol. 312, 130–166, December 1, 2016.

270. "Multi-degree smooth polar splines: a framework for geometric modeling and isogeometric analysis," (with Deepesh Toshniwal, Hendrik Speleers and René R. Hiemstra), *Computer Methods in Applied Mechanics and Engineering,* Vol. 316, 1005-1061, April 1, 2017.

271. "Truncated Hierarchical C^0 Spline Construction on Unstructured Hexahedral Meshes for Isogeometric Analysis Applications," (with Xiaodong Wei and Yongjie Jessica Zhang), *Computers and Mathematics with Applications,* Vol. 74, Issue 9, 2203-2220, November 1, 2017. https://doi.org/10.1016/j.camwa.2017.07.043

272. "A Review of Trimming in Isogeometric Analysis: Challenges, Data Exchange and Simulation Aspects," (with Benjamin Marussig), *Archive of Computational Methods in Engineering,* Volume 25, Issue 4, Pages 1059-1127, November 2018. https://link.springer.com/article/10.1007/s11831-017-9220-9

273. "Smooth cubic spline spaces on unstructured quadrilateral meshes with particular emphasis on extraordinary points: Geometric design and isogeometric analysis considerations," (with Deepesh Toshniwal and Hendrik Speleers), *Computer Methods in Applied Mechanics and Engineering,* Vol. 327, 411-458, December 1, 2017.

274. "Hierarchically refined and coarsened splines for moving interface problems, with particular application to phase-field models of prostate tumor growth," (with G. Lorenzo, M.A. Scott, K. Tew, and H. Gomez), *Computer Methods in Applied Mechanics and Engineering,* Vol. 319, 515–548, 1 June 2017. http://www.sciencedirect.com/science/article/pii/S0045782516318254

275. "A diffuse interface method for the Navier-Stokes/Darcy equations: Perfusion profile for a patient-specific human liver based on MRI scans," (with Stein K.F. Stoter, Peter Müller, Luca Cicalese, Massimiliano Tuveri, and Dominik Schillinger), *Computer Methods in Applied Mechanics and Engineering,* Vol. 321, 70-102, 1 July 2017. http://www.sciencedirect.com/science/article/pii/S0045782516316644

276. "Corrigendum to ['A phase-field formulation for fracture in ductile materials: Finite deformation balance law derivation, plastic degradation, and stress triaxiality effects," (with Michael J. Borden, Chad M. Landis, Amin Anvari, and Isaac J. Lee), *Computer Methods in Applied Mechanics and Engineering,* Vol. 312, 130–166, December 1, 2016.] *Computer Methods in Applied Mechanics and Engineering,* Vol. 324, 712-713, September 1, 2017.

277. "Truncated Hierarchical Tricubic C^0 Spline Construction on Unstructured Hexahedral Meshes for Isogeometric Analysis Applications," (with Xiaodong Wei and Yongjie Jessica Zhang), *Computers and Mathematics with Applications,* Vol. 74, Issue 9, 2203-2220, November 1, 2017. https://doi.org/10.1016/j.camwa.2017.07.043

278. "Smooth cubic spline spaces on unstructured quadrilateral meshes with particular emphasis on extraordinary points: Geometric design and isogeometric analysis considerations," (with Deepesh Toshniwal and Hendrik Speleers), *Computer Methods in Applied Mechanics and Engineering,* Vol. 327, 411-458, December 1, 2017.

279. "A framework for designing patient-specific bioprosthetic heart valves using immersogeometric fluid–structure interaction analysis," (with Fei Xu, Simone Morganti, Rana Zakerzadeh, David Kamensky, Ferdinando Auricchio, Alessandro Reali, Michael S. Sacks, and Ming-Chen Hsu), *Numerical Methods in Biomedicine*, Vol. 34, Issue 4, Article Number: e2938, 1-25, April 2018. http://doi.org/10.1002/cnm.2938

280. "Improved Conditioning of Isogeometric Analysis Matrices for Trimmed Geometries," (with Benjamin Marussig and René Hiemstra), submitted to *Computer Methods in Applied Mechanics and Engineering*, Vol. 334, 79-110, June 1, 2018.

281. "Variationally consistent isogeometric analysis of trimmed thin shells at finite deformations, based on the STEP exchange format," (with Yujie Guo, Jason Heller, Martin Ruess, and Dominik Schillinger), *Computer Methods in Applied Mechanics and Engineering*, Vol.336, 39-79, 1 July, 2018.

282. "Explicit Higher-Order Accurate Isogeometric Collocation Methods for Structural Dynamics," (with J.A. Evans, R.R. Hiemstra and A. Reali), *Computer Methods in Applied Mechanics and Engineering,* Vol. 327, 208-240, August 15, 2018. "Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis," (with Xiaodong Wei, Yongjie Jessica Zhang, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, and John A. Evans), *Computer Methods in Applied Mechanics and Engineering,* Vol. 341, 609-639, November 1, 2018.

283. "Error estimates for dynamic augmented Lagrangian boundary condition enforcement, with application to immersogeometric fluid-structure interaction," (with Yue Yu, David Kamensky, Ming-Chen Hsu, Xin Yang Lu, and Yuri Bazilevs), submitted to *Mathematical Models and Methods in Applied Sciences (M3AS),* August 31, 2017. Volume 28, Issue 12, Pages 2457-2509, November 2018. Published online at https://doi.org/10.1142/S0218202518500537

284. "Review of Patient-Specific Vascular Modeling: Template-based Isogeometric Framework and the Case for CAD," (with Benjamin Urick, Travis M. Sanders, Shaolie S. Hossain, and Yongjie Zhang), *Archives of Computational Methods in Engineering*, submitted for publication, September 26, 2017. Vol. 26, Issue 2, 381-

404, April 2019. Published online December 12, 2017, https://link.springer.com/article/10.1007/s11831-017-9246-z

285. "An isogeometric finite element formulation for phase fields on deforming surfaces," (with Christopher Zimmermann, Deepesh Toshniwal, Chad M. Landis, Kranthi K. Mandadapu, and Roger A. Sauer), *Computer Methods in Applied Mechanics and Engineering,* Vol. 351, 441-477, July 1, 2019. http://arxiv.org/abs/1710.02547

286. "Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis," (with Xiaodong Wei, Yongjie Jessica Zhang, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, and John A. Evans), *Computer Methods in Applied Mechanics and Engineering,* Vol. 341, 609-639, November 1, 2018.

287. "Symbol-based analysis of finite element and isogeometric B-spline discretizations of eigenvalue problems: Exposition and review," (with Carlo Garoni, Hendrik Speleers, Sven-Erik Ekström, Alessandro Reali, and Stefano Serra-Capizzano), *Archives of Computational Methods in Engineering,* Vol. 26, Issue 5, 1639-1690, November 2019.

288. "Computer simulations suggest that prostate enlargement due to benign prostatic hyperplasia mechanically impedes prostate cancer growth," (with Guillermo Lorenzo, Pablo Dominguez-Frojan, Alessandro Reali, and Hector Gomez), *Proceedings of the National Academy of Sciences*, 116(4):1152-1161, January 22nd, 2019. DOI 10.1073/pnas.1815735116. Published electronically, January 7th, 2019.

289. "Multi-degree B-splines: Algorithmic computation and properties," (with Deepesh Toshniwal, Hendrik Speleers, René R. Hiemstra, and Carla Manni), submitted to *Computer Aided Geometric Design*, Vol. 76, January 2020, 101792. https://doi.org/10.1016/j.cagd.2019.101792

290. "A Review of Trimming in Isogeometric Analysis: Challenges, Data Exchange and Simulation Aspects," (with Benjamin Marussig), *Archives of Computational Methods in Engineering,* Volume 25, Issue 4, Pages 1059-1127, November 2018.

291. "Isogeometric Boundary Element Methods and Patch Tests for Linear Elastic Problems: Formulation, Numerical Integration, and Applications," (with Matthias Taus, Gregory J. Rodin, and Michael A. Scott), submitted to *Computer Methods in Applied Mechanics and Engineering*, January 2019, accepted for publication, Vol, 357, December 1, 2019.

292. "Polynomial splines of non-uniform degree on triangulations: Combinatorial bounds on the dimension," (with Deepesh Toshniwal), *Computer Aided Geometric Design*, published online July 26, 2019. Volume 75, November 2019, 101763. https://doi.org/10.1016/j.cagd.2019.07.002

293. "Watertight Boolean Operations: A Framework for Creating CAD-Compatible, Gap Free, Editable Models," (with B. Urick, B. Marussig, E. Cohen, R.H. Crawford, and R.F. Riesenfeld), *Computer-Aided Design (Elsevier),* Vol. 115, October 2019, 147-160.

294. "Fast Formation and Assembly of Finite Element Matrices with Application to Isogeometric Linear Elasticity," (with Rene R. Hiemstra, Giancarlo Sangalli, Mattia Tani, and Francesco Calabro), *Computer Methods in Applied Mechanics and Engineering*, Volume 355, Pages 234-260, 1 October 2019. (Published online June 27, 2019).

295. "A Tchebycheffian Extension of Multi-Degree B-Splines: Algorithmic Computation and Properties," (with Rene R. Hiemstra, Carla Manni, Hendrik Speleers, and Deepesh Toshniwal), *SIAM Journal of Numerical Analysis*, May 22, 2019. Volume 58, Issue 2, Pages 1138-1163, Published 2020.

296. "A numerical simulation study of the dual role of 5alpha-reductase inhibitors on tumor growth in prostates enlarged by benign prostatic hyperplasia via stress relaxation and apoptosis upregulation," (with G. Lorenzo, A. Reali and H. Gomez), *Computer Methods in Applied Mechanics and Engineering*, submitted May 15, 2019, published April 15, 2020, vol. 362, article number 112843, DOI: 10.1016/j.cma.2020.112843.

297. "Seamless integration of design and Kirchhoff-Love shell analysis using analysis-suitable unstructured T-splines" (with Hugo Casquero, Xiaodong Wei, Deepesh Toshniwal, Angran Li, Josef Kiendl, and Yongjie Jessica Zhang), *Computer Methods in Applied Mechanics and Engineering*, submitted, June 11, 2019, Volume: 360, Article Number: 112765, Published: March 1, 2020.

298. "An adaptive space-time phase field formulation for dynamic fracture of brittle shells based on LR NURBS," (with Karsten Paul, Christopher Zimmermann, Kranthi K. Mandadapu, Chad M. Landis, and Roger A. Sauer), *Computational Mechanics,* submitted, July 1, 2019. January 21, 2020, vol.65, 1039–1062. https://doi.org/10.1007/s00466-019-01807-y

299. "Thinner biological tissues induce leaflet flutter in replacement aortic heart valves," (with Emily L. Johnson, Michael C.H. Wu, Fei Xu, Nelson M. Wiese, Austin J. Herrema, Baskar Ganapathysubramanian, Michael S. Sacks, and Ming-Chen Hsu), *Proceedings of the National Academy of Sciences,* Volume 117, Issue 32, Pages 19007-

19016, August 11, 2020. https://doi.org/10.1073/pnas.2002821117

300. "The divergence-conforming immersed boundary method: Application to vesicle and capsule dynamics," (with Hugo Casquero, Carles Bona-Casas, Deepesh Toshniwal, Hector Gomez, and Yongjie Jessica Zhang), *Journal of Computational Physics,* Vol. 425, Article Number: 109872, January 15, 2021. DOI: 10.1016/j.jcp.2020.109872

301. "Mixed stress-displacement isogeometric collocation for nearly incompressible elasticity and elastoplasticity," (with Frederik Fahrendorfa, Simone Morganti, Alessandro Reali, and Laura De Lorenzis), *Computer Methods in Applied Mechanics and Engineering,* Volume 369, 1 September 2020, 113112 https://doi.org/10.1016/j.cma.2020.113112

302. "Computational Medicine, Present and the Future: Obstetrics and Gynecology Perspective," (authors: Radek Bukowski MD, PhD; Karl Schulz, PhD; Kelly Gaither, PhD; Keri K. Stephens, PhD; Dave Semeraro, PhD; Justin Drake, PhD; Gordon Smith, MD, PhD; Craig Cordola, FACHE; Thaleia Zariphopoulou, PhD; Thomas J.R. Hughes, PhD; Christopher Zarins, MD; Dimitri Kusnezov, PhD; Rep. Donna Howard, M.A.; Tinsley Oden, PhD), *American Journal of Obstetrics and Gynecology*, vol. 224, issue 1, pages 16-34, January 2021. DOI: 10.1016/j.ajog.2020.08.057

303. "Reconstruction of Trimmed NURBS Surfaces for Gap-Free Intersections, (with Benjamin Urick, Richard Crawford, Elaine Cohen, and Richard Riesenfeld), *ASME Journal of Computer and Information Science in Engineerin*g, Paper Number JCISE-19-1291, Volume: 20, Issue: 5, Article Number: 051008, Published: October 1, 2020. DOI: 10.1115/1.4047427.

304. "Simulating the spread of COVID-19 via a spatially-resolved susceptible-exposed-infected-recovered-deceased (SEIRD) model with heterogeneous diffusion," (with Alex Viguerie, Guillermo Lorenzo, Ferdinando Auricchio, Davide Baroli, Alessia Patton, Alessandro Reali, Thomas E. Yankeelov, and Alessandro Veneziani), *Applied Mathematics Letters*, Volume 111, Article Number: 106617, January 2021. https://doi.org/10.1016/j.aml.2020.106617

305. "Tuned Hybrid Non-uniform Subdivision Surfaces with Optimal Convergence Rates," (Xiaodong Wei, Xin Li, Yongjie Jessica Zhang, and Thomas J.R. Hughes), *International Journal for Numerical Methods in Engineering,* Vol. 122, Pages 2117-2144, May 15, 2021. **https://doi.org/10.1002/nme.6608**

306. "Towards untrimmed NURBS: CAD embedded reparameterization of trimmed B-rep geometry using frame-field guided global parameterization," (with R.R. Hiemstra, K.M. Shepherd, M.J. Johnson, and L. Quan), *Computer Methods in Applied Mechanics and Engineering,* Volume 369, Article Number:113227, 1 September 2020, https://doi.org/10.1016/j.cma.2020.113227

307. "Diffusion-reaction compartmental models formulated in a continuum mechanics framework: application to COVID-19, mathematical analysis, and numerical study," (with Alex Viguerie, Alessandro Veneziani, Guillermo Lorenzo, Davide Baroli, Nicole Aretz-Nellesen, Alessia Patton, Thomas E. Yankeelov, Alessandro Reali, and Ferdinando Auricchio), *Computational Mechanics,* Early Access, August 2020, Volume: 66 Issue: 5   Special Issue: SI   Pages: 1131-1152 , Published November 2020, DOI: 10.1007/s00466-020-01888-0

308. "Isogeometric discrete differential forms: Non-uniform degrees, Bézier extraction, polar splines and flows on surfaces," (Deepesh Toshniwal and Thomas J.R. Hughes), *Computer Methods in Applied Mechanics and Engineering,* Vol. 376, 1 April 2021, Article no. 113576. https://doi.org/10.1016/j.cma.2020.113576

309. "Polynomial splines of non-uniform bi-degree on T-meshes: Combinatorial bounds on the dimension," (with Deepesh Toshniwal, Bernard Mourrain and Thomas J.R. Hughes), *Advances in Applied Mathematics,* Volume: 47 Issue: Article Number: 16   Published: February 2, 2021.

310. "Patient specific, imaging-informed modeling of Rhenium-186 nanoliposomedelivery *via* convection enhanced delivery in glioblastoma multiforme," (Ryan T. Woodall, David A. Hormuth II, Chengyue Wu, Michael R. A. Abdelmalik, William T Phillips, Ande Bao, Thomas J.R. Hughes, Andrew J. Brenner, Thomas E. Yankeelov), *Biomedical Physics and Engineering Express*, Vol. 7, Issue 4, Article no. 045012, July, 2021.

311. "Galerkin formulations of isogeometric shell analysis: Alleviating locking with Greville quadratures and higher-order elements," (Z. Zou, T.J.R. Hughes, M.A. Scott, R.A. Sauer, and E.J. Savitha), *Computer Methods in Applied Mechanics and Engineering,* Vol. 380, Article no. 113757, July 1, 2021,

312. "A comparison of matrix-free isogeometric Galerkin and collocation methods for Karhunen-Loève expansion," (Michal L. Mika, Thomas J.R. Hughes, Dominik Schillinger, Peter Wriggers, and René R. Hiemstra), *Computer Methods in Applied Mechanics and Engineering,* Vol. 379, Article no. 113730, June 1, 2021.

313. "Part 1 - Biography and tributes," (Mark Austin, Thomas J.R. Hughes, Pamela Eibeck, Darryll Pines, Alice Agogino, J. Tinsley Oden, Lola Martin-Atilano, Billie Greene, Stein Sture, Constance Lütolf-Carroll, Ekkehard Ramm, Paula Hawthorn, Barbara Simons, Antoinette Torres, Carlos Felippa, Brant Smith, Peter Pinsky, Gary

May, Sheila Humphreys, Loc Vu-Quoc), *CMES - Computer Modeling in Engineering and Sciences,* Special Issue, [Advances in Computational Mechanics and Optimization to celebrate the 95th birthday of Professor Karl Stark Pister](#). [Vol.129, No.3, 2021](#), pp.1077-1122, Published 25 November 25, 2021. [doi:10.32604/cmes.2021.018838](#)

314. "Isogeometric Collocation: A Mixed Displacement-Pressure Method for Nearly Incompressible Elasticity," (S. Morganti, F. Fahrendorf, L. De Lorenzis, J.A. Evans, Thomas J.R. Hughes, and A. Real), Special Issue, [Advances in Computational Mechanics and Optimization To celebrate the 95th birthday of Professor Karl Stark Pister](#). *CMES - Computer Modeling in Engineering and Sciences,* Vol.129, No.3, pp. 1125-1150, Published 25 November, 2021, DOI:10.32604/cmes.2021.016832

315. "Removal of spurious outlier frequencies and modes from isogeometric discretizations of second- and fourth-order problems in one, two, and three dimensions," (with René R. Hiemstra, Alessandro Reali and Dominik Schillinger), *Computer Methods in Applied Mechanics and Engineering*, [Volume 387](#), 15 December 2021, Article Number 114115.

316. "Discontinuous Galerkin methods through the lens of variational multiscale analysis," (Stein K.F. Stoter, Bernardo Cockburn, Thomas J.R. Hughes, and Dominik Schillinger), Oden Institute *Computer Methods in Applied Mechanics and Engineering,* Volume 388, January 1, 2022, Article Number 114220. DOI 10.1016/j.cma.2021.114220.

317. "Isogeometric Model Reconstruction of Open Shells Via Ricci Flow and Quadrilateral Layout-Inducing Energies," (Kendrick M. Shepherd, Xianfeng David Gu, and Thomas J. R. Hughes), *Engineering Structures*, [Volume 252](#), 1 February 2022, 113602. [https://doi.org/10.1016/j.engstruct.2021.113602](#)

318. "Analysis-suitable unstructured T-splines: Multiple extraordinary points per face," (with X. Wei, X. Li, K. Qian, Y. Zhang, and H. Casquero), *Computer Methods in Applied Mechanics and Engineering,* Vol. 391, Article No. 114494, March 1, 2022. DOI 1016/j.cma.2021.114494

319. "An accurate strategy for computing reaction forces and fluxes on trimmed locally refined meshes," (Davide D'Angella, Stefan Kollmannsberger, Alessandro Reali, Ernst Rank, and Thomas J.R. Hughes), *Journal of Mechanics,* Vol. 38, 60-76, April 1, 2022. DOI 10.1093/jom/ufac006

320. "Efficient and robust quadratures for isogeometric analysis: Reduced Gauss and Gauss–Greville rules," (Zou Z., Hughes T.J.R., Scott M., Miao D., Sauer R.)
Computer Methods in Applied Mechanics and Engineering, Vol. 392, Article No. 114722, March 15, 2022. [https://doi.org/10.1016/j.cma.2022.114722](#)

321. "Quadrilateral Layout Generation and Optimization Using Equivalence Classes of Integral Curves: Theory and Application to Surfaces with Boundaries," (Kendrick M. Shepherd, Xianfeng David Gu, Rene R. Hiemstra, Thomas J.R. Hughes), *Journal of Mechanics,* Vol. 38, 128-155, April 13, 2022. DOI 10.1093/jom/ufac002

322. "Editorial, 50th Anniversary Special Edition of Computer Methods in Applied Mechanics and Engineering," (Thomas J.R. Hughes, Manolis Papadrakakis, and Tarek Zohdi), *Computer Methods in Applied Mechanics and Engineering,* Vol. 397, Article No. 115206, July 1, 2022. DOI 10.1016/j.cma.2022.115206

323. "Feature-aware reconstruction of trimmed splines using Ricci flow with metric optimization," (Kendrick M. Shepherd, Xianfeng David Gu, Thomas J.R. Hughes), *Computer Methods in Applied Mechanics and Engineering,* Vol. 402, Article No. 115555, 2022/12/1. [https://doi.org/10.1016/j.cma.2022.115555](#)

324. "Phase-field Fracture Modeling of Large Structures," (Yu-Sheng Lo, Thomas J.R. Hughes, Chad M. Landis), *Journal of Mechanics and Physics of Solids*, Vol. 171, 2023/2/1

325. "Patient-specific forecasting of prostate cancer growth during active surveillance using an imaging-informed mechanistic model." (G. Lorenzo, J.S. Heiselman, M.A. Liss, M.I. Miga, H. Gomez, T.E. Yankeelov, T.J.R. Hughes, A. Reali), *Cancer Research,* 82:12S, 5064, 2022. Published abstract.

326. "Variationally Mimetic Operator Networks," (Dhruv Patel, Deep Ray, Michael RA Abdelmalik, Thomas JR Hughes, Assad Oberai), *Computer Methods in Applied Mechanics and Engineering,* Volume 419, DOI 10.1016/j.cma.2023.116536, February 1, 2024.

327. "[Extraction of surface quad layouts from quad layout immersions: application to an isogeometric model of car crash](#)," (Kendrick M. Shepherd, René R. Hiemstra, Xianfeng David Gu, and Thomas J. R. Hughes), *Engineering with Computers,* August 2024, 2024-08-17, DOI 10.1007/s00366-024-02007-w

328. "The Quad Layout Immersion: A Mathematically Equivalent Representation of a Surface Quadrilateral Layout," (Kendrick Monroe Shepherd, René R. Hiemstra, Thomas J. R. Hughes), *Computer Methods in Applied Mechanics and Engineering,* Volume 417, Part B, DOI 10.1016/j.cma.2023.116445, December 15, 2023.

329. "Image-guided subject-specific modeling of glymphatic transport and amyloid deposition," (Michael J. Johnson, Michael R.A. Abdelmalik, Frimpong A. Baidoo, Andrew Badachhape, Thomas J.R. Hughes, and Shaolie

S. Hossain), *Computer Methods in Applied Mechanics and Engineering,* Volume 417, Part B, DOI 10.1016/j.cma.2023.116449, December 15, 2023.

330. "Finite Element and Isogeometric Stabilized Methods for the Advection-Diffusion-Reaction Equation," (Konstantin Key, Michael R.A. Abdelmalik, Stefanie Elgeti, Thomas J.R. Hughes, Frimpong A. Baidoo), *Computer Methods in Applied Mechanics and Engineering,* Volume 417, Part B, DOI 10.1016/j.cma.2023.116354, December 15, 2023.

331. "Image-Guided Patient-Specific Optimization of Catheter Placement for Convection-Enhanced Nanoparticle Delivery in Recurrent Glioblastoma," (Chengyue Wu, David A. Hormuth II, Chase Christenson, Ryan T. Woodall, Michael R. A. Abdelmalik, William T Phillips, Thomas J. R. Hughes, Andrew J. Brenner, Thomas E. Yankeelov), *Computers in Biology and Medicine,* Volume 417, Part B, December 15, 2023, 116449, DOI 10.1016/j.cma.2023.116449

332. "A parametric study of 3D plaque shape on local hemodynamics and implications for plaque instability", (Shaolie S. Hossain, Michael J. Johnson, and Thomas J.R. Hughes), *Biomechanics and Modeling in Mechanobiology,* March 2024. DOI:10.1007/s10237-024-01834-6

333. "An analysis of high order FEM and IGA for explicit dynamics: Mass lumping and immersed boundaries," (Lars Radtke, Michele Torre, Thomas J.R. Hughes, Alexander Düster, Giancarlo Sangalli, Alessandro Reali), *International Journal for Numerical Methods in Engineering,* DOI: 10.1002/nme.7499, May 2024.

334. "A simple and efficient hybrid discretization approach to alleviate membrane locking in isogeometric thin shells," (Roger A. Sauer, Zhihui Zou, Thomas J.R. Hughes), *Computer Methods in Applied Mechanics and Engineering,* Volume 424, 1 May 2024.

335. "A Pilot Study on Patient-specific Computational Forecasting of Prostate Cancer Growth during Active Surveillance Using an Imaging-informed Biomechanistic Mode," (Guillermo Lorenzo, Jon S. Heiselman, Michael A. Liss, Micahel Miga, Hector Gomez, Hector, Thomas Yankeelov, Alessandro Reali, and Thomas J.R. Hughes), *Cancer Research Communications,* 4 (3), pp.617-633, March 2024. DOI: 10.1158/2767-9764.CRC-23-0449

336.

Refereed Conference Proceedings

1. "Finite Elements for Compressible and Incompressible Continua" (with H. Allik), pp. 27-62 in Proceedings, Symposium on Application of Finite Element Methods in Civil Engineering, Vanderbilt University, Nashville, Tennessee, November 1969.

2. "Reduced Finite Element Systems in Dynamics which Retain Full Rate of Convergence" (with R. L. Taylor and H. M. Hilber), Paper Ml/9, Transactions, Third International Conference on Structural Mechanics in Reactor Technology, London, September 1975.

3. "Finite Element Formulation and Solution of a Class of Contact-Impact Problems in Continuum Mechanics" (with R. L. Taylor, J. L. Sackman, A. Curnier and W. Kanoknukulchai), Transactions, Third International Conference on Structural Mechanics in Reactor Technology, London, September 1975.

4. "A Finite Element Method for Incompressible Viscous Flows" (with R. L. Taylor and J. F. Levy), pp. 1-15 in Proceedings, Second International Symposium on Finite Element Methods in Flow Problems, Rapallo, Italy, June 1976.

5. "Concepts of Numerical Stability in Linear and Nonlinear Dynamic Finite Element Analysis" (with T. K. Caughey) pp. 895-897 in Proceedings, Fourteenth Annual Meeting of the Society of Engineering Science, Lehigh University, Bethlehem, Pennsylvania, November 1977.

6. "On the Equivalence of Mixed Finite Element Methods with Reduced/Selective Integration Displacement Models" (with D. S. Malkus), pp. 23-32, Proceedings of the Symposium on Applications of Computer Methods in Engineering, Vol. 1, University of Southern California, Los Angeles, California, August 1977.

7. "Reduced and Selective Integration Techniques in Finite Element Analysis: Two Examples", pp. 35-36 in Developments in Mechanics, Vol. 8, Proceedings of the Midwestern Mechanics Conference, University of Illinois at Chicago Circle, Chicago, Illinois, March 1977.

8. "Impact-Release Conditions in Dynamic Contact Problems," pp. 40-42, Proceedings of the Workshop on Nonlinear Waves in Solids, University of Illinois at Chicago Circle, Chicago, Illinois, March 1977.

9. "Step-by-Step Integration in Linear Structural Dynamics with Particular Reference to Collocation and 'Overshoot'" (with H. M. Hilber), pp. 1043-1044, Proceedings of the Sixth Canadian Congress of Applied Mechanics, Vancouver, British Columbia, June 1977.

10. "Modification of Newmark's Algorithm to Achieve Effective Numerical Dissipation" (with H. M. Hilber), Paper M5/4, Transactions, Fourth International Conference on Structural Mechanics in Reactor Technology, San Francisco, California, August 1977.

11. "A New Finite Element for Plate Bending Analysis" (with R. L. Taylor), Paper M2/1, Transactions, Fourth International Conference on Structural Mechanics in Reactor Technology, San Francisco, California, August 1977.

12. "Viscoplastic Finite Element Analysis by Unconditionally Stable Implicit Methods" (with R. L. Taylor), Paper M5/5, Transactions, Fourth International Conference on Structural Mechanics in Reactor Technology, San Francisco, California, August 1977.

13. "Stability of One-Step Methods in Transient Nonlinear Heat Condition," Paper B2/10, Transactions, Fourth International Conference on Structural Mechanics in Reactor Technology, San Francisco, California, August 1977.

14. "Mathematical Modeling of Cyclic Soil Behavior" (with J. H. Prevost) pp. 746-761 in Proceedings, ASCE Geotechnical Engineering Specialty Conference, Pasadena, California, June 1978.

15. "Analysis of Gravity Offshore Structure Foundations Subjected to Cyclic Wave Loading" (with J. H. Prevost), pp. 1809-1818 in Proceedings of the 10th Annual Offshore Technology Conference, Houston, Texas, May 1978.

16. "A Variational Basis for 'Upwind' Finite Elements" (with J. Atkinson), Proceedings of the IUTAM Symposium on Variational Methods in the Mechanics of Solids, (ed. S. Nemat-Nasser), Pergamon Press, pp. 387-391, 1980.

17. "The 'Heterosis' Family of Plate Finite Elements" (with M. Cohen), pp. 608-617, Proceedings of the Seventh Conference on Electronic Computation, Washington University, St. Louis, Missouri, August 6-8, 1979.

18. "Finite Element Methods for Fluids and Fluid-Structure Interaction," pp. 19-27, Preprints of the First International Seminar of Fluid-Structure Interaction in LWR Systems, Berlin, Germany, August 20-21, 1979.

19. "Arbitrary Lagrangian-Eulerian Finite Element Descriptions with Particular Reference to Incompressible Viscous Flows" (with W. K. Liu and T. K. Zimmermann), Fifth International Conference on Structural Mechanics in Reactor Technology, Berlin, Germany, August 13-17, 1979.

20. "Selective Integration Techniques for the Analysis of General Nonlinear Media" (with W. K. Liu), Proceedings of the Society of Engineering Science Annual Meeting, Northwestern University, Evanston, Illinois, September 5-7, 1979.

21. "Finite Element Procedures for Modeling Fluid-Structures Interaction," Proceedings of the Third Engineering Mechanics Division Specialty Conference, Austin, Texas, September 17-19, 1979.

22. "Solution of the Navier-Stokes Equations by the Finite Element/Penalty Function Formulation," Second International Conference on Computational Methods in Nonlinear Mechanics, University of Texas, Austin, March 26-30, 1979.

23. "Streamline-Upwind/Petrov-Galerkin Methods for Advection Dominated Flows" (with A. Brooks), pp. 283-292, Proceedings for the Third International Conference on Finite Element Methods in Fluid Flow, Banff, June 1980.

24. "Finite Element Methods for Convection Dominated Phenomena with Special Emphasis on the Navier-Stokes Equation," Third International Conference on Finite Elements in Water Resources, University of Mississippi, Oxford, May 1980.

25. "Nonlinear Dynamic Finite Element Analysis of Shells" (with W. K. Liu and I. Levit), Europe - U.S. Workshop on Nonlinear Finite Element Analysis Structural Mechanics, Ruhr - University, Bochum, W. Germany, July 28-31, 1980. Proceedings (eds. W. Wunderlich et al), 151-168, Springer-Verlag, 1981.

26. "Streamline Upwind Formulations for Advection-Diffusion, Navier-Stokes, and First-Order Hyperbolic Equations" (with T. E. Tezduyar and A. Brooks), pp. 97-104 in Proceedings of the Fourth International Conference of Finite Element Methods in Fluid Flow, Tokyo, July 1982.

27. "Finite Element Methods for the Incompressible Navier-Stokes Equations and the Compressible Euler Equations" (with T. E. Tezduyar and A. N. Brooks), Proceedings of the 6th Invitational Symposium on the Unification of Finite Elements, Finite Differences and Calculus of Variations (ed. H. Kardestuncer), 153-178, University of Connecticut, Storrs, May 7, 1982.

28. "Finite Element Formulation for Convection Dominated Flows with Particular Emphasis on the Compressible Euler Equations" (with T. E. Tezduyar), AIAA Paper No. 83-0125, AIAA 21st Aerospace Sciences Meeting, Reno, Nevada, Jan. 10-13, 1983.

29. "Auxiliary Convergence Criteria for Mindlin Plate Elements and their Application to the Four-Node Quadrilateral Element" (with A. Tessler), Proceedings of the 24th Structural Dynamics and Materials Conference, Part 1, AIAA CP 831, pp. 154-160, Lake Tahoe, California 1983.

30. "Element-by-Element and Subdomain Strategies for Solving the Discrete Helmholtz Poisson Problem Arising in the Finite element Analysis of Incompressible Viscous Flows" (with A. Raefsky), pp. 273-274, Proceedings of the Fifth International Symposium on Finite Elements and Flow Problems, University of Texas, Austin, January 23-26, 1984.

31. "Finite Element Analysis of the Incompressible Navier-Stokes Equations: A Synopsis of the Streamline-Upwind Petrov-Galerkin Formulations," Proceedings of FEMSA '85, University of Stellenbosch, South Africa, February 5-8, 1985.

32. "A Shock-Capturing Finite Element Method," pp. 519-534 in Proceedings of the 6th International Conference on Computing Methods in Applied Sciences and Engineering, Versailles, December 12-16, 1983, North-Holland, 1984.

33. "A Progress Report on EBE Solution Procedures in Solid Mechanics" (with A. Raefsky, A. Muller, J. M. Winget, and I. Levit), pp. 18-26 in Proceedings, Second International Conference on Numerical Methods for Nonlinear Problems, Barcelona, Spain, April 9-13, 1984, Pineridge Press, Swansea.

34. "Element-by-Element Algorithms for Heat Transfer Analysis of Structures" (with J. M. Winget), A1AA 19th Thermophysics Conference Paper, Snowmass, Colorado, June 25-27, 1984.

35. "Augmented Weak Forms and Element-by-Element Preconditioners: Efficient Iterative Strategies for Structural Finite Elements - A Preliminary Study" (with A. Muller), Symposium on Advances and Trends in Structural Dynamics , Arlington, Virginia, October 22-25, 1984, pp. 95-100, Research in Structures and Dynamics - 1984, NASA Conference Publication 2335.

36. "Experience with an Element-by-Element Iterative Strategy for Solid Mechanics on a CRAY X-MP/48" (with R.M. Ferencz and J.O. Hallquist), Workshop on Scientific Applications and Algorithm Design for High Speed Computing, April 7-10, 1986, National Center for Supercomputing Applications, Champaign, Illinois. See pp. 180-195 in High Speed Computing (ed. R.B. Wilhelmson), Academic Press.

37. "Large-Scale Vectorized Implicit Calculations in Solid Mechanics on a CRAY X-MP/48 Utilizing EBE Preconditioned Conjugate Gradients" (with R. M. Ferencz and J. 0. Hallquist) Proceedings of Symposium on Future Directions of Computational Mechanics (ed. A. Noor), ASME Winter Annual Meeting, Anaheim, December 10-11, 1986.

38. "Finite Element Methods for High-Speed Flows: Consistent Calculations of Boundary Flux" (with L. P. Franca, M. Mallet, F. Shakib and T. E. Spelce), AIAA Aerospace Sciences Meeting, Paper No. 87-0556, Reno, Nevada, January 11-15, 1987.

39. "A Successful Mixed Formulation for Axisymmetric Shell Analysis Employing Discontinuous Stress Fields of the Same Order as the Displacement Field" (with A. F. D. Loula, I. Miranda, and L. P. Franca) pp. 581-599 in Proceedings of the Fourth Brazilian Symposium on Piping and Pressure Vessels, Salvador, Brazil, October 1986.

40. "Fully Vectorized EBE Preconditioners for Nonlinear Solid Mechanics: Applications to Large-Scale Three-Dimensional Continuum, Shell and Contact/Impact Problems" (with R. M. Ferencz), pp. 261-280 in Proceedings of the First International Symposium on Domain Decomposition Methods for Partial Differential Equations, Paris. France, January 7-9, 1987. Published by SIAM, Philadelphia.

41. "Implicit Solutions of Large-scale Contact and Impact Problems Employing an EBE Preconditioned Iterative Solver" (with R. M. Ferencz), Proceedings of IMPACT 87, International Conference on Effects of Fast Transient Loading in the Context of Structural Mechanics, Lausanne, Switzerland, August 26-27, 1987.

42. "Computational Aerodynamics and the Finite Element Method" (with F. Shakib), AIAA Aerospace Sciences Meeting, Paper No. 88-0031, Reno, Nevada, January 11-15, 1988.

43. "Element-by-Element Algorithms for Nonsymmetric Matrix Problems Arising in Fluids" (with F. Shakib and Z. Johan), Proceedings of the Symposium on the Solution of Super-Large Problems in Computational Mechanics, October 18-19, 1988, Mystic, Connecticut, Plenum, New York, 1989.

44. "Compressible Flow Calculations Employing the Galerkin/Least-Squares Method" (with F. Shakib and Z. Johan), pp. 331-338 in Proceedings of the FEMIF 7th Meeting, University of Alabama, Huntsville, April 2-7, 1989.

45. "Galerkin/Least-Squares Procedures in Computational Fluid Dynamics," Proceedings of the FEMIF 7th Meeting, University of Alabama, Huntsville, April 2-7, 1989.

46. "The Stokes Problem with Various Well-Posed Boundary Conditions: Symmetric Formulations that Converge for All Velocity/Pressure Spaces" (with L.P. Franca), Proceedings of the FEMIF 7th Meeting, University of Alabama, Huntsville, April 2-7, 1989.

47. "A New Family of Stable Elements for the Stokes Problem Based on a Mixed Galerkin/Least-Squares Finite Element Formulation" (with L.P. Franca, A. Loula and I. Miranda), Proceedings of the FEMIF 7th Meeting, University of Alabama, Huntsville, April 2-7, 1989.

48. "Galerkin/Least-Squares Finite Element Formulations for the Stokes Flow Problem" (with L.P. Franca), Proceedings of the Fifth International Symposium on Numerical Methods in Engineering, Lausanne, Switzerland, September 11-15, 1989.

49. "Finite Element Approximations of the Stokes Flow Problem Based Upon Various Variational Principles," (with L.P. Franca and R. Stenberg), Proceedings of Reliability of Finite Element Methods, Swansea, U.K. September 1989.

50. "Finite Element Approximations of the Stokes Flow Problem Based Upon Various Variational Principles" (with L.P. Franca and R. Stenberg), pp. 85-96 in Numerical Methods in Laminar and Turbulent Flow, Vol. 6, Part 1 (eds. C. Taylor, P. Gresho, R. L. Sani and J. Hausen), Proceedings of the Sixth International Conference on Numerical Methods in Laminar and Turbulent Flow, Swansea, U.K., July 11-15,1989.

51. "Finite Elements with Drilling Degrees of Freedom: Theory and Numerical Evaluations" (with F. Brezzi, A. Masud and I. Harari), pp. 3-17 in Proceedings of the Fifth International Symposium on Numerical Methods in Engineering, Vol. 1 (eds. R. Gruber, J. Periaux and R.P. Shaw). Springer-Verlag, Berlin, 1989.

52. "Calculation of Two-dimensional Compressible Euler Flows with a New Petrov-Galerkin Finite Element Method" (with L.P. Franca, F.L. Chalot, I. Harari, F. Shakib, M. Mallet, J. Periaux, and B. Stoufflet), Numerical Simulation of Compressible Euler Flows, A GAMM Workshop (eds. A. Dervieux, B. Van Leer, J. Periaux, and A. Rizzi), Notes on Numerical Fluid Mechanics, Vieweg, Braunschweig, Vol. 26, 88-104 (1989).

53. "Application of the Galerkin/Least-Squares Formulation to the Analysis of Hypersonic Flows: 1. Flow Over a Two-dimensional Ramp" (with F. Chalot, Z. Johan and F. Shakib), pp. 181-200 in Hypersonic Flows for Reentry Problems, Vol. II: Test Cases — Experiments and Computations, Proceedings of the Workshop on Hypersonic Flows for Reentry Problems, Antibes, France, January 22-25, 1990 (eds., J.-A. Desideri, R. Glowinski and J. Periaux), Springer-Verlag, Berlin-Heidelberg, 1991.

54. "Application of the Galerkin/Least-Squares Formulation to the Analysis of Hypersonic Flows: 2. Flow Past a Double Ellipse" (with F. Chalot, Z. Johan and F. Shakib), pp. 427-450 in Hypersonic Flows for Reentry Problems, Vol. II: Test Cases — Experiments and Computations, Proceedings of the Workshop on Hypersonic Flows for Reentry Problems, Antibes, France, January 22-25, 1990 (eds., J.-A. Desideri, R. Glowinski and J. Periaux), Springer-Verlag, Berlin-Heidelberg,1991.

55. "A Globally Convergent Matrix-Free Algorithm for Implicit Time-Marching Schemes Arising in Finite Element Analysis in Fluids" (with Z. Johan and F. Shakib), pp. 992-1009 in Third International Conference on Hyperbolic Problems Theory, Numerical Methods and Applications, Vol. 2 (eds. B. Engquist and B. Gustafsson), Studentlitteratur, Lund (1991).

56. "On Stabilized Methods for the Advective-diffusive Model" (with L.P. Franca and S.L. Frey), pp. 609-620 in Proceedings of 10th International Conference on Computing Methods in Applied Sciences and Engineering (ed. R. Glowinski), Nova Science Publishers, New York, 1991.

57. "Stabilized Finite Element Methods for the Advective-diffusive Problem" (with L.P. Franca and S. Frey), pp. 97-100 in Proceedings of the 11th ABCM Mechanical Engineering Conference, Sao Paulo, Brazil, 1991.

58. "Analysis of Hypersonic Flows in Thermochemical Equilibrium by Application of the Galerkin/Least-Squares Formulation" (with F.L. Chalot), pp. 146-159 in 1CIAM 91, Proceedings of the Second International Conference on Industrial and Applied Mathematics, (ed. R. E. O'Malley, Jr.), SIAM, Philadelphia, 1991.

59. "A Unified Approach to Compressible and Incompressible Flows" (with G. Hauke), pp. 31-40 in Metodes Numericos en Ingenieria, Volumen 1 (eds. F. Navamna and M. Casteleiro), SEMNI, Barcelona, 1993.

60. "New Perspectives and Possibilities within the Field of FEM," pp. 227-235 in Proceedings of the 22nd International FEM Congress, 1KOSS, Stuttgart, 1993.

61. "Massively Parallel Computing: Unstructured Finite Element Simulations" (with Z. Johan, K. K. Mathur and S. L. Johnsson), Proceedings of the NAFEM 4th International Conference on Quality Assurance and Standards on Finite Element and Associated Technologies, Brighton, England, May 26-28, 1993.

62. "Adaptive Finite Element Methods for The Helmholtz Equation in Exterior Domains" (with J. Stewart), pp. 122-142 in Large-Scale Structures in Acoustics and Electromagnetism, Proceedings of a Symposium, National Academy Press, Washington, DC, 1996.

63. "Multiscale Phenomena: Green's Functions, Subgrid Scale Models, Bubbles and the Origins of Stabilized Methods," pp. 99-114 in Proceedings of the Ninth Internatonal Conference on Finite Elements in Fluids — New Trends and Applications (eds. M. Morandi-Cecchi, K. Morgan, J. Periaux, B.A. Schrefler and O.C. Zienkiewicz), SM Liguria, Padova, Italy, 1995.

64. "Stabilization Techniques and Subgrid Scales Capturing" (with F. Brezzi, L.P. Franca and A. Russo), pp. 391-406 in The State of the Art in Numerical Analysis (based on the Proceedings of the 3rd Congress on Numerical Analysis, York, England, 1996), IMA Conference Series, Vol. 63 (I.S. Duff and G.A. Watson, eds.), Oxford University Press.

65. "Multiphysics Simulation of Turbomachinery Applications Using Smart Structures" (with W.-P. Wang and S.M. Rifai), A1AA Paper No. 99-0368, 37th A1AA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 11-14, 1999.

66. "The Variational Multiscale Formulation of LES: Channel Flow at Re=590" (with A.A. Oberai), AIAA 2002-1056, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, NV, January 14-17, 2002.

67. "In vivo Validation of a One-dimensional Finite Element Method for Simulation-based Medical Planning for Cardiovascular Bypass Surgery" (with B.N. Steele, J. Wan, J.P. Ku and C.A. Taylor), Proceedings of the 23d Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Istanbul, Turkey, 2002.

68. "Stabilized Finite Element Methods for Coupled Geomechanics – Reservoir Flow Simulations (with J. Wan, A. Aziz, L.J. Durlofsky), Society of Petroleum Engineers paper SPE 79694, SPE Reservoir Simulation Symposium, Houston, TX, February 3-5, 2003.

69. "A Coupled Momentum Method to Model Blood Flow in Deformable Arteries," (with A. Figueroa, K. E. Jansen and C. A. Taylor), Proceedings of the 6th World Congress on Computational Mechanics (WCCMVI), Beijing, China, Sept. 5-10, 2004.

70. "Variational and Multiscale Methods in Turbulence," (with V. Calo and G. Scovazzi), Proceedings of the 21st International Congress of Theoretical and Applied Mechanics, Kluwer Academic Publishers, in press.

71. "Isogeometric Analysis," (with J.A. Cottrell and Y. Bazilevs), Coupled Problems 2005: Computational Methods for Coupled Problems in Science and Engineering, Santorini Island, Greece, May 25-28, 2005.

72. "Isogeometric Structural Analysis," (with J.A. Cottrell and Y. Bazilevs), 5th International Conference on Computation of Shell and Spatial Structures, Salzburg, Austria, June 1-4, 2005.

73. "Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis of Blood Flow," (with Y. Zhang, Y. Bazilevs, S. Goswami, and C.L. Bajaj), Proceedings of the 15th International Meshing Round table, pp. 73-92, 2006.

74. "Isogeometric modeling and analysis for naval ship structures," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, and Y. Zhang), Marine 2007, Barcelona, Spain, June 5-7, 2007.

75. "A fully integrated approach to fluid-structure interaction," (with Y. Bazilevs, V.M. Calo and Y. Zhang), Coupled Problems, Ibiza, Spain, May 21-23, 2007.

76. "Isogeometric analysis of blood flow: a NURBS-based approach," (with Y. Bazilevs, Y. Zhang, V. Calo, S. Goswami, and C. Bajaj), CompIMAGE, Coimbra, Portugal, October 20-21, 2006.

77. "Patient-specific heart models from high resolution CT," (with C. Bajaj, S. Goswami, Z. Yu, Y. Zhang, and Y. Bazilevs), CompIMAGE, Coimbra, Portugal, October 20-21, 2006.

78. "Isogeometric Discretizations in Structural Dynamics and Earthquake Engineering," (with J. A. Cottrell, A. Reali and G. Sangalli), ECCOMAS Thematic Conference and Computational Methods in Structural Dynamics and Earthquake Engineering, Rythmno, Crete, Greece, June 13-16, 2007.

79. "Variational multiscale residual-driven turbulence modeling for large eddy simulation of incompressible flows", (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, A. Reali, and G. Scovazzi), ECCOMAS Thematic Conference on Multiscale Computational Methods for Solids and Fluids, Cachan, France, November 28-30, 2007.

80. "Isogeometric Analysis: Progress and Challenges," Proceeding of the Computational Engineering Conference, Japan Society of Computational Engineering and Science (JSCES), Vol. 13, pp. 1-3, May 2008.

81. "Modeling and computation of patient-specific vascular fluid-structure interaction using Isogeometric Analysis," (with Y. Bazilevs, V.M. Calo, and Y. Zhang), 6th International Conference on Computation of Shells and Spatial Structures, Cornell University, Ithaca, NY, May 28-31, 2008.

82. "Preliminary Results for an Isogeometric Shell," (with D.J. Benson, and Y. Bazilevs), 10th International LS-DYNA Users Conference, Dearborn, MI, USA, June 8-10, 2008.

83. "F-bar projection method for finite deformation elasticity and plasticity using NURBS-based isogeometric analysis," (with T. Elguedj, Y. Bazilevs, and V.M. Calo), ESAFORM2008, Lyon, France, April 23-25, 2008.

84. "Simulation of Engineering Applications Using Isogeometric Analysis," (with V.M. Calo, H. Gomez, Y. Bazilevs, and G.P. Johnson), TeraGrid 08, Las Vegas, Nevada, June 9-13, 2008

85. "Isogeometric Analysis: Toward unification of CAD and FEA," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, J. Evans, S. Lipton, M.A. Scott, and T.W. Sederberg), 6th International Conference on Engineering Computational Technology, Athens, Greece, September 2-5, 2008.

86. "Variational Multiscale Residual-Driven Turbulence Modeling for Large Eddy Simulation of Incompressible Fow," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, A. Reali and G. Scovazzi), ERCOFTAC Workshop, Direct and Large-Eddy Simulation 7, Trieste, Italy, September 8-10, 2008.

87. "Isogeometric Analysis," pp. 41-44 in *Computational Methods in Marine Engineering III* (eds. T. Kvamsdal, et al.), CIMNE, Barcelona, Spain, 2009.

88. "Isogeometric Failure Aanlysis," (with R. de Borst, M.A. Scott and C.V. Verhoosel), *Multiscale and Multiphysics Processes in Geomechanics* (ed. R.I. Borja), Springer, 2011. Proceedings of the International Workshop on Multiscale and Multiphysics Processes in Geomechanics, Stanford University, Stanford, California, June 23-25, 2010.

89. "Isogeometric Analysis," Volume I, Proceedings of ICM 2010, International Congress of Mathematics, Hyderabad, India, August 19-27, 2010, (Edited by Rajendra Bhatia, Arup Pal, G. Rangarajan, V. Srinivas, and M. Vanninathan), World Scientific Publications. Hyderabad, India, August 19-27, 2010.

90. "Modeling of Drug and Drug-encapsulated Nanoparticle Transport in Patient-specific Coronary Artery Walls to Treat Vulnerable Plaques," (with S. Hossain, S. Hossainy, Y. Bazilevs, and V.M. Calo), NEMB 2010: Proceedings of the First ASME Global Congress on Nanoengineering for Medicine and Biology, Houston, Texas, February 7-10, 2010, pp. 263-264, 2010.

91. "Mathematical modeling of fluid-structure interaction in bioprosthetic heart valves: Numerical approximation and experimental validation," (with D. Kamensky, M.-C. Hsu, J.G. Lesicko, M.A. Katona, J.L. Graves, S.J. Petter, and M.S. Sacks), in *Proceedings of the 2016 Summer Biomechanics, Bioengineering and Biotransport Conference,* pp. SB3C2016-1069 (2 pages), National Harbor, Maryland, June 29-July 2, 2016.

92. "Analysis-suitable CAD Models based on Watertight Boolean Operations," (with Benjamin Marussig, Benjamin Urick, Elaine Cohen, Richard H. Crawford, and Richard F. Riesenfeld), Proceedings in Applied Mathematics and Mechanics (PAMM), GAMM 2019, the 90th Annual Meeting of the International Association of Applied Mathematics and Mechanics, Vienna, Austria, February 18-22, 2019.

93. "Integrating quantitative imaging and computational modeling to predict the spatiotemporal distribution of ^{186}Re nanoliposomes for recurrent glioblastoma treatment," (with Ryan T. Woodall*, David A. Hormuth II, Michael R.A. Abdelmalik, Chengyue Wu, Xinzeng Feng, Williams T. Phillips, Ande Bao, Andrew J. Brenner, and Thomas E. Yankeelov), Paper number 10948-130, SPIE Medical Imaging Symposium, 16 - 21 February 2019, San Diego, California.
http://spie.org/Publications/Proceedings/Paper/10.1117/12.2512867?SSO=1

94. "Reconstruction of Gap-free Intersections for Trimmed NURBS Surfaces," (with B. Urick, R.H. Crawford, E. Cohen, and R.F. Riesenfeld)," Proceedings of the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, IDETC/CIE2019, August 18-21, 2019, Anaheim, CA, USA.

95. "Integrating theory and population data to forecast the spatiotemporal spread of COVID-19," (with Alex Viguerie, Guillermo Lorenzo, Ferdinando Auricchio, Davide Baroli, Alessia Patton, Alessandro Reali, Thomas E. Yankeelov, Alessandro Veneziani), Poster presentation at UT COVID-19 Conference, November 10-11, 2020.

96. "Integrating theory and population data to forecast the spatiotemporal spread of COVID-19," (with Alex Viguerie, Guillermo Lorenzo, Ferdinando Auricchio, Davide Baroli, Alessia Patton, Alessandro Reali, Thomas E. Yankeelov, Alessandro Veneziani), Poster, 36th International CAE Conference, Virtual Event, November 30 – December 4, 2020.

97. "Reconstruction of Gap-Free Intersections for Trimmed NURBS Surfaces, (with Benjamin Urick, Richard Crawford, Elaine Cohen, and Richard Riesenfeld), *Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference,* Anaheim, CA, August 18-21, 2019, Vol. 1, ASME, Article Number: UNSP V001T02A026, published 2020.

98. "Isogeometric Analysis-Suitable Reconstruction Of 1996 Dodge Neon Using Ricci Flow with Metric Optimization," (Kendrick M. Shepherd, Xianfeng David Gu and Thomas J.R. Hughes), Research Note, International Meshing Round Table, Virtual Meeting, February 23-26, 2022.

99. Patient specific, imaging-informed modeling of rhenium-186 nanoliposome delivery via convection-enhanced delivery in glioblastoma multiforme. (Woodall RT, Hormuth Ii DA, Wu C, Abdelmalik MRA, Phillips WT,

Bao A, Hughes TJR, Brenner AJ, Yankeelov TE), Biomed Phys Eng Express. 2021 May 28;7(4):10.1088/2057-1976/ac02a6. doi: 10.1088/2057-1976/ac02a6.

Other Major Publications

1. "The Revolution Fueled by Fast Computers" (with Fritz Hatt), *Magazine Design*, pp. 151-155, February 8, 1990.
2. "Effect of Graded Exercise on Aortic Wall Shear Stress" (with C.A. Taylor, B.I. Tropea and C.K. Zarins), *Surgical Forum*, Vol. XLVI, 331-334 (1995).
3. "Finite Element Modeling of Blood Flow in Arteries," (with C. A. Taylor, and C. K. Zarins), *IACM Expressions,* pp. 4-6, Summer 1997.
4. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow" (with A. Masud), preprint, 2003.
5. "The IACM 2004 Congress Medal Awardees," pp. 4-5 in IACM Expressions, No. 17, January 2005.
6. "Simulation-Based Engineering Science – Revolutionizing Engineering Science through Simulation," Report of the National Science Foundation Blue Ribbon Panel on Simulation-Based Engineering Science (with J.T. Oden, T. Belytschko, J. Fish, C. Johnson, D. Keyes, A. Laub, L. Petzold, D. Srolovitz and S. Yip), National Science Foundation, February 2006.
7. "Personal Recollections of Robert L. Taylor and his Contributions to Computational Mechanics," *IACM Expressions*, No. 19, International Association for Computational Mechanics, Barcelona, Spain, May 2006.
8. Preface for *Multiscale and Multiresolution Approaches in Turbulence* by P. Sagaut, S. Deck and M. Terracol, Imperial College Press, London, 2006.
9. "Research Directions in Computational and Composite Mechanics," (with C.E. Bakis, T. Belytschko, C.T. Herakovich, and N. Patankar), Report of the United States National Committee on Theoretical and Applied Mechanics (USNC/TAM), National Research Council, National Academy of Science, June 2007.
10. "Timoshenko Lecture," delivered November 13, 2007 in Seattle, Washington and published on the *iMechanica* website: http://imechanica.org/node/2293.
11. "Engineering and Medicine: The Predictive Paradigm for the Treatment of Cardiovascular Disease," lectio doctoralis, delivered in the Aula Magna Galileo Galilei, University of Padua, Padua, Italy, November 20, 2007 and published online:
http://caronte.dic.unipd.it/addc/index.php?option=com_content&task=view&lang=en&id=327&Itemid=2
12. "A Vision of the Future: Patient Specific Cardiovascular Modeling and the Predictive Paradigm in Medicine," lectio doctoralis, delivered in the Aula Magna, Facolta di Ingegneria, Universita Degli Studi Di Pavia, Italy, September 24, 2007, published in the book Lauree Honoris Causa, 2007.
13. "Computational Mechanics: Past, Present and Future," lectio doctoralis, delivered at the doctoral degree awards ceremony, Student Union Building, Norwegian University of Science and Technology, Trondheim, Norway, June 3, 2009.
14. "Personal Reminiscences of O.C. Zienkiewicz," pp. 13-14, *IACM Expressions,* No. 25, July 2009.
15. "Ted Belytschko – Personal Remembrances," pp. 14-15, *IACM Expressions*, No. 36, January 2015.
16. "Mathematical model may predict PCa tumor growth, evolution," Lisette Hilton. http://urologytimes.modernmedicine.com/urology-times/news/mathematical-model-may-predict-pca-tumor-growth-evolution *Urology Times*, December 5, 2016. This article was based on an interview in which I described the significance of the paper on patient-specific modeling of prostate tumors published in *PNAS* that I co-authored.
17. "Ted Belytschko, January 13, 1943 – September 15, 2014, Elected to the NAS, 2011: A Biographical Memoir by Thomas J.R. Hughes," National Academy of Sciences, https://www.nasonline.org/wp-content/uploads/2024/06/belytschko-ted-b.pdf

Books (Authored/Co-Authored, Edited/Co-Edited)

1. *Short Course in Fluid Mechanics* (with J. Marsden), Publish or Perish Press, Boston, 1976.
2. *Finite Element Methods for Convection Dominated Flows* (editor), AMD Vol. 34, ASME, New York, 1979.
3. *New Concepts in Finite Element Analysis* (editor), AMD Vol. 44, ASME, New York, 1981.
4. *Nonlinear Finite Element Analysis of Plates and Shells* (editor), AMD Vol. 48, ASME, New York, 1981.
5. *Computational Methods in Transient Analysis* (editor, with T. Belytschko), North-Holland Publishing, Amsterdam, 1983.

6.   *Mathematical Foundations of Elasticity* (with J. Marsden), Prentice-Hall, Englewood Cliffs, New Jersey, 1983. Reprint 1983, Dover, New York.

7.   *Finite Element Methods for Fluid Dynamics and Nonsymmetric Operator Problems* (editor). Special Volume of *Computer Methods in Applied Mechanics and Engineering*, Vol. 45. Nos. 1-3, September 1984.

8.   *Finite Element Methods for Plate and Shell Structures, Vol. 1*, Element Technology (editor, with E. Hinton), Pineridge Press, Swansea, U.K., 1986.

9.   *Finite Element Methods for Plate and Shell Structures, Vol. 2*, Formulations and Algorithms (editor, with E. Hinton), Pineridge Press, Swansea, U.K., 1986.

10. *Numerical Methods for Compressible Flows -- Finite Difference, Element and Volume Techniques* (editor, with T. E. Tezduyar), AMD Vol. 78, ASME, New York, 1986.

11. *The Finite Element Method: Linear Static and Dynamic Finite Element Analysis*, Prentice-Hall, Englewood Cliffs, New Jersey, 1987.

12. *Recent Developments in Computational Fluid Dynamics*, (editor, with T. E. Tezduyar), AMD Vol. 95, ASME, New York, 1988.

13. *Solution Manual for: The Finite Element Method: Linear Static and Dynamic Finite Element Analysis*, by Thomas J.R. Hughes, Prentice-Hall, Englewood Cliffs, New Jersey, 1987 (with I. Harari, G.M. Hulbert, and R.M. Ferencz), 1989.

14. *Stabilized Methods in Computational Fluid Dynamics* (with L.P. Franca, Z. Johan and F.L. Chalot), in preparation.

15. *Recent Developments in Large-Scale Computational Fluid Dynamics* (editor, with T. E. Tezduyar), Special Issues of *Computer Methods in Applied Mechanics and Engineering*, Vol. 87, Nos. 2-3, North-Holland, Amsterdam (1991).

16. *Finite Element Methods in Large-Scale Computational Fluid Dynamics* (editor, with T. E. Tezduyar and M. Kawahara), Special Volume of *Computer Methods in Applied Mechanics and Engineering*, Vol. 112, Nos. 1-4, February 1994.

17. *Recent Developments in Finite Element Analysis. A Book Dedicated to Robert L. Taylor* (editor, with E. Onate and 0. C. Zienkiewicz), International Center for Numerical Methods in Engineering, Barcelona, Spain, 1994.

18. *Finite Element Methods in Large-Scale Computational Fluid Dynamics* (editor, with T. E. Tezduyar and M. Kawahara), Special Issue of International Journal for Numerical Methods in Fluids, Vol. 21, No. 10, Wiley (1995).

19. *Parallel Computing Methods in Applied Fluid Mechanics* (editor, with T.E. Tezduyar), Special Issue of *Parallel Computing*, Vol. 23, No. 9, North-Holland, Amsterdam (1997).

20. *Computational Inelasticity* (with J.C. Simo), Springer-Verlag, New York, 1998.

21. *The Finite Element Method: Linear Static and Dynamic Finite Element Analysis*, Dover, Mineola, New York, 2000 (reprint of 1987 Prentice-Hall edition).

22. *Special Section on Flow Simulation and Modeling*, (editor, With T. E. Tezduyar), *Journal of Applied Mechanics,* Vol. 70, No. 1, January 2003.

23. *Encyclopedia of Computational Mechanics*, (editor, with E. Stein and R. de Borst), Wiley, Chichester, U.K., Dec. 2004.

24. *Computational Fluid Dynamics, Vol. III, Encyclopedia of Computational Mechanics*, (volume editor), Wiley, Chichester, U.K., 2004.

25. *Flow Simulation and Modeling*, (editor, with T. E. Tezduyar), Special Issue of *Computer Methods in Applied Mechanics and Engineering,* Vol. 913, Nos. 21-22, Elsevier, Lausanne, Switzerland, 2004.

26. "John H. Argyris Memorial Issue," (editor, with J.T. Oden and M. Papdrakakis), *Computer Methods in Applied Mechanics and Engineering,* Vol. 195, Nos. 37-40, III-IV, 2006.

27. "John H. Argyris Memorial Issue Part II," (editor, with J.T. Oden and M. Papdrakakis), *Computer Methods in Applied Mechanics and Engineering,* Vol. 195, Nos. 37-40, V-VII, 2006.

28. "Challenges and Advances in Flow Simulation and Modeling," (editor, with T.E. Tezduyar, Y. Matsumoto and M. Haflz), Vol. 36, No. 1, *Computers and Fluids* (special issue), Elsevier, 2007.

29. *Isogeometric Analysis: Toward Integration of CAD and FEA* (with J.A. Cottrell and Y. Bazilevs), Wiley, Chichester, U.K., 2009.

30. *Turbulence Modeling for Large Eddy Simulations* (editor, with V.M. Calo, Y. Bazilevs and R. Moser). Special volume of *Computer Methods in Applied Mechanics and Engineering*, Vol. 199, Issues 13-16, 2010.

31. *Computational Geometry and Analysis* (editor, with Y. Bazilevs, C.L. Bajaj and V.M. Calo). Special Issue of *Computer Methods in Applied Mechanics and Engineering,* Vol. 199, Issues 5-8, 2010.

32. *Models and Methods in Computational Vascular and Cardiovascular Mechanics* (editor, with Y. Bazilevs, V.M. Calo and C.A. Taylor). Special Issue of *Computer Methods in Applied Mechanics and Engineering,* Vol. 198, Issues 45-46, 2010.
33. *Volume III, Fluid Dynamics, Encyclopedia of Computational Mechanics, Second Edition,* (Editor: T.J.R. Hughes), Wiley, February 23, 2018.
34. *Encyclopedia of Computational Mechanics, Second Edition,* (co-esditor with E. Stein and R de Borst), Wiley, February 23, 2018.
35. Special Issue Co-editor (with Yuri Bazilevs, Ming-Chen Hsu and Emily Johnson}, *"Recent Advances in Isogeometric Analysis," Journal of Mechanics,* Vol. 38, January 23, 2023.
36. *"50th Anniversary Special Edition of Computer Methods in Applied Mechanics and Engineering,"* (Editors: Thomas J.R. Hughes, Manolis Papadrakakis, and Tarek Zohdi), *Computer Methods in Applied Mechanics and Engineering,* Vol. 397, July 1, 2022. https://www.sciencedirect.com/journal/computer-methods-in-applied-mechanics-and-engineering/special-issue/10MXNQTWTQ3

Book Chapters - Authored/Co-Authored, Edited/Co-Edited

1. "A Finite Element Method for Large Displacement Contact and Impact Problems" (with W. Kanoknukulchai and R. L. Taylor), pp. 468-495 in *Formulations and Computational Algorithms in Finite Element Analysis*, MIT Press, Cambridge, 1977.
2. "High Reynolds Number, Steady Incompressible Flows by a Finite Element Method" (with R. L. Taylor and J. F. Levy), pp. 55-72 in *Finite Elements in Fluids*, Vol. 3, John Wiley, London.
3. "Numerical Prediction of Head/Helmet System Response" (with R. L. Taylor and W. Kanoknukulchai), pp. 151-165 in *Measurement and Prediction of Structural and Biodynamic Crash-Impact Response* (eds. K. J. Saczalski and W. D. Pilkey), ASME, New York, 1976.
4. "Topics in the Mathematical Foundations of Elasticity" (with J. E. Marsden) *in Nonlinear Analysis and Mechanics: Heriot-Watt Symposium,* Vol. II, pp. 30-285, R. J. Knops (ed.). Pitman, London, 1978.
5. "A Multi-Dimensional Upwind Scheme with No Crosswind Diffusion" (with A. Brooks), pp. 19-35 in *Finite Element Methods for Convection Dominated Flows* (ed. T. J. R. Hughes), AMD Vol. 34, ASME, New York, December 1979.
6. "Finite Element Solutions of Boundary Value Problems in Soil Mechanics" (with J. H. Prevost), *Soils Under Cyclic and Transient Loading* (eds. G. N. Pande and 0. C. Zienkiewicz), pp. 263-276, A. A. Balkema, Rotterdam, 1980.
7. "Galerkin/Upwind Finite Element Mesh Partitions in Fluid Mechanics" (with A. Brooks), *Boundary and Interior Layers -Computational and Asymptotic Methods* (ed. J. J. H. Miller), pp. 103-112, 1980.
8. "Implicit-Explicit Finite Element Technique for Symmetric and Nonsymmetric Operators," *Recent Advances in Non-Linear Computational Mechanics* (eds. E. Hinton, D. R. J. Owen and C. Taylor), pp. 255-267, Pineridge Press, Swansea, 1982.
9. "A Theoretical Framework for Petrov-Galerkin Methods with Discontinuous Weighting Functions: Application to the Streamline Upwind Procedure" (with A. Brooks), pp. 47-65 in *Finite Elements in Fluids*, Vol. 4, (eds. R. H. Gallagher et al.) J. Wiley and Sons, London, 1982.
10. "The Linear Triangular Bending Element" (with R. L. Taylor), pp. 127-142, *Mathematics of Finite Elements and Applications,* MAFELAP 1981, Academic Press, 1982.
11. "Analysis of Transient Algorithms with Particular Reference to Stability Behavior," pp. 67-155 *Computational Methods in Transient Analysis* (eds. T. Belytschko and T. J. R. Hughes), North-Holland, Amsterdam, 1983.
12. "A Comparison of Paraxial and Viscous Silent Boundary Methods in Finite Element Analysis" (with M. F. Cohen and P. C. Jennings), pp. 67-80, *New Concepts in Finite Element Analysis* (eds. T. J. R. Hughes, D. Gartling and R. L. Spilker), AMD Vol. 44, ASME, New York, 1981.
13. "A General Penalty/Mixed Equivalence Theorem for Anistropic, Incompressible Finite Elements" (with D. S. Malkus), pp. 487-496, *Hybrid and Mixed Finite Methods* (eds. S. N. Atluri, R. H. Gallagher and 0. C. Zienkiewicz), J. Wiley, 1983.
14. "Nonlinear Finite Element Shell Formulation Accounting for Large Membrane Strains" (with E. Carnoy), pp. 193-208, *Nonlinear Finite Element Analysis of Plates and Shells*, (eds. T. J. R. Hughes, A. Pifko and A. Jay), AMD Vol. 48, ASME, New York, 1981.

15.   "An Algorithm for Solving the Navier-Stokes Equations based upon the Streamline-Upwind/Petrov-Galerkin Formulation" (with A. N. Brooks), pp. 387-404, *Numerical Methods in Coupled Systems* (ed. R. W. Lewis et al.), J. Wiley, London, 1984.

16.   "A Petrov-Galerkin Finite Element Formulation for Systems of Conservation Laws with Special Reference to the Compressible Euler Equations" (with T. E. Tezduyar and A. N. Brooks), pp. 97-125, *Numerical Methods for Fluid Dynamics* (eds. K. W. Morton and M. J. Baines), Academic Press, London 1982.

17.   "Dynamic Fluid-Structure-Soil Interaction" (with J. H. Prevost), pp. 133-143 *in ASCE Publication on Geotechnical Practice in Offshore Engineering*, University of Texas, Austin, April 27-29, 1983.

18.   "New Alternating Direction Procedures in Finite Element Analysis Based Upon EBE Approximate Factorizations" (with J. Winget, I. Levit, T. E. Tezduyar), pp. 75-109 in *Recent Developments in Computer Methods for Nonlinear Solid and Structural Mechanics*, AMD Vol. 54, 1983.

19.   "Finite Element Methods" (with T. E. Tezduyar and M. Behr), pp. 1272-1282 in *Handbook of Fluid Dynamics and Fluid Machinery*, John Wiley, 1996.

20.   "Numerical Implementation of Constitutive Models: Rate-Independent Deviatoric Plasticity," pp. 29-57, *Theoretical Foundation for Large-Scale Computations of Nonlinear Material Behavior* (eds. S. Nemat-Nasser, R. J. Asaro and G. A. Hegemier), Martinus Nijhoff Publishers, Dordrecht, The Netherlands, 1984.

21.   "A High-Precision Finite Element Method for Shock-Tube Calculations" (with M. Mallet), *Finite Elements in Fluids* (eds. R. H. Gallagher et al.), pp. 339-353, Vol. VI, J. Wiley, London, 1985.

22.   "A One-Dimensional Shock Capturing Finite Element Method and Multi-Dimensional Generalizations" (with M. Mallet, Y. Taki, T. E. Tezduyar and R. Zanutta), pp. 371-408, *Numerical Methods for the Euler Equations of Fluid Dynamics,* (eds. F. Angrand et al.), SIAM, Philadelphia, 1985.

23.   "Mixed Finite Element Methods and Iterative Solutions: An Algorithm for Structural Finite Element Analysis" (with A. Muller), pp. 1-16, *Innovative Methods for Nonlinear Problems* (eds. W. K. Liu, T. Belytschko and K. C. Park), Pineridge Press, Swansea, United Kingdom, 1984.

24.   "Entropy-stable Finite Element Methods for Compressible Fluids: Application to High Mach Number Flows with Shocks" (with M. Mallet and L. Franca), *Finite Element Methods for Nonlinear Problems* (eds. P. Bergan et al.), pp 761-773, Springer Verlag, Berlin, 1986.

25.   "New Finite Element Methods for the Compressible Euler and Navier-Stokes Equations" (with M. Mallet and L. Franca), pp. 339-360 in *Computing Methods in Applied Sciences and Engineering*, VII (eds. R. Glowinski and J. L. Lions), North-Holland, 1986.

26.   "Continuum-based Resultant Shell Elements" (with G. M. Stanley and K. C. Park), pp. 1-45 in Finite Element Methods for Plate and Shell Structures, Vol. 1, *Element Technology* (eds. T. J. R. Hughes and E. Hinton), Pineridge Press, Swansea, U. K., 1986.

27.   "General Return Mapping Algorithms for Rate-Independent Plasticity" (with J. C. Simo), pp. 221-231, *Constitutive Laws for Engineering Materials — Theory and Applications* (eds. C. S. Desai et al.), Elsevier, New York, 1986.

28.   "A Petrov-Galerkin Finite Element Method for the Compressible Euler and Navier-Stokes Equations" (with L. P. Franca, I. Harari, M. Mallet, F. Shakib, T. E. Speice, F. Chalot, and T. E. Tezduyar), pp. 19-43*, Numerical Methods for Compressible Flows—Finite Difference, Element and Volume Techniques* (eds. T. E. Tezduyar and T. J. R. Hughes), AMD Vol. 78, ASME, New York, 1986.

29.   "Implicit Solutions of Large-scale Contact and Impact Problems Employing an EBE Preconditioned Iterative Solver" (with R. M. Ferencz), pp. 165-181 in *Impact: Effects of Fast Transient Loadings* (eds. W. J. Ammann, W. K. Liu, J. A. Studer and T. Zimmermann), Balkema, Rotterdam, 1988, Proceedings of IMPACT 87, International Conference on Effects of Fast Transient Loading in the Context of Structural Mechanics, Lausanne, Switzerland, August 26-27, 1987.

30.   "Some New Classes of Mixed Finite Element Methods" (with L.P. Franca), pp. 135-156 in *Numerical Analysis* 1987, (eds. D. F. Griffiths and G. A. Watson), Longman, New York, 1987.

31.   "Unconditionally Convergent Algorithms for Non-smooth Multisurface Plasticity Amenable to Exact Linearization" (with J. Simo, J. Kennedy, and S. Govindjee), pp. 87-95 in *Advances in Inelastic Analysis* (eds. S. Nakazawa, K. Willam and N. Rebelo), AMD Vol. 88, PVD Vol. 28, ASME, New York,1987.

32.   "The Galerkin/Least-Squares Method for Advective-Diffusive Equations," (with L.P. Franca, G.M. Hulbert, Z. Johan and F. Shakib), pp. 75-99 in *Recent Development in Finite Element Methods in Fluid Mechanics* (eds. T.E. Tezduyar and T.J.R. Hughes), AMD Vol. 95, ASME, New York, 1988.

33.   "Numerical Methods for the Helmholtz Equation with Non-Reflecting Boundary Conditions in Exterior Domains" (with I. Harari), pp. 379-388 in *The Finite Element Method in the 1990's* (eds. E. Onate, J. Periaux and A. Samuelsson), Springer-Verlag, Berlin, 1991.

34. "Iterative Finite Element Solutions in Nonlinear Solid Mechanics" (with R. M. Ferencz), pp. 3-178 in *Handbook of Numerical Analysis* V.B. (eds. P.G. Ciarlet and J.L. Lions), Elsevier Science Publishers, North Holland, Amsterdam, 1998.

35. "An Efficient Implementation of the Spectral Partitioning Algorithm on Connection Machine Systems" (with Z. Johan), pp. 357-371 in *Future Tendencies in Computer Science, Control and Applied Mathematics*

36. "Fast Projection Algorithm for Unstructured Meshes" (with K. Jansen and F. Shakib), pp. 175-203 in *Computational Nonlinear Mechanics in Aerospace Engineering* (ed. S. N. Atluri), American Institute of Aeronautics and Astronautics, Inc., Washington, D.C., 1992.

37. "Data Parallel Finite Element Techniques for Computational Fluid Dynamics on Connection Machine Systems" (with Z. Johan, K. K. Mathur and S. L. Johnsson) pp. 215-229 in *Parallel CFD '92, Implementation and Results Using Parallel Computers*, (eds. R. B. Pelz, A. Ecer and J. Hauser), North Holland, Amsterdam, 1993.

38. "Stabilized Finite Element Methods for the Stokes Problem" (with L. P. Franca and R. Stenberg), pp. 87-107 in *Incompressible Fluid Dynamics - Trends and Advances* (eds. R. A. Nicolaides and M. D. Gunzberger), Cambridge University Press, 1993.

39. "Parallel Implementation of Recursive Spectral Bisection on the Connection Machine CM-5 System" (with Z. Johan, K. K. Mathur and S. L. Johnsson), pp. 451-459 in *Parallel Computational Fluid Dynamics: New Trends and Advances*, Vol. 2, Springer-Verlag, 1994.

40. "Current Reflections on Stabilized Finite Element Methods for Computational Fluid Mechanics" (with G. Hauke, K. Jansen and Z. Johan), pp. 44-63 in *Finite Elements in Fluids: New Trends and Appplications, Part 1* (eds. K. Morgan, E. Onate, J. Periaux, J. Peraire and 0. C. Zienkiewicz), Centre Internacional de Metodos Numericos en Ingenieria, Barcelona, 1993.

41. "Mesh Decomposition and Communication Procedures for Finite Element Applications on the Connection Machine CM-5 System" (with Z. Johan, K. K. Mathur, and S. L. Johnsson), pp. 233-240 in *High Performance Computing and Networking* (W. Gentzsch and V. Harms, editors). Lecture Notes in Computer Science, Vol. 2, Springer-Verlag, 1994.

42. "Stabilized Finite Element Methods in Fluids: Inspirations, Origins, Status and Recent Developments" (with G. Hauke and K. Jansen), pp. 272-292 in *Recent Developments in Finite Element Analysis. A Book Dedicated to Robert L. Taylor* (eds. T. J. R. Hughes, E. Onate and 0. C. Zienkiewicz), International Center for Numerical Methods in Engineering, Barcelona, Spain, 1994.

43. "Application of the Finite Element Method to the Reynolds Averaged Navier-Stokes Equations" (with K. Jansen and G. Hauke), pp. 215-222 in *Notes on Numerical Fluid Mechanics*, Vol. 65 (eds. A. Dervieux, M. Braza and J.-P. Dussuage), Vieweg, 1998.

44. "High Performance Finite Element Computation of Fluid Dynamics Problems" (with T.E. Tezduyar and M. Behr), pp. 300-321 in *Computational Fluid Dynamics Review* (eds. M. Hafez and K. Oshima), Wiley, 1995.

45. "Stabilized Methods" (with G. Hauke, K. Jansen and Z. Johan), pp. 137-159 in *Computer Simulation of Fluid Flows with the Finite Element Method* (eds. M. Kawahara, K. Kashiyama, T. Nomura and H. Okuda), Springer, Tokyo, 1998 (in Japanese).

46. " Comparison of Discontinuous and Continuous Galerkin Methods Based on Error Estimates, Conservation, Robustness and Efficiency" (with G. Engel, L. Mazzei and M. Larson), pp. 135-146, *Discontinuous Galerkin Methods,* (eds. G. Karniadakis et al.). Springer, Berlin, 2000.

47. "The Variational Multiscale Formulation of LES with Application to Turbulent Channel Flows" (with A.A. Oberai), pp. 223-239 in *Geometry, Mechanics and Dynamics* (eds., P. Newton, P. Holmes and A. Weinstein), Volume in Honor of the 60th Birthday of J.E. Marsden, Springer, New York, 2002.

48. "Assessment of a Multiscale Formulation of LES for Homogeneous Isotropic Flows," (with A.A. Oberai and A.A. Wray), pp. 242-252 in *Fluid Dynamics and Aeronautics: New Challenges*, (eds. J. Periaux, M. Champion, J.-J. Gagnepain, O. Pironneau, B. Stoufflet, and Ph. Thomas), A Book Dedicated to Pierre Perrier on the Occasion of his 65th Birthday, CIMNE, Barcelona, Spain, 2003.

49. "Multiscale and Stabilized Methods," (with G. Scovazzi and L. P. Franca), *Encyclopedia of Computational Mechanics,* Wiley, Chinchester, U.K., December 2004.

50. "On the Continuous/Discontinuous Galerkin (CDG) Formulation of Poisson-Kirchhoff Plate Theory," (with K. Garikipati), pp. 67-76 in *Computational Mechanics – Theory and Practice*, (eds. K. Mathisen and T. Kvamsdal and K. M. Okstad), CIMNE, Barcelona, Spain, 2004.

51. "Isogeometric Shell Analysis," (with J.A. Cottrell and Y. Bazilevs), pp. 73-86 in *Applied Mechanics and Multi-Physics Simulations of High-Consequence Engineering Systems, Anniversary Volume in Honor of*

Professor Charles R. Steele, (eds. J.T. Fong, P.C. Mitiguy and L.A. Taber), Stanford Mechanics Alumni Club (SMAC) and Division of Mechanics and Computation, Stanford University, Stanford, CA, 2005.

52.   "A Multiscale Discontinuous Galerkin Method," (with P. Bochev and G. Scovazzi), *Large-scale Scientific Computing, Springer Lecture Notes in Computer Science*, 3743, pp. 84-93, 2006.

53.   "John H. Argyris Memorial Issue," (editor, with J.T. Oden and M. Papdrakakis), *Computer Methods in Applied Mechanics and Engineering,* Vol. 195, Nos. 37-40, III-IV, 2006.

54.   "John H. Argyris Memorial Issue Part II," (editor, with J.T. Oden and M. Papdrakakis), *Computer Methods in Applied Mechanics and Engineering,* Vol. 195, Nos. 37-40, V-VII, 2006.

55.   "Variational and Multiscale Methods in Turbulence," (with V.M. Calo and G. Scovazzi), pp. 153-163, in *Mechanics of the 21st Century*, (eds. W. Gutkowski and T.A. Kowaleski), Springer, Dordrecht, The Netherlands, 2005.

56.   "Computational Geometry and the Analysis of Solids and Structures," (with J.A. Cotrell, A. Reali, and Y. Bazilevs), pp. 21-40 in *Computational Mechanics – Solids, Structures and Coupled Problems* (eds. C.A. Mota Soares, J.A.C. Martins, H.C. Rodrigues and J.A.C. Ambrosio), Springer, Dordrecht, the Netherlands, 2006.

57.   "Computational Geometry as a Basis for Computational Structure Technology: A Look into the Future," (with J.A. Cottrell, Y. Bazilevs, and A. Reali), pp. 1-22 in *Innovations in Computational Structures Technology* (eds. B.H.V. Topping, G. Montero and R. Montenegro), Saxe-Coburg Publications, Stirling, Scotland, 2006.

58.   "Refinement and Continuity in the Isogeometric Analysis of a Hyperboloidal Shell," (with J.A. Cottrell), pp. 133-150 in *Progress in Computational Mechanics in Honour of Professor Arantes e Oliveira's 73rd Birthday* (eds. E. Stein, V.M.A. Leitao, C.A. Duarte), ICIST-IST, Lisbon, Portugal, 2007.

59.   "Isogeometric Analysis of the Phase-field Models: Application to the Cahn-Hilliard equation." (with H. Gomez and V.M. Calo), *Proceedings of the ECCOMAS Multidisciplinary Jubilee Symposium*, Springer, in press, 2008.

60.   "The Variational Multiscale Theory for Turbulent Flow," (with Y. Bazilevs, V. Calo, J.A. Cottrell, A.Reali, and G. Scovazzi), pp. 177-213 in *Flow Simulation by the Finite Element Method – II* (eds. K. Kashiyama, T. Nomura and S. Fujima), Springer, Japan, 2008 (in Japanese).

61.   "Isogeometric Analysis: Toward Unification of CAD and FEA," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, J. Evans, S. Lipton, M.A. Scott and T.W. Sederberg), pp. 1-16 in *Trends in Engineering Computational Technology* (eds. M. Papadrakakis and B.H.V. Topping), Saxe-Coburg Publications, Stirlingshire, Scotland, 2008.

62.   "Isogeometric Analysis of Phase Field Models: Application to the Cahn-Hilliard Equation," pp. 1-16 in ECCOMAS *Multidisciplinary Jubilee Symposium – New Computational Challenges in Materials, Structures and Fluids,* Book Series: Computational Methods in Applied Sciences, Vol. 14, Springer, 2009.

63.   "Variational Multiscale Theory of LES Turbulence Modeling," (with Y. Bazilevs, V.M. Calo and G. Scovazzi), pp. 103-112, in *Direct and Large Eddy Simulation VII,* Proceedings of the Seventh International ERCOFTAC Workshop on Direct and Large Eddy Simulation, held at the University of Trieste, September 8-10, 2008 (editors, V. Armenio, B. Guerts, J. Froehlich), Springer, 2010.

64.   "Residual-based Variational Multiscale Theory of LES Turbulence Modeling," (with Y. Bazilevs, V.M. Calo and G. Scovazzi), pp. 3-18, in Lecture Notes in Applied and Computational Mechanics Volume 55, Multiscale Methods in Computational Mechanics, Progress and Accomplishments (R. de Borst and E. Ramm, editors), Springer, 2011.

65.   "Isogeometric Analysis: A Calculus for Computational Mechanics," (with D.J. Benson, R. de Borst, M.A. Scott, and C. Verhoosel), Chapter 1, pp. 1-17, in *Developments and Applications in Engineering Computational Technology* (B.H.V. Topping et al., editors), Saxe-Coburg Publications, Stirlingshire, Scotland, 2010.

66.   "Isogeometric Analysis," (with J. Evans), Proceedings of the International Congress of Mathematicians (ICM 2010), World Scientific Publishers, Volume 1, Hyderabad, India, August19-27, 2010, (R. Bhatia, A. Pal, G. Rangarajan, V. Srinivas, and M. Vanninathan, eds.), 2011.

67.   "Isogeometric failure analysis," (with C. V. Verhoosel, M. A. Scott, M. J. Borden, and R. de Borst), pp. 275–282, in *Recent Developments and Innovative Applications in Computational Mechanics,* (D. Mueller-Hoeppe, S. Loehnert, and S. Reese, editors), Springer-Verlag, 2011.

68.   "Discretization of Higher Order Gradient Damage Models Using Isogeometric Finite Elements," (with C. V. Verhoosel, M. A. Scott, M. J. Borden, and R. de Borst), Chapter 4 in *Damage Mechanics of Cementitious Materials and Structures,* (G. Pijaudier-Cabot and F. Dufour, editors), ISTE-Wiley, November 2011.

69. "The Variational Multiscale Theory for Turbulent Flow," (with Y. Bazilevs, V. Calo, J.A. Cottrell, A.Reali, and G. Scovazzi), pp. 177-213 in *Flow Simulation by the Finite Element Method – II*, revised second printing, (eds. K. Kashiyama, T. Nomura and S. Fujima), Maruzen Publishing Co., Ltd, Japan, 2012 (in Japanese).

70. "Multiscale Modeling for the Vascular Transport of Nanoparticles," (with S.S. Hossain, A.M. Kopacz, Y. Zhang, S.-Y. Lee, T.-R. Lee, M. Ferrari, W.K. Liu, and P. Decuzzi), pp. 437-459 in *Nano and Cell Mechanics: Fundamentals and Frontiers,* (eds. H.D. Espinosa and G. Bao), John Wiley & Sons, 2013, published online December 11, 2012, DOI: 10.1002/9781118482568.ch17.

71. "An Introduction to Isogeometric Collocation Methods," (with A. Reali), pp.173-204, in *Iso-Geometric Methods for Numerical Simulation* (editors: G. Beer and S.P. Bordas), CISM Courses and Lectures, Vol. 561, Springer, 2015.

72. "Isogeometric Phase-field Simulation of Boiling," (with Ju Liu), pp. 217-228 in *Advances in Computational Fluid-Structure Interaction and Flow Simulation: A Tribute to the Life and Work of Tayfun Tezduyar on the Occasion of his 60th Birthday,* (Editors: Y. Bazilevs and K. Takizawa), Modeling and Simulation in Science, Engineering and Technology Book Series, Springer Birkhäuser, Basel, 2016.

73. Foreword, *Isogeometric Analysis and its Applications,* Proceedings Volume, IGAA 2014, Workshop on Isogeometric Analysis and Applications, Annweiler, Germany, April 7-10, 2014, (Editors: Bert Jüttler and Bernd Simeon), Lecture Notes in Computational Science and Engineering, Springer International Publishing Switzerland, 2015.

74. "Isogeometric Compatible Discretizations for Viscous Incompressible Flow," (with J.A. Evans), pp. 155-192 in *Isogeometric Analysis: A New Paradigm in the Numerical Approximation of PDEs*, (Editors: A. Buffa and G. Sangalli), Lecture Notes in Mathematics 2161, Fondazione CIME Roberto Conti, Firenze, Springer International Publishing AG Switzerland, October 2016.

75. Foreword to the book "Smooth Bezier Surfaces over Unstructured Quadrilateral Meshes," (Authors: Michel Bercovier and Tanya Matskewich), Springer, 2017.

76. "An Introduction to Isogeometric Analysis," (with A. Cottrell and Y. Bazilevs), Chapter 7, pp. 145-170, *Flow Simulation with the Finite Element Method*, in Japanese, edited by The Japanese Society for Computational Engineering and Science, Maruzen Publishers, Japan, 2017.

77. "Variational Multiscale Method and Turbulence," (with Y. Bazilevs, V. Calo, J.A. Cottrell, A. Reali, G. Scovazzi), Chapter 7, pp. 171-208, *Flow Simulation with the Finite Element Method,* in Japanese, edited by The Japanese Society for Computational Engineering and Science, Maruzen Publishers, Japan, 2017.

78. "Fluids: Introduction and Survey," Encyclopedia of Computational Mechanics, Second Edition, (Editors: E. Stein, R. de Borst and T.J.R. Hughes), Volume 5, Part 1, pp. 1-3; John Wiley & Sons, Ltd., 2018.

79. "Mathematics of Isogeometric Analysis: A Conspectus," (with G. Sangalli), Encyclopedia of Computational Mechanics, Second Edition, (Editors: E. Stein, R. de Borst and T.J.R. Hughes), Volume 2, Part 2, pp. 589-628; John Wiley & Sons, Ltd., 2018.

80. "Multiscale and Stabilized Methods," (with G. Scovazzi and L.P. Franca), Encyclopedia of Computational Mechanics, Second Edition, (Editors: E. Stein, R. de Borst and T.J.R. Hughes), Volume 5, Part 1, pp. 5-96; John Wiley & Sons, Ltd., 2018.

81. "Phase Field Formulation for Ductile Fracture," (with M.J. Borden, C.M. Landis, A. Anvari, and I.J. Lee), pp. 45-70, in *Advances in Computational Plasticity*, a book in honor of D.R.J. Owen, (Editors: E. Oñate, D. Peric, E. de Souza Neto, and M. Chiumenti), Springer, 2018.

82. "Isogeometric Analysis: Mathematical and Implementational Aspects, with Applications," (with Giancarlo Sangalli and Mattia Tani), pp. 237-315 in *Splines and PDEs: From Approximation Theory to Numerical Linear Algebra,* Lecture Notes in Mathematics, Vol. 2,219, (Editors: T. Lyche, C. Manni and H. Speleers), Springer, Cham, Switzerland. Published online September 21, 2018.

83. "Computational Cardiovascular Analysis with the Variational Multiscale Methods and Isogeometric Discretization," (with Kenji Takizawa, Yuri Bazilevs, Tayfun E. Tezduyar, and Ming-Chen Hsu), pages 151-193 in *Parallel Algorithms in Computational Science and Engineering* (eds. Ananth Grama and Ahmed Sameh). Modeling and Simulation in Science, Engineering and Technology book series (Birkhäuser, Cham), published online July 7th, 2020, https://doi.org/10.1007/978-3-030-43736-7_6.

84. "Smooth multi-patch discretizations in Isogeometric Analysis," (with G.Sangalli, T. Takacs and D. Toshniwal), *Handbook of Numerical Analysis,* Volume 22, 2021, Pages 467-543. Available online 28 October 2020, https://doi.org/10.1016/bs.hna.2020.09.002

85. "Quantitative in vivo Imaging to Enable Tumor Forecasting and Treatment Optimization," (with Guillermo Lorenzo, David A. Hormuth II, Angela M. Jarrett, Ernesto A. B. F. Lima, Shashank Subramanian, George

Biros, J. Tinsley Oden, Thomas J.R. Hughes and Thomas E. Yankeelov), pages 55-97, in: *Cancer, Complexity, Computation.* Eds.: Igor Balaz and Andrew Adamatzky, Springer, 2022.

86. "Dynamic fracture of brittle shells in a space-time adaptive isogeometric phase field framework, (with Karsten Paul, Chad M. Landis and Roger A. Sauer), invited book chapter in honor of Peter Wriggers's 70th birthday, *Current Trends and Open Problems in Computational Mechanics* (F. Aldakheel et al., Eds.), pp. 407-415, Springer, 2022.

87. "Galerkin Formulations with Greville Quadrature Rules for Isogeometric Shell Analysis: Higher Order Elements and Locking," (with Zhihui Zou and Michael A. Scott), invited book chapter in honor of Peter Wriggers's 70th birthday, *Current Trends and Open Problems in Computational Mechanics* (F. Aldakheel et al., Eds.), pp. 207-215, Springer, 2022.

88. "A comparison of matrix-free isogeometric Galerkin and collocation methods for Karhunen-Loève expansion," (with Michal L. Mika, René R. Hiemstra and Dominik Schillinger), invited book chapter in honor of Peter Wriggers's 70th birthday, *Current Trends and Open Problems in Computational Mechanics* (F. Aldakheel et al., Eds.), pp. 329-340, Springer, 2022.

89. Special Issue Co-editor (with Yuri Bazilevs, Ming-Chen Hsu and Emily Johnson}, "Recent Advances in Isogeometric Analysis," *Journal of Mechanics,* January 23, 2023. https://academic.oup.com/jom/pages/iga-special-issue

Technical Reports

1. "Preliminary Shock and Slam Analysis of U.S.S. Spokane Sonar Appendage" (with J.H. Leighton), GD/Electric Boat Division, Report No. U411-67-024, May 1967."Specifications for Shock Confidence Test," GD/Electric Boat Division, Report No. U411-67-051, August 3, 1967.

2. "Mathematical Model Report for SS(N) 637 Main Sea Water Piping System Shock Analysis," Electric Boat Division, Progress Report for Contract No. N161-26310, August 18, 1967.

3. "Linear Time Dependent Shock Analysis Program," GD/Electronics Division, Report U411-67-062, December 1967. (Also appears as GD/Electric Boat Division, WP 720, Project Serial No. SS-40-00, Task No. 819, Contract No. BSR 93021, January 15, 1968).

4. "Elastic-Plastic Matrix Analysis of Complex Structures" (with H. Allik), GD/Electric Boat Division, Report P411-67-050, December 1967.

5. "GENSAM Automatic Mode Selection," GD/Electric Boat Division SVS-TN-68-002, February 20, 1968.

6. "A Refined Finite Element for the Analysis of Complexly Shaped Continua," GD/Electric Boat Division, Report No. P411-68-032, May 1968.

7. "Final Report-Dynamic Shock Analysis of SS(N) 637 Main Sea Water Piping System (U)," GD/Electric Boat Division, Report No. C411-68-019, June 1968. (Confidential.)

8. "Final Report-Dynamic Shock Analysis of SS(N) 637 Main Sea Water Piping System 1/3 Scale Model (U)" (with J. Engblom'), GD/Electric Boat Division, Report No. C411-68-022, June 1968. (Confidential.)

9. "Comparison of Hrennikoff and Finite Element Methods," GD/Electric Boat Division, SVS-TN-68-013, August 1968.

10. "Tetrahedral Model for Solid Analysis of Incompressible and Nearly Incompressible Material," GD/Electric Boat Division, SVS-TN-68-011, July 1968.

11. "Dynamic Analysis of Structures with Shear Modulus A Function of Frequency," GD/Electric Boat Division, SVS-TN-68-012, August 16, 1968.

12. "Finite Element Formulation for Piezoelectric Continua by a Variational Theorem" (with H. Allik), GD/Electric Boat Division, Report P411-68-056, September 1968.

13. "Introduction to the Finite Element Method—Displacement Formulation" (with H. Allik), GD/Electric Boat Division, Shock and Vibration Section Engineering Seminars, Lecture 19, October 1968.

14. "Dynamic Applied Load Analysis-Time Dependent and Shock Spectrum Approaches," GD/Electric Boat Division, Shock and Vibration Section Engineering Seminars, Lecture 18, November 1968.

15. "The Current 'GENSAM' Finite Element Library-A Resume," GD/Electric Boat Division, Shock and Vibrations Section Engineering Seminars, Lecture 20, December 1968.

16. "GENSAM—A General Structural Analysis and Matrix System" (with H. Allik, B. Bott, T. J. McArdle and P. J. Cacciatore), GD/Electric Boat Division, Report No. P411-69-021, March 1969.

17. "Compressible and Incompressible Solid Finite Element Analysis" (with H. Allik), GD/Electric Boat Division, Report No. U411-69-040, May 1969.
18. "3-D Finite Element Analysis of SSN685 Impulse Tank Forward Bulkhead," GD/Electric Boat Division, Report No. U411-69-040, May 1969.
19. "Problems in Impact of Solid Rocket Motors" (with J. L. Sackman and G. L. Goudreau), MSNW Report No. 70-62-1, Mathematical Science Northwest, Seattle, Washington, October 1970.
20. "Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics" (with R. L. Taylor and J. L. Sackman), SESM Report No. 74-8, U. C. Berkeley, May 1974.
21. "A Study of the One-Dimensional Theory of Arterial Pulse Propagation," SESM Report No. 74-13, U.C. Berkeley, December 1974. (Ph.D. Dissertation.)
22. "Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics-11" (with R. L. Taylor and J. L. Sackman), SESM Report No. 75-3, U. C. Berkeley, January 1975.
23. "Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics-Ill" (with R. L. Taylor and J. L. Sackman), SESM Report No. 75-7, U.C. Berkeley, July 1975.
24. "A Reduction Scheme for Problems of Structural Dynamics" (with H. M. Hilber and R. L. Taylor), SESM Report No. 75-9, University of California, Berkeley, September 1975.
25. "Improved Numerical Dissipation for Time Integration Algorithms in Structural Dynamics" (with H. M. Hilber and R. L. Taylor), LBL-4486, Lawrence Berkeley Laboratory, University of California, Berkeley, April 1976.
26. "Unconditionally Stable Algorithm for Nonlinear Heat Conduction," LBL-5205, Lawrence Berkeley Laboratory, University of California, Berkeley, May 1976.
27. "Finite Element Formulation and Solution of Contact-Impact Problems in Continuum Mechanics-IV" (with R. L. Taylor, J. L. Sackman and W. Kanoknukulchai), SESM 76-4, Department of Civil Engineering, University of California, Berkeley, July 1976.
28. "Equivalence of Finite Elements for Nearly-incompressible Elasticity," LBL-5237, Lawrence Berkeley Laboratory, University of California, Berkeley, August 1976.
29. "Collocation. Dissipation and 'Overshoot' for Time Integration Schemes in Structural Dynamics" (with H. M. Hilber), LBL-5959, Energy and Environment Division, Lawrence Berkeley Laboratory, University of California, Berkeley, July 1977.
30. "Upwind Finite Element Schemes for Convective-Diffusive Equations" (with J.D. Atkinson), Charles Rolling Research Laboratory, Technical Note C-2, Department of Mechanical Engineering, University of Sydney, December 1977.
31. "LEARN -- A Linear Static Finite Element Analysis Program," Division of Engineering and Applied Science, California Institute of Technology, 1976.
32. "DIRT-II - A Nonlinear Quasi-Static Finite Element Analysis Program" (with J. H. Prevost), Division of Engineering and Applied Science, California Institute of Technology, 1979.
33. "Foundations of Offshore Gravity Structures: Analysis and Centrifugal Modeling" (with J. H. Prevost, B. Cuny and R. F. Scott), California Institute of Technology, 1979.
34. "Stress-point Algorithms for a Pressure Sensitive Multiple-Yield-Surface Plasticity Theory," Lawrence Livermore National Laboratory, March 1982.
35. "Development of Time Accurate Finite Element Techniques for First-Order Hyperbolic Systems with Particular Emphasis on the Compressible Euler Equations," NASA-Ames University Consortium, Interchange No. NCA2-OR745-104, May 1982.
36. "Fluid-Structure Finite Element Analysis for Cylindrical, Flat-Bottomed Oil Storage Tank with Floating Roof," Report to Hitachi-Zosen Corporation, Osaka, Japan, 1982.
37. "A Literature Survey on Finite Element Methodology for Turbine Hot Section Components" (with D. Fyhrie), Report prepared for MARC Analysis Research Corporation, Palo Alto, 1983.
38. "Finite Element Procedures Applicable to Nonlinear Analysis of Reinforced Concrete Shell Structure" (with G. Stanley), CR84.033, Naval Civil Engineering Laboratory, Port Hueneme, California, September 1984.
39. "DLEARN — A Linear Static and Dynamic Finite Element Analysis Program" (with R. Ferencz and A. Raefsky), Division of Applied Mechanics, Stanford University, 1985.
40. "Research Program in Theoretical and Experimental Foundations of Large-Scale Computations of Nonlinear Material Behavior" (with R.J. Asaro, G.A. Hegemier, and S. Nemat-Nasser) Report prepared

for Defense Advanced Research Projects Agency and Office of Naval Research, Transcience Corporation, La Jolla, California, February 1985.

41. "Efficient and Simple Algorithms for the Integration of General Classes of Inelastic Constitutive Equations Including Damage and Rate Effects: Application to the Cap Model for Soils and Concrete," Naval Civil Engineering Laboratory, Port Hueneme, California, July 1986.

42. "An Assessment of Modelling Techniques for the Finite Element Analysis of Reinforced Concrete Plate and Shell Structures," Naval Civil Engineering Laboratory, Port Hueneme, California, October 1987.

43. "Numerical Evaluation and Comparison of Subcycling Algorithms for Structural Dynamics" (with G. M. Hulbert), Report prepared for Defense Nuclear Agency, Washington, D.C., 1988.

44. "The Finite Element Method with Lagrange Multipliers on the Boundary: Circumventing the Babuska-Brezzi Condition" (with H.J.C. Barbosa), No. 030/90, Laboratorio Nacional de Computacao Cientifica, Rio de Janiero, Brazil, October 1990.

45. "Stabilized Finite Element Method for the Stokes Problem" (with L.P. Franca and R. Stenberg), Helsinki University of Technology, Faculty of Mechanical Engineering, Laboratory for Strength of Materials, Research Report No. 11, January 1991.

46. "Three-dimensional and Plane Stress Constitutive Models and Algorithms for Reinforced Concrete Plate and Shell Structures Incorporating Anisotropic Damage Mechanisms and Viscous Regularization Effects" (with A. Muller), CR91.010, Naval Civil Engineering Laboratory, Port Hueneme, California, August 1991.

47. "AETHER-1.0: Aero-Thermodynamics-Release 1.0" (with F.L.Chalot), Division of Applied Mechanics, Stanford University, 1992.

48. "ENSA-3C: A Space-Time Galerkin/Least-Squares Finite Element Program to Analyze the Compressible Euler and Navier-Stokes Equations for General Divariant Gases, User's Manual" (with F. Shakib and Z. Johan), Stanford University, 1990.

49. "Convergence Analyses of Galerkin/Least-Squares Methods for Symmetric Advective-diffusive Forms of the Stokes and Incompressible Navier-Stokes Equations" (with L.P. Franca), Laboratorio Nacional de Computacao Cientifica, Rio de Janeiro, July 1992.

50. "Stabilized Finite Element Methods: I. Application to the Advective-diffusive Model" (with L. P. Franca and S. L. Frey), Research Report No. 1300, INRIA, Rocquencourt, Le Chesnay Cedex, France, October 1990.

51. "Finite Element Methods for Fluids," pp. 2-1 to 2-22, AGARD Report No. 787, Special Course on Unstructured Grid Methods for Advection Dominated Flows, NATO Advisory Group for Aerospace Research and Development, Neuilly sur Seine, France, May 1992.

52. "A Space-Time Finite Element Method for Fluid-Structure Interaction" (with A. Masud) SUDAM Report No. 93-3, Division of Applied Mechanics, Stanford University, May 1993.

53. "b = int g" (with F. Brezzi, L. P. Franca and A. Russo), Pubblicazioni N. 1000, Istituto di Analisi Numerica, Consiglio Nazionale delle Ricerche, Via Abbiategrasso, 209-27100 Pavia, Italy, 1996.

54. "A Priori Error Analysis of a Finite Element Method with Residual-free Bubbles for Advection Dominated Equations" (with F. Brezzi, D. Marini, A. Russo and E. Suli) Report No. 98/07, Oxford University Computing Laboratory, Numerical Analysis Group, Wolfson Building, Parks Road, Oxford, England Xl 3QD.

55. "Variational Approximation of Flux in Conforming Finite Element Methods for Elliptic Partial Differential Equations: A Model Problem" (with F. Brezzi and E. Suli) Report No. 01/04, Oxford University Computing Laboratory, Numerical Analysis Group, Wolfson Building, Parks Road, Oxford, England OX1 3QD.

56. "Trailing Edge Noise due to Turbulent Flows" (with A.A. Oberai and F. Roknaldin), Report No. 02-002, Department of Aerospace and Mechanical Engineering, Boston University, Boston, Massachusetts.

57. "Mixed Discontinuous Galerkin Methods for Darcy Flow," (with F. Brezzi, L. D. Marini and A. Masud), ICES Report 04-17, Institute for Computational Engineering and Sciences, UT-Austin, April 2004.

58. "Multiscale and Stabilized Methods," (with G. Scovazzi and L. P. Franca), ICES Report 04-18, Institute for Computational Engineering and Sciences, UT-Austin, April 2004.

59. "Energy Transfers and Spectral Eddy Viscosity in Large-Eddy Simulations of Homogeneous Isotropic Turbulence: Comparison of Dynamic Smagorinsky and Multiscale Models over a Range of Discretizations," (with G. N. Wells and A. A. Wray), ICES Report 04-20, Institute for Computational Engineering and Sciences, UT-Austin, April 2004.

60. "On the Continuous/Discontinuous Galerkin (CDG) Formulation of Poisson-Kirchhoff Plate Theory," (with K. Garikipati), ICES Report 04-30, Institute for Computational Engineering and Sciences, UT-Austin, June 2004.
61. "Conservation Properties for the Galerkin and Stabilised Forms of the Advection Diffusion and Incompressible Navier-Stokes Equations," (with G. N. Wells), ICES Report 04-31, Institute for Computational Engineering and Sciences, UT-Austin, June 2004.
62. "A Coupled Momentum Method to Model Blood Flow in Deformable Arteries," (with A. Figueroa, K. E. Jansen and C. A. Taylor), ICES Report 04-33, Institute for Computational Engineering and Sciences, UT-Austin, June 2004.
63. "Variational and Multiscale Methods in Turbulence," (with V. Calo and G. Scovazzi), ICES Report 04-46, Institute for Computational Engineering and Sciences, UT-Austin, October, 2004.
64. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry, and Mesh Refinement," (with J.A. Cottrell and Y. Bazilevs), ICES Report 04-51, Institute for Computational Engineering and Sciences, UT-Austin, October, 2004.
65. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow," (with A. Masud and J. Wan), ICES Report 04-53, Institute for Computational Engineering and Sciences, UT-Austin, October 2004.
66. "Trailing Edge Noise from a 'Frozen' Line Vortex," (with A.A. Oberai), ICES Report 05-07, Institute for Computational Engineering and Sciences, UT-Austin, February 2005.
67. "A Coupled Momentum Method for Modeling Blood Flow in Three-dimensional Deformable Arteries," (with A. Figueroa, I. Vignon-Clementel, K.E. Jansen and C.A. Taylor), ICES Report 05-14, Institute for Computational Engineering and Sciences, UT-Austin, March 2005.
68. "A Multiscale Discontinuous Galerkin Method with the Computational Structure of a Continuous Galerkin Method," (with G. Scovazzi, P. Bochev and A. Buffa), ICES Report 05-16, Institute for Computational Engineering and Sciences, UT-Austin, March, 2005.
69. "A Multiscale Discontinuous Galerkin Method," (with P. Bochev and G. Scovazzi), ICES Report 05-17, Institute for Computational Engineering and Sciences, UT-Austin, April 2005.
70. "Isogeometric Analysis of Structures: k-refinement, Invariant Frequency Spectra, Nonlinear Parametrization, Rotationless Bending Elements, and Application to an Exact Geometrical Model of the NASA Aluminum Tested Cylinder," (with Y. Bazilevs, J.A. Cottrell and A. Reali), ICES Report 05-27, Institute for Computational Engineering and Sciences, UT-Austin, July 2005.
71. "Weak Imposition of Dirichlet Boundary Conditions in Fluid Mechanics," (with Y. Bazilevs), ICES Report 05-25, Institute for Computational Engineering and Sciences, UT-Austin, June 2005.
72. Patient Specific Mathematical Models of the Heart for Simulation-Based Medical Planning," (with F. Nugen), ICES Report No. 05-26, Institute for Computational Engineering and Sciences, UT-Austin, July 2005.
73. "Analysis of a Multiscale Discontinuous Galerkin Method for Convection Diffusion Problems," (with A. Buffa and G. Sangalli), ICES Report No. 05-040, Institute for Computational Engineering and Sciences, UT-Austin, September 2005.
74. "Variational Multiscale Analysis: the Fine-scale Green's Function, Projection, Optimization, Localization, and Stabilized Methods," (with G. Sangalli), ICES Report No. 05-046, Institute for Computational Engineering and Sciences, UT- Austin, November 2005.
75. "Stabilized shock hydrodynamics: I. A Lagrangian method," (with G. Scovazzi, M.A. Christon, and J.N. Shadid), ICES Report No. 05-048, Institute for Computational Engineering and Sciences, UT-Austin, December 2005.
76. "Stabilized shock hydrodynamics: I. A Lagrangian method," (with G. Scovazzi, M.A. Christon, and J.N. Shadid), Sandia Report SAND2005-J563J, December 2005.
77. "Isogeometric analysis: approximation, stability and error estimates for h-refined meshes," (with Y. Bazilevs, L. Beirao de Veiga, J.A. Cottrell, and G. Sangalli), ICES Report No. 06-04, Institute for Computational Engineering and Sciences, UT-Austin, February 2006.
78. "Isogeometric Fluid-Structure Interaction Analysis with Applications to Arterial Blood Flow," (with Y. Bazilevs, V.M. Calo, and Y. Zhang), ICES Report No. 06-05, Institute for Computational Engineering and Sciences, UT-Austin, April 2006.
79. "Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis of Blood Flow," (with Y. Zhang, Y. Bazilevs, S. Goswami, and C. L. Bajaj), ICES Report No. 06-07, Institute for Computational Engineering and Sciences, UT-Austin, April 2006.

80. "Weak Dirichlet Boundary Conditions for Wall-Bounded Turbulent Flows," (with Y. Bazilevs, C. Michler and V.M. Calo), ICES Report No. 07-01, Institute for Computational Engineering and Sciences, UT-Austin, January 2007.

81. "YZbeta Disconuity Capturing for Advection-Dominated Processes with Application to Arterial Drug Delivery," (with Y. Bazilevs, V.M. Calo and T.E. Tezduyar), ICES Report No. 07-02, Institute for Computational Engineering and Sciences, UT-Austin, January 2007.

82. "Studies of Refinement and Continuity in Isogeometric Structural Analysis," (with J.A. Cottrell and A. Reali), ICES Report No. 07-05, Institute for Computational Engineering and Sciences, UT-Austin, February 2007.

83. "Isogeometric Discretizations in Structural Dynamics and Wave Propagation," (with J.A. Cottrell, A. Reali and G. Sangalli), ICES Report No. 07-12, Institute for Computational Engineering and Sciences, UT-Austin, April 2007.

84. "Variational Multiscale Residual-based Turbulence Modeling for Large Eddy Simulation of Incompressible Flows," (with Y. Bazilevs, V.M. Calo, A. Reali, and G. Scovazzi), ICES Report No. 07-15, Institute for Computational Engineering and Sciences, UT-Austin, May 2007.

85. "The role of continuity in residual-based variational multiscale modeling of turbulence," (with I. Akkerman, Y. Bazilevs, V.M. Calo and S. Hulshoff), ICES Report No. 07-16, Institute for Computational Engineering and Sciences, UT-Austin, May 2007.

86. "B-bar and F-bar Projection Methods for Nearly Incompressible Linear and Nonlinear Elasticity and Plasticity using Higher-order NURBS Elements," (with T. Elguedj, Y. Bazilevs and V. Calo), ICES Report No. 07-26, Institute for Computational Engineering and Sciences, UT-Austin, September 2007.

87. "Duality and Unified Analysis of Discrete Approximations in Structural Dynamics and Wave Propagation: Comparison of p-method Finite Elements with k-method NURBS," (with A. Reali and G. Sangalli), ICES Report No. 07-29, Institute for Computational Engineering and Sciences, UT-Austin, October 2007.

88. "Isogeometric Analysis of the Cahn-Hilliard phase-field model,"(with H. Gomez, V.M. Calo and Y. Bazilevs), ICES Report No. 07-38, Institute for Computational Engineering and Sciences, UT-Austin, December 2007.

89. "NURBS-based Isogeometric Analysis for the Computation of Flows about Rotating Components," (with Y. Bazilevs), ICES Report No. 08-03, Institute for Computational Engineering and Sciences, UT-Austin, February 2008.

90. "Stabilized methods for compressible flows," (with G. Scovazzi and T.E. Tezduyar), ICES Report No. 08-04, Institute for Computational Engineering and Sciences, UT-Austin, April 2008.

91. "Augmented Lagrangian Method for Constraining the Shape of Velocity Profiles at Outlet Boundaries for Three-Dimensional Finite Element Simulations of Blood Flow," (with H.J. Kim, C.A. Figueroa, K.E. Jansen, and C.A. Taylor), ICES Report No. 08-05, Institute for Computational Engineering and Sciences, UT-Austin, April 2008.

92. "Turbulence without Tears: Residual-Based VMS, Weak Boundary Conditions, and Isogeometric Analysis of Wall-Bounded Flows," (with Y. Bazilevs, C. Michler, and V.M. Calo), ICES Report No. 08-07, Institute for Computational Engineering and Sciences, UT-Austin, April 2008.

93. "Simulation of Engineering Applications Using Isogeometric Analysis," (with V.M. Calo, H. Gomez, Y. Bazilevs, and G.P. Johnson), ICES Report No. 08-08, Institute for Computational Engineering and Sciences, UT-Austin, May 2008.

94. "Multiphysics Model for Blood Flow and Drug Transport with Application to Patient-Specific Coronary Artery Flow," (with V.M. Calo , N.F. Brasher and Y. Bazilevs), ICES Report No. 08-12, Institute for Computational Engineering and Sciences, UT-Austin, May 2008.

95. "Isogeometric Analysis of Phase-field Models: Application to the Cahn-Hilliard Equation," (with H. Gomez and V.M. Calo), ICES Report No. 08-13, Institute for Computational Engineering and Sciences, UT-Austin, May 2008.

96. "Patient-Specific Isogeometric Fluid-Structure Interaction Analysis of Thoracic Aortic Blood Flow due to Implantation of the Jarvik 2000 Left Ventricular Assist Device," (with Y. Bazilevs, J.R. Gohean, R.D. Moser, and Y. Zhang), ICES Report No. 08-14, Institute for Computational Engineering and Sciences, UT-Austin, May 2008.

97. "N-widths, sup-infs, and optimality ratios for the k-version of the isogeometric finite element method," (with J. A. Evans, Y. Bazilevs and I. Babuska), ICES Report No. 08-15, Institute for Computational Engineering and Sciences, UT-Austin, May 2008.

98. "Isogeometric Fluid-Structure Interaction: Theory, Algorithms, and Computations," (with Y. Bazilevs, V.M. Calo and Y. Zhang), ICES Report No. 08-16, Institute for Computational Engineering and Sciences, UT-Austin, June 2008.

99. "Improving stability of stabilized and multiscale formulations in flow simulations at small time steps," (with M.C. Hsu, Y. Bazilevs, V.M. Calo, and T.E. Tezduyar), ICES Report No. 08-19, Institute for Computational Engineering and Sciences, UT-Austin, June 2008.

100. "Isogeometric Analysis using T-Splines," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, J. Evans, S. Lipton, M.A. Scott, and T.W. Sederberg), ICES Report No. 08-26, Institute for Computational Engineering and Sciences, UT-Austin, August 2008.

101. "Efficient Quadrature for NURBS-based Isogeometric Analysis" (with A. Reali and G. Sangalli), ICES Report No. 08-27, August 2008.

102. "Isogeometric Shell Analysis: The Reissner-Mindlin Shell," (with D.J. Benson, Y. Bazilevs, and M.-C. Hsu), ICES Report No. 09-05, February 2009.

103. "Robustness of Isogeometric Structural Discretizations Under Severe Mesh Distortion," (with S. Lipton, J.A. Evans, Y. Bazilevs, and T. Elguedj), ICES Report No. 09-06, March 2009.

104. "Enforcement of Constraints and Maximum Principles in the Variational Multiscale Method," (with J.A. Evans and G. Sangalli), ICES Report No. 09-11, May 2009.

105. "Isogeometric Collocation Methods," (with F. Auricchio, L. Beirao da Veiga, A. Reali, and G. Sangalli), ICES Report No. 09-30, October 23, 2009.

106. "A Large Deformation, Rotation-free, Isogeometric Shell," (with D.J. Benson, Y. Bazilevs, and M.-C. Hsu), ICES Report No. 09-37, December 4, 2009.

107. "A generalized finite element formulation for arbitrary basis functions: From isogeometric analysis to XFEM," (with D.J. Benson, Y. Bazilevs, E. De Luycker, M.-C. Hsu, M. Scott, and T. Belytschko), ICES Report No. 09-38, December 4, 2009.

108. "Isogeometric analysis of the isothermal Navier-Stokes-Korteweg equations," (with H. Gomez, X. Nogueira and V.M. Calo), ICES Report No. 09-19, August 28, 2009; revised version, ICES Report No. 10-03, February 16, 2010.

109. "An Isogeometric Approach to Cohesive Zone Modeling," (with C. Verhoosel, M.A. Scott and R. de Borst), ICES Report No. 10-05, March 1, 2010.

110. "Isogeometric Finite Element Data Structures based on Bezier Extraction of NURBS," (with M.J. Borden, M.A. Scott and J.A. Evans), ICES Report No. 10-08, March 8, 2010.

111. "Isogeometric Analysis," (with J.A. Evans), ICES Report No. 10-18, May 13, 2010.

112. "An Isogeometric Anlaysis Approach to Gradient Damage Models," (with C. Verhoosel, M.A. Scott and R. de Borst), ICES Report No. 10-21, June 14 2010.

113. "Contact Treatment in Isogeometric Analysis with NURBS," (with I. Temizer and P. Wriggers), ICES report No. 10-30, July 5, 2010.

114. "Variational Multiscale Analysis: A New Look Between Flux Correction, Total Variation, and Constrained Optimization," (with J.A. Evans), ICES Report No. 10-35, August 23, 2010.

115. "Provably Unconditionally Stable, Second-order Time-accurate, Mixed Variational Methods for Phase-field Models," (with H. Gomez), ICES Report No. 10-38, September 27, 2010.

116. "On Linear Independence of T-splines," (with X. Li, T.W. Sederberg and M.A. Scott), ICES Report No. 10-40, October 22, 2010.

117. "Mathematical Modeling of Coupled Drug and Drug-encapsulated Nanoparticle Transport in Patient-specific Coronary Artery Walls," (with S.S. Hossain, S.F.A. Hossainy, Y. Bazilevs, and V.M. Calo), ICES Report No. 10-41, October 22, 2010.

118. "A Finite Strain Eulerian Formulation for Compressible and Nearly Incompressible Hyper-elasticity using Higher-order NURBS Elements," (with R. Duddu, L.L. Lavier and V.M. Calo), ICES Report No. 10-42, October 27, 2010.

119. "New Quadrilateral Plate Elements Based on Twist-Kirchhoff Thin Plate Theory," (with F. Brezzi, J. Evans and L.D. Marini), ICES Report No. 10-43, October 28, 2010.

120. "Isogeometric Finite Element Data Structures Based on Bezier Extraction of T-splines," (with M.A. Scott, M.J. Borden, C.V. Verhoosel, and T.W. Sederberg), ICES Report No. 10-45, November 9, 2010.

121. "Converting an Unstructured Quadrilateral Mesh to a Standard T-spline Surface," (with W. Wang, Y. Zhang and M.A. Scott), ICES Report No. 10-50, December 17, 2010.

122. "Local Refinement of Analysis-suitable T-splines," (with M.A. Scott, X. Li and T.W. Sederberg), ICES Report No. 11-06, April 1, 2011.

123. "Discretization of higher-order gradient damage models using isogeometric finite elements," (with C. V. Verhoosel, M. A. Scott, M. J. Borden, and R. de Borst), ICES Report No. 11-12, May 5, 2011.

124. "A phase-field description of dynamic brittle fracture," (with M.J. Borden, C.V. Verhoosel, M.A. Scott, and C.M. Landis), ICES Report No. 11-14, May 11, 2011.

125. "Three-dimensional mortar-based frictional contact treatment in isogeometric analysis with NURBS," (with I.Temizer and P. Wriggers), ICES Report No. 11-16, May 26, 2011.

126. "Explicit Trace Inequalities for Isogeometric Analysis and Parametric Hexahedral Elements," (with J.A. Evans), ICES Report No. 11-17, May 27, 2011.

127. "Generalization of the Twist-Kirchhoff Theory of Plate Elements to Arbitrary Quadrilaterals and Assesssment of Convergence," (with H.A.F.A. Santos and J.A. Evans), ICES Report No 11-25, July 15, 2011.

128. "Converting an Unstructured Quadrilateral/Hexahedral Mesh to a Rational T-Spline," (with W. Wang, Y. Zhang and G. Xu), ICES Report No. 11-27, August 5, 2011.

129. "Isogeometric Variational Multiscale Large-Eddy Simulation of Fully-developed Turbulent Flow over a Wavy Wall," (with K. Chang and V.M. Calo), ICES Report No. 11-28, September 21, 2011.

130. "Isogeometric Analysis for Topology Optimization with a Phase Field Model," (with L. Dede and M.J. Borden), ICES Report No. 11-29, September 29, 2011.

131. "Isogeometric Analysis of Nearly Incompressible Large Strain Plasticity," (with T. Elguedj), ICES Report No. 11-35, November 4, 2011.

132. "Solid T-spline Construction from Boundary Representations for Genus-Zero Geometry," (with Y. Zhang and W. Wang), ICES Report No. 11-14, November 14, 2011.

133. "Isogeometric Divergence-conforming B-splines for the Darcy-Stokes-Brinkman Equations," (with J.A. Evans), ICES Report 12-03, January 5, 2012.

134. "A Simple Algorithm for Obtaining Nearly Optimal Quadrature Rules for NURBS-based Isogeometric Analysis," (with F. Auricchio, F. Calabro, A. Reali, and G. Sangalli), ICES Report No. 12-04, January 5, 2012.

135. "An Isogeometric Design-through-analysis Methodology based onAdaptive Hierarchical Refinement of NURBS, Immersed Boundary Methods, and T-spline CAD Surfaces," (with D. Schillinger, L. Dede, M.A. Scott, J.A. Evans, M.J. Borden, and E. Rank), ICES Report No. 12-05, January 23, 2012.

136. "Isogeometric Collocation for Elastostatics and Explicit Dynamics," (with F. Auricchio, L. Beirao da Veiga, A. Reali, and G. Sangalli), ICES Report No. 12-07, January 30, 2012.

137. "in silico Vascular Modeling for Personalized Nanoparticle Delivery," (with S. Hossain, Y. Zhang, X. Liang, F. Hussein, M. Ferrari, and P. Decuzzi), ICES Report No. 12-09, February 3, 2012.

138. "Isogeometric Analysis of the Advective Cahn-Hilliard Equation: Spinodal Decomposition Under Shear Flow," (with J. Liu, L. Dede, J.A. Evans, and M.J.Borden), ICES Report No. 12-12, March 19, 2012.

139. "Solid T-spline Construction from Boundary Triangulations with Arbitrary Genus Topology," (with W. Wang, Y. Zhang and L. Liu), ICES Report No. 12-13, April 3, 2012.

140. "Simulation of Laminar and Turbulent Concentric Pipe Flows with the Isogeometric Variational Multiscale Method," (with Y.G. Motlagh, H.T. Ahn and V.M. Calo), ICES Report No. 12-14, April 4, 2012.

141. "Isogeometric Divergence-conforming B-splines for the Steady Navier-Stokes Equations," (with J.A. Evans), ICES Report No. 12-15, April 6, 2012.

142. "Isogeometric Divergence-conforming B-splines for the Unsteady Navier-Stokes Equations," (with J.A. Evans), ICES Report No. 12-16, April 22, 2012.

143. "An inexact Gauss-Newton method for inversion of basal sliding and rheology parameters in a nonlinear Stokes ice sheet model," (with N. Petra, H. Zhu, G. Stadler, and O. Ghattas), ICES Report No. 12-20, May 29, 2012.

144. "Isogeometric boundary element analysis using unstructured T-splines," (with M.A. Scott, R.N. Simpson, J.A. Evans, S.P.A. Bordas, and T.W. Sederberg), ICES Report No. 12-20, May 29, 2012.

145. "Conformal Solid T-spline Construction from Boundary T-spline Representations," (with Y. Zhang and W. Wang), ICES Report No. 12-29, July 20, 2012.

146. "Blended Isogeometric Shells," (with D. Benson, S. Hartmann, Y. Bazilevs, and M.-C. Hsu), ICES Report No. 12-38, August 24, 2012.

147. "Discrete Spectrum Analyses for Various Mixed Formulations of the Stokes Eigenproblem," ICES Report No. 12-39, August 24, 2012.

148. "Functional Entropy Variables: A New Methodology for Deriving Thermodynamically Consistent Algorithms for Complex Fluids, with Particular Reference to the Isothermal Navier-Stokes-Korteweg Equations," (with J. Liu, H. Gomez, J.A. Evans, and C. Landis), ICES Report No. 12-43, November 27, 2012.

149. "Isogeometric Collocation: Cost Comparison with Galerkin Methods and Extension to Adaptive Hierarchical NURBS Discretizations," (with D. Schillinger, J.A. Evans, A. Reali, and M.A. Scott), ICES Report No. 13-03, February 6, 2013.

150. "Vascular Deposition Patterns for Nanoparticles in an Inflamed Patient-Specific Arterial Tree," (with Shaolie S. Hossain and Paolo Decuzzi), ICES Report No. 13-04, February 11, 2013.

151. "Volumetric T-spline Construction Using Boolean Operations," (with L. Lei, Y. Zhang, M.A. Scott, and T.W. Sederberg), ICES Report No. 13-19, July 2, 2013.

152. "A higher-order phase-field model for brittle fracture: Formulation and analysis within the isogeometric analysis framework", (with M.J. Borden, C.M. Landis and C.V. Verhoosel), ICES Report No. 13-20, July 30, 2013.

153. "Amplitude-Phase Decompositions and the Growth and Decay of Solutions of the Incompressible Navier-Stokes and Euler Equations," ICES Report No. 13-21, August 8, 2013.

154. "Finite element and NURBS Approximations of Eigenvalue, Boundary-value, and Initial-value Problems," (with J.A. Evans and A. Reali), ICES Report No. 13-24, August 16, 2013.

155. "Reduced Bézier Element Quadrature Rules for Quadratic and Cubic Splines in Isogemetric Analysis," (with Dominik Schillinger and Shaikh J. Hossain), ICES Report No. 14-02, February 3, 2014.

156. "Isogeometric Boundary-element Analysis for the Wave-resistant Problem Using T-splines," (with M.A. Scott, A.-A.I. Ginnis, K.V. Kostas, C.G. Politis, P.D. Kaklis, K.A. Belibassakis, and Th. P. Gerostathis), ICES Report No. 14-03, February 10, 2014.

157. "Collocation on *hp* finite element meshes: Reduced quadrature perspective, cost comparison with standard finite elements, and explicit structural dynamics," (with D. Schillinger, J.A. Evans, F. Frischmann, and M.-C. Hsu), ICES Report No. 14-04, February 13, 2014.

158. "Isogeometric collocation: Neumann boundary conditions and contact," (with L. De Lorenzis, J.A. Evans and A. Reali), ICES Report 14-06, March 27, 2014.

159. "MRI-based computational modeling of blood flow and nanomedicine deposition in patients with peripheral arterial disease," (with Shaolie S. Hossain, Yongjie Zhang, Xiaoyi Fu, Gerd Brunner, Jaykrishna Singh, Dipan Shah, and Paolo), ICES Report No. 14-07, April 21, 2014.

160. "Isogeometric contact: a review," (with Laura De Lorenzis and Peter Wriggers), ICES Report No. 14-09, May 5, 2014.

161. "Patient-specific isogeometric structural analysis of aortic valve closure," (with S. Morganti, F. Auricchio, D. Benson F.I. Gambarin, S. Hartmann, and A. Reali), ICES Report No. 14-10, May 5, 2014.

162. "A variational immersed boundary framework for fluid-structure interaction: Isogeometric implementation and application to bioprosthetic heart valves," (with D. Kamensky, M.-C. Hsu, D. Schillinger, J.A. Evans, A. Aggarwal, Y. Bazilevs, and M.S. Sacks), ICES Report No. 14-12, May 22, 2014.

163. "USNCTAM Perspectives on Mechanics in Medicine," (with G. Bao, Y. Bazilevs, J.-H. Chung, P. Decuzzi, H.D. Espinosa, M. Ferrari, H. Gao, S.S. Hossain, R. D. Kamm, W.K. Liu, A. Marsden and B. Schrefler), ICES Report No. 14-13, June 3, 2014.

164. "Fluid–structure interaction analysis of bioprosthetic heart valves: Significance of arterial wall deformation," (with M.-C. Hsu, D. Kamensky, Y. Bazilevs, and M.S. Sacks), ICES Report No. 14-14, June 27, 2014.

165. "Single-variable formulations and isogeometric discretizations for shear deformable beams," (with J. Kiendl, F. Auricchio and A. Reali), ICES Report No. 14-26, August 14, 2014.

166. "Selective and reduced numerical integration for NURBS-based isogeometric analysis," (with C. Adam, S. Bouabdallah, M. Zarroug, and H. Maitournam), ICES Report No. 14-29, August 31, 2014.

167. "An Introduction to Isogeometric Collocation Methods," (with A. Reali), ICES Report No. 14-30, September 6, 2014.

168. "Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement," (with X. Wei, Y. Zhang and M.A. Scott), ICES Report No. 14-31, September 6, 2014.

169. "An integrated approach to engineering design and analysis using the Autodesk T-spline plugin for Rhino3d," (with M.A. Scott, T.W. Sederberg, and M.T. Sederberg), ICES Report No. 14-33, September 10, 2014.

170. "A locking-free model for Reissner-Mindlin plates: Analysis and isogeometric implementation via NURBS and triangular NURPS," (with L. Beirao da Veiga, J. Kiendl, C. Lovadina, J. Niiranen, A. Reali, and H. Speleers), ICES Report No. 15-01, January 20, 2015.

171. "Isogeometric collocation for large deformation elasticity and frictional contact problems," (with R. Kruse, N. Nguyen-Thanh and L. De Lorenzis), ICES Report No. 15-08, March 16, 2015.

172. "Isogeometric Analysis of Boundary Integral Equations," (with Matthias Taus and Gregory J. Rodin), ICES Report No. 15-12, April 21, 2015.

173. "Liquid-Vapor Phase Transition: Thermomechanical Theory, Entropy Stable Numerical Formulation, and Boiling Simulations," (with Ju Liu, Chad M. Landis and Hector Gomez), ICES Report No. 15-14, May 5, 2015.

174. "Extended Truncated Hierarchical Catmull-Clark Subdivision," (with Xiaodong Wei, Yongjie Jessica Zhang, and Michael A. Scott), ICES Report No. 15-15, June 8, 2015.

175. "Isogeometric Phase-field Simulation of Boiling," (with Ju Liu), ICES Report No. 15-16, June 18, 2015.

176. "A Palette of Fine-scale Eddy Viscosity and Residual-based Models for Variational Multiscale Formulations of Turbulence," (with A.A. Oberai), ICES Report No. 15-23, November 2, 2015.

177. "Truncated T-splines: Fundamentals and Methods," (with Xiaodong Wei, Yongjie Zhang, and Lei Liu), ICES Report No. 16-02, January 29, 2016.

178. "Optimal and reduced quadrature rules for tensor product and hierarchically refined splines in isogeometric analysis," (with René R. Hiemstra, Francesco Calabrò, and Dominik Schillinger), ICES Report No. 16-11, May 11, 2016.

179. "Immersogeometric cardiovascular fluid–structure interaction analysis with divergence-conforming B-splines" (with David Kamensky, Ming-Chen Hsu, Yue Yu, John A. Evans, and Michael S. Sacks), ICES Report No. 16-14, May 16, 2016.

180. "A phase-field formulation for fracture in ductile materials: Finite deformation balance law derivation, plastic degradation, and stress triaxiality effects," (with Michael J. Borden, Chad M. Landis, Amin Anvari, and Isaac J. Lee), ICES Report No. 16-15, June 13, 2016.

181. "Multi-degree smooth polar splines: a framework for geometric modeling and isogeometric analysis," (with Deepesh Toshniwal, Hendrik Speleers and René R. Hiemstra), ICES Report No. 16-17, June 20, 2016.

182. "Tissue-scale, patient-specific modeling and simulation of prostate cancer growth," (with Guillermo Lorenzo, Michael A. Scott, Kevin Tew, Yongjie Jessica Zhang, Lei Liu, Guillermo Vilanova, and Hector Gomez), ICES Report No. 16-25, November 8, 2016.

183. "Volumetric Truncated Hierarchical Spline Construction on Unstructured Hexahedral Meshes for Isogeometric Analysis Applications," (with Xiaodong Wei and Yongjie Jessica Zhang), ICES Report No. 17-02, February 8, 2017.

184. "A Review of Trimming in Isogeometric Analysis: Challenges, Data Exchange and Simulation Aspects," (with Benjamin Marussig), ICES Report 17-03, February 13, 2017.

185. "Smooth cubic spline spaces on unstructured quadrilateral meshes with particular emphasis on extraordinary points: Geometric design and isogeometric analysis considerations," (with Deepesh Toshniwal and Hendrik Speleers), ICES Report 17-05, March 9, 2017.

186. "Hierarchically refined and coarsened splines for moving interface problems, with particular application to phase-field models of prostate tumor growth," (with G. Lorenzo, M.A. Scott, K. Tew, and H. Gomez), ICES Report 17-05, March 9, 2017.

187. "A diffuse interface method for the Navier-Stokes/Darcy equations: Perfusion profile for a patient-specific human liver based on MRI scans," (with Stein K.F. Stoter, Peter Müller, Luca Cicalese, Massimiliano Tuveri, and Dominik Schillinger), ICES Report 17-07, April 10, 2017.

188. "A framework for designing patient-specific bioprosthetic heart valves using immersogeometric fluid–structure interaction analysis," (with Fei Xu, Simone Morganti, Rana Zakerzadeh, David Kamensky, Ferdinando Auricchio, Alessandro Reali, Michael S. Sacks, and Ming-Chen Hsu), ICES Report 17-11, May 16, 2017.

189. "Analysis-suitable spline spaces of arbitrary degree on unstructured quadrilateral meshes," (with Deepesh Toshniwal and Hendrik Speleers), ICES Report 17-16, July 14, 2017.

190. "Explicit Higher-Order Accurate Isogeometric Collocation Methods for Structural Dynamics," (with J.A. Evans, R.R. Hiemstra and A. Reali), ICES Report 17-18, August 11, 2017.

191. "Error estimates for dynamic augmented Lagrangian boundary condition enforcement, with application to immersogeometric fluid--structure interaction," (with Yue Yu, David Kamensky, Ming-Chen Hsu, Xin Yang Lu, and Yuri Bazilevs), ICES Report 17-21, September 6, 2017.

192. "Patient-Specific Vascular Modeling: Template-based Isogeometric Framework and the Case for CAD," (with Benjamin Urick, Travis M. Sanders, Shaolie S. Hossain, and Yongjie Zhang), ICES Report 17-24, September 26, 2017.

193. "Improved Conditioning of Isogeometric Analysis Matrices for Trimmed Geometries," (with Benjamin Marussig and René Hiemstra), ICES Report 17-27, October 3, 2017.

194. "Variationally consistent isogeometric analysis of trimmed thin shells at finite deformations, based on the STEP exchange format," (with Yujie Guo, Jason Heller, Martin Ruess, and Dominik Schillinger), ICES Report 17-30, November 1, 2017.

195. "Blended B-Spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis," (with Xiaodong Wei, Yongjie Jessica Zhang, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, and John A. Evans), ICES Report 17-33, November 20, 2017

196. "An isogeometric finite element formulation for phase transitions on deforming surfaces," (with Christopher Zimmermann, Deepesh Toshniwal, Chad M. Landis, Kranthi K. Mandadapu, and Roger A. Sauer), ICES Report 18-10, May 17, 2018. http://arxiv.org/abs/1710.02547

197. "Symbol-based analysis of finite element and isogeometric B-spline discretizations of eigenvalue problems: Exposition and review," (with Carlo Garoni, Hendrik Speleers, Sven-Erik Ekström, Alessandro Reali, and Stefano Serra-Capizzano), ICES Report 18-16, August 21, 2018.

198. "Multi-degree B-splines: Algorithmic computation and properties," (with Deepesh Toshniwal, Hendrik Speleers, René R. Hiemstra, and Carla Manni), ICES Report 18-22, November 28, 2018.

199. "Polynomial splines of non-uniform degree on triangulations: Combinatorial bounds on the dimension," (with Deepesh Toshniwal), ICES Report 18-23, December 1, 2018.

200. "Isogeometric Boundary Element Methods and Patch Tests for Linear Elastic Problems: Formulation, Numerical Integration, and Applications," (with Matthias Taus, Gregory J. Rodin, and Michael A. Scott), ICES Report 19-01, January 22, 2019.

201. "Fast Formation and Assembly of Finite Element Matrices with Application to Isogeometric Linear Elasticity," (with Rene R. Hiemstra, Giancarlo Sangalli, Mattia Tani, and Francesco Calabro), ICES Report 19-03, March 15, 2019.

202. "Polynomial spline spaces of non-uniform bi-degree on T-meshes: Combinatorial bounds on the dimension," (with Deepesh Toshniwal and Bernard Mourrain), ICES-Report 19-04, March 15, 2019.

203. "A Tchebycheffian Extension of Multi-Degree B-Splines: Algorithmic Computation and Properties," (with Rene R. Hiemstra, Carla Manni, Hendrik Speleers, and Deepesh Toshniwal), ICES Report 19-08, May 22, 2019.

204. "A numerical simulation study of the dual role of 5alpha-reductase inhibitors on tumor growth in prostates enlarged by benign prostatic hyperplasia via stress relaxation and apoptosis upregulation," (with G. Lorenzo, A. Reali, and H. Gomez), ICES Report 19-09, May 28, 2019.

205. "Seamless integration of design and Kirchhoff-Love shell analysis using analysis-suitable unstructured T-splines" (Hugo Casquero, Xiaodong Wei, Deepesh Toshniwal, Angran Li, Josef Kiendl, and Yongjie Jessica Zhang), ICES Report 19-10, June 11, 2019.

206. "Computational Cardiovascular Analysis with the Variational Multiscale Methods and Isogeometric Discretization," (with Kenji Takizawa, Yuri Bazilevs, Tayfun E. Tezduyar, and Ming-Chen Hsu), ICES Report 19-11, June 28, 2019.

207. "An adaptive space-time phase field formulation for dynamic fracture of brittle shells based on LR NURBS," (with Karsten Paul, Christopher Zimmermann, Kranthi K. Mandadapu, Chad M. Landis, and Roger A. Sauer), ICES Report 19-12, July 1, 2019.

208. "The divergence-conforming immersed boundary method: Application to vesicle and capsule dynamics," (with Hugo Casquero, Carles Bona-Casas, Deepesh Toshniwal, Hector Gomez, and Yongjie

Jessica Zhang), Oden Institute Report 20-01, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, January 2, 2020.

209. "Towards untrimmed NURBS: CAD embedded reparameterization of trimmed B-rep geometry using frame-field guided global parameterization," (with R.R. Hiemstra, K.M. Shepherd, M.J. Johnson, and L. Quan), Oden Institute Report 20-06, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, March 16, 2020.

210. "Tuned Hybrid Non-Uniform Subdivision Surfaces with Optimal Convergence Rates," (with Xiaodong Wei, Xin Lia, and Yongjie Jessica Zhang), Oden Institute REPORT 20-07, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, May 4, 2020.

211. "Mixed stress-displacement isogeometric collocation for nearly incompressible elasticity and elastoplasticity," (with Frederik Fahrendorf, Simone Morganti, Alessandro Reali, and Laura De Lorenzis), Oden Institute REPORT 20-08, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, May 11, 2020.

212. "Simulating the spread of COVID-19 via a spatially-resolved susceptible-exposed-infected-recovered-deceased (SEIRD) model with heterogeneous diffusion," (with Alex Viguerie, Guillermo Lorenzo, Ferdinando Auricchio, Davide Baroli, Alessia Patton, Alessandro Reali, Thomas E. Yankeelov, and Alessandro Veneziani), Oden Institute REPORT 20-09, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, May 13, 2020.

213. "Diffusion-reaction compartmental models formulated in a continuum mechanics framework: application to COVID-19, mathematical analysis, and numerical study," (with Alex Viguerie, Alessandro Veneziani, Guillermo Lorenzo, Davide Baroli, Nicole Aretz-Nellesen, Alessia Patton, Thomas E. Yankeelov, Alessandro Reali, and Ferdinando Auricchio), Oden Institute REPORT 20-13, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 6, 2020.

214. "Matrix-free isogeometric Galerkin method for Karhunen-Loève approximation of random fields using tensor product splines, tensor contraction and interpolation based quadrature," (with Michal L. Mika, Dominik Schillinger, Peter Wriggers, and René R. Hiemstra), Oden Institute REPORT 20-14, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 6, 2020.

215. "Thinner biological tissues induce leaflet flutter in replacement aortic heart valves," (with Emily L. Johnson, Michael C.H. Wu, Fei Xu, Nelson M. Wiese, Austin J. Herrema, Baskar Ganapathysubramanian, Michael S. Sacks, and Ming-Chen Hsu), Oden Institute REPORT 20-16, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 27, 2020.

216. "Isogeometric discrete differential forms: Non-uniform degrees, Bézier extraction, polar splines and flows on surfaces," (with Deepesh Toshniwal), Oden Institute REPORT 20-18, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, October 16, 2020.

217. "Dynamic fracture of brittle shells in a space-time adaptive isogeometric phase field framework," (with Karsten Paul, Chad M. Landis and Roger A. Sauer), Oden Institute REPORT 20-19, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, December 14, 2020.

218. "Galerkin Formulations with Greville Quadrature Rules for Isogeometric Shell Analysis: Higher Order Elements and Locking," (with Z. Zou, M.A. Scott, R.A. Sauer, and E.J. Savitha), Oden Institute REPORT 20-20, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, December 14, 2020.

219. "Galerkin formulations of isogeometric shell analysis: Alleviating locking with Greville quadratures and higher-order elements," (with Z. Zou, M.A. Scott, R.A. Sauer, and E.J. Savitha), Oden Institute REPORT 20-21, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, December 14, 2020.

220. "The Quad Layout Immersion: A Mathematically Equivalent Representation of a Surface Quadrilateral Layout," (with Kendrick M. Shepherd and René R. Hiemstra), Oden Institute REPORT 20-23, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, December 17, 2020.

221. "A comparison of matrix-free isogeometric Galerkin and collocation methods for Karhunen-Loève expansion," (with Michal L. Mika, René R. Hiemstra and Dominik Schillinger), Oden Institute REPORT

21-01, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, January 5, 2021.

222. "Quantitative in vivo imaging to enable tumor forecasting and treatment optimization," (with Guillermo Lorenzo, David A. Hormuth II, Angela M. Jarrett, Ernesto A. B. F. Lima, Shashank Subramanian, George Biros, J. Tinsley Oden, and Thomas E. Yankeelov), Oden Institute REPORT 21-03, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, March 4, 2021.

223. "Isogeometric Collocation: A Mixed Displacement-Pressure Method For Nearly Incompressible Elasticity," (with S. Morganti, F. Fahrendorf, L. De Lorenzis, J.A. Evans, * , and A. Real), Oden Institute REPORT 21-04, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, March 2021.

224. "Removal of spurious outlier frequencies and modes from isogeometric discretizations of second- and fourth-order problems in one, two, and three dimensions," (with René R. Hiemstra, Alessandro Reali and Dominik Schillinger, Oden Institute REPORT 21-07, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, April 2021.

225. "Discontinuous Galerkin methods through the lens of variational multiscale analysis," (with Stein K.F. Stoter, B. Cockburn, Thomas J.R. Hughes, and Dominik Schillinger, Oden Institute REPORT 21-10, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 2021.

226. "Analysis-suitable unstructured T-splines: Multiple extraordinary points per face," (Xiaodong Wei, Xin Li, Kuanren Qian, Thomas J.R. Hughes, Yongjie Jessica Zhang, and Hugo Casquero), Oden Institute REPORT 21-11, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, July 2021.

227. "Isogeometric Model Reconstruction of Open Shells Via Ricci Flow and Quadrilateral Layout-Inducing Energies," (Kendrick M. Shepherd, Xianfeng David Gu, and Thomas J. R. Hughes), Oden Institute REPORT 21-12, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, August 2021.

228. "Efficient and Robust Quadratures for Isogeometric Analysis: Reduced Gauss and Gauss-Greville Rules," (Z. Zou, T.J.R Hughes, M.A. Scott, Di Miao, and R.A. Sauer), Oden Institute REPORT 21-14, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, August 2021.

229. "An accurate strategy for computing reaction forces and fluxes on trimmed locally-refined meshes," (Davide D'Angella, Stefan Kollmannsberger, Alessandro Reali, Ernst Rank, and Thomas J.R. Hughes), Oden Institute REPORT 21-18, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, December 12, 2021.

230. "Isogeometric Analysis-Suitable Reconstruction Of 1996 Dodge Neon Using Ricci Flow with Metric Optimization," (Kendrick M. Shepherd, Xianfeng David Gu and Thomas J.R. Hughes), Oden Institute REPORT 22-01, January 1, 2022.

231. "Variationally Mimetic Operator Networks," (D Patel, D Ray, MRA Abdelmalik, TJR Hughes, AA Oberai), arXiv:2209.12871, 2022/9/26.

232. "Finite Element and Isogeometric Stabilized Methods for the Advection-Diffusion-Reaction Equation," (Konstantin Key, Michael Abdelmalik, Stefanie Elgeti, Thomas Hughes, Frimpong Baidoo), SSRN: https://ssrn.com/abstract=4473578 or http://dx.doi.org/10.2139/ssrn.4473578.

233. "Extensions to the Navier-Stokes-Fourier Equations for Rarefied Transport: Variational Multiscale Moment Methods for the Boltzmann Equation," (FA Baidoo, IM Gamba, TJR Hughes, MRA Abdelmalik), arXiv:2407.17334 https://doi.org/10.48550/arXiv.2407.17334

ORAL PRESENTATIONS (from 2002):

1. "The Variational Multiscale Formulation of LES: Channel Flow at Re=590" (with A.A. Oberai), AIAA 2002-1056, 40th AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, January 14-17, 2002.

2. "Large Eddy Simulation and the Variational Multiscale Formulation," II Congreso Internacional de Metodos Numericos en Ingenieria y Ciencias Aplicadas, Guanajuato, Mexico, January 17-19, 2002.

3. "Variational Multiscale Methods in Turbulence," Department of Mechanical Engineering, University of California, San Diego, March 7, 2002.

4. "Determination of Hydrodynamic Noise Sources and Geometrically Exact Structural Analysis" (with A.A. Oberai, F. Roknaldin and A.A. Wray), ONR Joint Review of Computational Mechanics and Structural Acoustics, Arlington, Virginia, April 15-18, 2002.

5. "Continuous/Discontinuous Finite Element Approximations of Fourth-Order Elliptic Problems in Structural and Continuum Mechanics with Application to Thin Beams and Plates, and Strain Gradient Elasticity," Civil Engineering Department, University of California, Berkeley, April 22, 2002.

6. "Variational Multiscale Methods in Turbulence," Mechanical Engineering Department, University of California, Berkeley, May 1, 2002.

7. "Multiscale Methods in Turbulence: A Variational Formulation of Large Eddy Simulation" (with A.A. Oberai, F. Roknaldin and A.A. Wray), 6th Japan – U.S. Symposium on Flow Simulation and Modeling, Kyushu University, Fukuoka, Japan, May 29-31, 2002.

8. "Multiscale Methods in Turbulence," Proceedings of the Fifth World Congress on Computational Mechanics (WCCM V), Vienna, Austria, July 7-12, 2002.

9. "Stabilized Continuous/Discontinuous Galerkin Methods for Fourth Order Elliptic Problems: Formulations for Thin Bending Elements and Strain Gradient Theory without Derivative Degrees-of-Freedom" (with G. Engel, K. Garikipati, M.G. Larson, L. Mazzei and R.L. Taylor), Proceedings of the Fifth World Congress on Computational Mechanics (WCCM V), Vienna, Austria, July 7-12, 2002.

10. "Discontinuous Galerkin Methods for Higher-Order Continuum Theories" (with K. Garikipati and G. Engel), Proceeding of the Fifth World Congress on Computational Mechanics (WCCM V), Vienna, Austria, July 7-12, 2002.

11. "A Stabilized Mixed Finite Element Method for Darcy Flow" (with A. Masud), Proceedings of the Fifth World Congress on Computational Mechanics (WCCM V), Vienna, Austria, July 7-12, 2002.

12. "Multiscale Methods in Turbulence" (with A.A. Oberai and A.A. Wray), Geometry, Mechanics and Dynamics, Conference in Honor of the 60th Birthday of J.E. Marsden, Fields Institute, University of Toronto, Canada, August 7-10, 2002.

13. "Variational and Multiscale Methods in Turbulence with Particular Reference to Large Eddy Simulation," ASME International Mechanical Engineering Congress, New Orleans, Louisiana, November 17-22, 2002.

14. "Multiscale Methods in Turbulence: A Variational Approach to Large Eddy Simulation," Numerical Analysis Seminar, Texas A&M University, College Station, Texas, December 4, 2002.

15. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," SIAM Conference on Computational Science and Engineering, San Diego, California, February 10-13, 2003.

16. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Workshop on Computational Mechanics, Universite Catholique de Louvain, Louvain-la-Neuve, Belgium, March 14, 2003.

17. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Twelfth International Conference on Finite Element Methods in Flow Problems, FEF '03, Meijo University, Nagoya, Japan, April 2-4, 2003.

18. "Computational Hydroacoustics: New Approaches for Computing Turbulent Acoustic Sources," ONR Joint Review of Computational Mechanics and Structural Acoustics, Arlington, Virginia, April 7-10, 2003.

19. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Workshop on: Perspectives on Incompressible Flows, Comparison of Different Computational Strategies, Center for Scientific Computation and Mathematical Modeling (CSCAMM), University of Maryland, College Park, Maryland, April 7-11, 2003.

20. "Variational and Multiscale Methods in Turbulence with Particular Reference to Large Eddy Simulations," MIT Distinguished Speaker Series in High Performance Computation for Engineered Systems, Program in High Performance Computation for Engineered Systems (HPCES) of the Singapore – MIT Alliance (SMA), MIT, April 30, 2003.

21. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulations," Seminario di Matematica Applicata, Istituto de Matematica Applicata e Technologie Informatiche (CNR), Dipartimento di Matematica, "Felice Casorati," Universitario degli Studi di Pavia, Pavia, Italy, June 3, 2003.

22. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulations," Seminario di Matematica Applicata, Dipartimento di Matematica, Politecnico di Milano, Italy, June 6, 2003.

23. "Mathematical Formulation of a Coupled Momentum Method for Modeling Blood Flow in Deformable Arteries" (with A. Figueroa, K.C. Jansen, C.A. Taylor), ASME Summer Bioengineering Conference, Sonesta Beach Resort in Key Biscayne, Florida, June 25-29, 2003.

24. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Seventh U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July 28-30, 2003.
25. "A Tutorial on the Consistent Algorithmic Tangent Operator in Nonlinear Continuum Mechanics," Seventh U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July 28-30, 2003.
26. "A New Formulation for Modeling Blood Flow in Deformable Arteries: The Coupled Momentum Method for Fluid-Solid Interaction Problems" (with A. Figueroa, K. Jansen and C.A. Taylor), Seventh U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July 28-30, 2003.
27. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow" (with A. Masud), Seventh U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July 28-30, 2003.
28. "Variational Counterpart of the Germano Identity," (with J. Wanderer, A. A. Oberai and Y. Bazilevs), Seventh U.S. National Contress on Computational Mechanics, Albuquerque, New Mexico, July 28-30, 2003.
29. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Fourth European Conference on Numerical Mathematics and Advanced Applications, ENUMATH 2003, Prague, Czech Republic, August 18-22, 2003.
30. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow" (with A. Masud), Fourth European Conference on Numerical Mathematics and Advanced Applications, ENUMATH 2003, Prague, Czech Republic, August 18-22, 2003.
31. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow" Sandia National Laboratories, Albuquerque, NM, Sept. 16, 2003.
32. "Variational Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," NSCM 16, 16th Nordic Seminar on Computational Mechanics (in combination with the P. G. Bergan Anniversary Seminar), Trondheim, Norway, October 16-18, 2003.
33. "Variational Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Rice University, Houston, TX, October 24, 2004.
34. "Variational Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Dassault Aviation, St. Cloud, France, December 19, 2003.
35. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow" I Congreso Nacional III Internacional de Métodos Numéricos en Ingeniería y Ciencias Aplicadas, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Monterrey, Mexico, January 22-24, 2004.
36. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Conference on Computational Methods in Multiscale Analysis and Applications, University of Florida, Gainesville, FL, February 28 – March 3, 2004.
37. "Geometrically Exact Structural Analysis and Determination of Hydrodynamic Noise Sources," ONR Joint Review of Computational Mechanics and Structural Acoustics, Arlington, VA, April 19-22, 2004.
38. "Consider a Spherical Cow – Conservation of Geometry in Analysis: Implications for Computational Methods in Engineering," IMA Workshop on Compatible Discretizations, Institute for Mathematics and its Applications, University of Minnesota, Minneapolis-St. Paul, MN, May 11-15, 2004.
39. "Consider a Spherical Cow – Conservation of Geometry in Analysis: Implications for Computational Methods in Engineering," Sandia National Laboratories, Albuquerque, NM, June 14, 2004.
40. "Advances in the Modeling of Turbulence Using the Multiscale Subgrid Method," Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE), Universitat Politècnica de Catalunya, Spain, July 13, 2004.
41. "Concepts and Possibilities of Computational Geometry, Centro Internacional de Métodos Numéricos en Ingeniería (CIMNE), Universitat Politècnica de Catalunya, Spain, July 14, 2004.
42. "Multiscale Methods in Turbulence," Computing Laboratory, Oxford University, Oxford, England, July 22, 2004.
43. "Consider a Spherical Cow - Conservation of Geometry in Analysis: Implications for Computational Methods in Engineering," Computing Laboratory, Oxford University, Oxford, England, July 22, 2004.
44. "Variational and Multiscale Methods in Turbulence," Sectional Lecture, 21st International Congress of Theoretical and Applied Mechanics, Warsaw, Poland, August 15-21, 2004
45. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Plenary Lecture, 6th World Congress on Computational Mechanics, (WCCM VI), Beijing, China, Sept. 5-10, 2004.
46. "A Study of the Three-dimensional Heart Model Using the Immersed Continuum Method" (with W.K. Liu, G. Chen, X. Wang, J. Zhang, and C.Bajaj) 6th World Congress on Computational Mechanics (WCCMVI), Beijing, China, Sept. 5-10, 2004.

47. "Isogeometric Analysis: Computer Aided Design, Finite Elements, and Adaptivity in Solid and Fluid Mechanics," Michael A. Sadowsky Distinguished Lecture in Applied Mechanics, Rensselaer Polytechnic Institute, Troy, NY, October 22, 2004.

48. "Isogeometric Analysis: Computer Aided Design, Finite Elements, and Adaptivity in Solid and Fluid Mechanics,"Samuel D. Conte Distinguished Lecture, Department of Computer Sciences, Purdue University, West Lafayette, IN, October 25, 2004.

49. "Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation," Center for Nonlinear Studies, Los Alamos National Labs, Los Alamos, NM, November 1, 2004.

50. "The Weak Shall Inherit the Earth: The Parable of the Dirichlet Boundary Condition in CFD," (with Y. Bazilevs), ASME International Mechanical Engineering Congress and Exposition, (IMECE 2004), Anaheim, CA, November 13-19, 2004.

51. "Isogeometric Analysis, Part I: CAD, NURBS, Mesh Refinement and Geometry," (with J.A. Cottrell, Y. Bazilevs, and G. Sangalli), Finite Element Rodeo, Southern Methodist University, Dallas, TX, March 4-5, 2005.

52. "Isogeometric Analysis Part II: Analyses," (with Y. Bazilevs, J.A. Cottrell, and G. Sangalli), Finite Element Rodeo, Southern Methodist University, Dallas, TX, March 4-5, 2005.

53. "Isogeometric Analysis Part III: Mathematics behind Isogeometric Analysis," with Y. Bazilevs, L. Beirao da Veiga, J.A. Cottrell, and G. Sangalli), Finite Element Rodeo, Southern Methodist University, Dallas, TX, March 4-5, 2005.

54. "Multiscale Methods in Turbulence," (with V. Calo), Finite Element Rodeo, Southern Methodist University, Dallas, TX, March 4-5, 2005.

55. "Variational and Multiscale Methods in Turbulence," Keynote Plenary Lecture, 13th Conference on Finite Elements for Flow Problems, University of Wales, Swansea, U.K., April 4-6, 2005.

56. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," Second DSCE Symposium, Delft Centre for Computational Science and Engineering, Delft University of Technology, Delft, The Netherlands, April 8, 2005.

57. "Isogeometric Analysis: Applications to Structures and Fluids," (with J.A. Cottrell, Y. Bazilevs, V. Calo, and A. Reali), Office of Naval Research Joint Review, Arlington, VA, 18-22 April 2005.

58. "Multiscale Methods in Turbulence," Workshop on Multiscale Finite Element Methods, Institute for Computational Engineering and Sciences, UT-Austin, May 5-7, 2005.

59. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," CIMMS Seminar, California Institute of Technology, Pasadena, CA, May 13, 2005.

60. "Isogeometric Analysis," (with J.A. Cottrell and Y. Bazilevs), Coupled Problems 2005: Computational Methods for Coupled Problems in Science and Engineering, Santorini Island, Greece, May 25-28, 2005.

61. "Isogeometric Structural Analysis," (with J.A. Cottrell and Y. Bazilevs), 5th International Conference on Computation of Shell and Spatial Structures, Salzburg, Austria, June 1-4, 2005.

62. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow," (with J.A. Masud and J. Wan), SIAM Conference on Mathematical and Computational Issues in the Geosciences, Avignon, France, June 7-10, 2005.

63. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," Laboratoire de Mecanique des structures et milieux continues (LSC), École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, June 13, 2005.

64. "A New Formulation to Model Blood Flow and Vessel Motion in Large, Patient-specific Models of the Cardiovascular System," (with A. Figueroa, I. Vignon-Clementel, K. E. Jansen, and CA. Taylor), Summer Bioengineering Conference, Vail Cascade Resort and Spa, CA, June 22-26, 2005.

65. "Análisis Isogeométrico: CAD, Elementos Finitos, NURBS, Geometria Exacta y Refinamientos de Mallas," Congreso de Métodos Numéricos en Ingeniería 2005, SEMNI & APMTAC, Granada, Spain, July 4-7, 2005.

66. "Multiscale Methods in Turbulence," Institut d'Analyse et Calcul Scientifique, Bat. de Mathematiques, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, July 12, 2005.

67. "A Computationally Efficient method to Simulate Blood Flow and Vessel Motion in Three-dimensional Arterial Models," (with A. Figueroa, I. Vignon-Clementel, K.E. Jansen, and C.A. Taylor), SIAM Annual Meeting, New Orleans, LA, July 2005.

68. "Simulating Blood Flow and Vessel Wall Deformation in Large Cardiovascular Models Using a Coupled Momentum Method," (with A. Figueroa, I. Vignon-Clementel, K.E. Jansen, and C.A. Taylor), U.S. National Congress on Computational Mechanics, Austin, TX, July 25-27, 2005.

69. "A Multiscale Discontinuous Galerkin Method with the Computational Structure of a Continuous Galerkin Method," (with G. Scovazzi, P. Bochev, A. Buffa and G. Sangalli), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

70. "A Multiscale Stabilized Method for Lagrangian Hydrodynamics," (with G. Scovazzi and M.A. Christon), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

71. "Isogeometric Analysis: Exact Geometry and Accurate Analysis of Real Structures," (with J.A. Cottrell, Y. Bazilevs and A. Reali), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

72. "Isogeometric Analysis with Particular Emphasis on Thin Structures," (with Y. Bazilevs and J.A. Cottrell), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

73. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow," (with A. Masud and J. Wan), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

74. "Residual-Based Multiscale Models for Large Eddy Simulation," (with V.M. Calo), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

75. "The Variational Multiscale Method: Projection, Optimization, the Fine-scale Green's Function, and Stabilized Methods," (with G. Sangalli), U.S. National Congress on Computational Mechanics, Austin, Texas, July 25-27, 2005.

76. "Toward Patient-specific Geometric Modeling from Imaging Data," Poster Presentation, (with Y. Zhang, S. Goswami and C.L. Bajaj), 14th International Meshing Roundtable, San Diego, California, September 11-14, 2005.

77. "Isogeometric Analysis," Focus Presentation for Panel Discussion on Geometric Modeling and Mesh Generation, Sandia National Laboratory, Albuquerque, NM, October 24th, 2005.

78. "Recent Developments in Multiscale and Stabilized Methods for Computational Fluid Dynamics," Boeing Company, Renton, Washington, November 4th, 2005.

79. "New Modeling Ideas and New Approximation Spaces in Turbulence Simulations – I," ASME International Mechanical Engineering Congress and Exposition, Walt Disney World Dolphin Hotel, Orlando, FL, November 5-11, 2005.

80. "New Modeling Ideas and New Approximation Spaces in Turbulence Simulations – II," ASME International Mechanical Engineering Congress and Exposition, Walt Disney World Dolphin Hotel, Orlando, FL, November 5-11, 2005.

81. "A Stabilized Mixed Discontinuous Galerkin Method for Darcy-Stokes Flow," (with A. Masud), ASME International Mechanical Engineering Congress and Exposition, Walt Disney World Dolphin Hotel, Orlando, FL, November 5-11, 2005.

82. "Variational Multiscale Framework for Discontinuous Galerkin Method," (with P. Bochev and G. Scovazzi), ASME International Mechanical Engineering Congress and Exposition, Walt Disney World Dolphin Hotel, Orlando, FL, November 5-11, 2005.

83. "Personal Recollections of Robert L. Taylor and his Contributions to Computational Mechanics," ASME International Mechanical Engineering Congress and Exposition, Walt Disney World Dolphin Hotel, Orlando, FL, November 5-11, 2005.

84. "Residual-Based Turbulence Modeling and Applications," (with V.M. Calo and Y. Bazilevs), Finite Element Rodeo, Texas A & M University, College Station, Texas, March 3-4, 2006

85. "Isogeometric Fluid-Structure Interaction Analysis with Particular Emphasis on Cardiovascular Modeling," (with Y. Bazilevs, V.M. Calo and Y. Zhang), Finite Element Rodeo, Texas A & M University, College Station, Texas, March 3-4, 2006

86. "Isogeometric Analysis: Refinement and Continuity," (with J. Austin Cottrell and A. Reali), Finite Element Rodeo, Texas A & M University, College Station, Texas, March 3-4, 2006

87. "Patient-specific Cardiovascular Geometric Modeling for Blood Flow," (with Y. Zhang, Y. Bazilevs and C. Bajaj), Finite Element Rodeo, Texas A & M University, College Station, Texas, March 3-4, 2006

88. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," Department of Mechanical Engineering and Materials Science, Rice University, Houston, TX, March 24, 2006.

89. "Designing the PDE Algorithms of the Future: An Example of the Role of Optimization in Variational Multiscale Analysis," (with G. Sangalli). Invited lecture at CSRI Workshop on Mathematical Analysis and Computational Simulation: Emerging Trends and Applications in Numerical PDEs, Albuquerque, NM, April 22-26, 2006.

90. "Isogeometric Analysis for Naval Ship Structures," Office of Naval Research Joint Review, Anteon Corp, Washington, DC, April 24-27, 2006.

91. "Computational Geometry and Computational Mechanics," Duke University, Durham, NC, April 28, 2006.

92. "Computational Geometry and Computational Mechanics," Keynote Plenary Lecture, Challenges in Computational Mechanics, Ecole Normale Superiore, Cachan, France, May 10-12, 2006.

93. "Computational Geometry and the Analysis of Solids and Structures," Keynote Plenary Lecture, ECCM 2006, Third European Conference on Computational Mechanics: Solids, Structures and Coupled Problems in Engineering, Lisbon, Portugal, June 4-9, 2006.

94. "Advances in Isogeometric Analysis in Computational Mechanics," Centro Internacional de Metodos Numericos en Ingenieria (CIMNE), Universitat Politecnica de Catalunya, Barcelona, Spain, June 13, 2006.

95. "Designing the PDE Algorithms of the Future: An Example of the Role of Optimization in Variational Multiscale Analysis," Mathematics Department, University of Colorado, Denver, June 26th 2006.

96. "Initiatives in Cardiovascular Engineering," Abbott Vascular, Santa Clara, California, July 11, 2006.

97. "Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry and Mesh Refinement," Keynote Plenary Lecture, 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

98. "Isogeometric Analysis: Generation and Refinement of Analysis Suitable Geometries" (with J.A. Cottrell and Y. Bazilevs), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

99. "Isogeometric Analysis: Geometry Considerations in Analysis" (with Y. Bazilevs, J.A. Cottrell and Y. Zhang), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

100. "Isogeometric Analysis for the Study of Structural Vibrations" (with A. Reali, J.A. Cottrell and Y. Bazilevs), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

101. "Isogeometric Analysis with NURBS from the Theoretical Perspective" (with L. Beirao da Veiga, Y. Bazilevs, J.A. Cottrell, and G. Sangalli), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

102. "A Lecture on k-refinement in Isogeometric Analysis in Honor of Professor Erwin Stein" (with J.A. Cottrell and Y. Bazilevs), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

103. "Variational Multiscale Analysis: The Fine-scale Green's Function, Projection, Optimization, Localization, and Stabilized Methods" (with G. Sangalli), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

104. "A Lecture in Honor of Professor Eduardo Arantes e Oliveira on Isogeometric Structural Analysis" (with J.A. Cottrell and Y. Bazilevs), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

105. "Variational Multiscale Framework for Discontinuous Galerkin Methods" (with P. Bochev and G. Scovazzi), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

106. "Residual-based Multiscale Models for Large Eddy Simulation of Turbulence" (with V. Calo and Y. Bazilevs), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

107. "A Multiscale Discontinuous Galerkin Method with the Computational Structure of a Continuous Method" (with G. Scovazzi, P. Bochev and A. Buffa), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

108. "Analysis of a Multiscale Discontinuous Galerkin Method for Convection Diffusion Problems" (with A. Buffa and G. Sangalli), 7th World Congress on Computational Mechanics, Los Angeles, California, July 16-22, 2006.

109. "Computational Geometry as a Basis for Computational Structures Technology: A Look into the Future," Keynote Plenary Lecture, The Eighth International Conference on Computational Structures Technology & The Fifth International Conference on Engineering Computational Technology, Las Palmas de Gran Canaria, Spain, September 12-15, 2006.

110. "Patient Specific Heart Models from High Resolution CT" (with C. Bajaj, S. Goswami, Z. Yu, Y. Zhang, and Y. Bazilevs), CompIMAGE - Computational Modelling of Objects Represented in Images, Fundamentals, Methods and Applications, Coimbra, Portugal, October 20-21, 2006.

111. "Isogeometric Analysis of Blood Flow: A NURBS-based Approach" (with Y. Bazilevs, Y. Zhang, V. Calo, S. Goswami, and C. Bajaj), CompIMAGE - Computational Modelling of Objects Represented in Images, Fundamentals, Methods and Applications, Coimbra, Portugal, October 20-21, 2006.

112. "Isogeometric Analysis: A Bridge Between Computational Geometry and Computational Mechanics," Plenary Lecture, ENIEF2006, XV Congreso sobre Metodos Numericos y sus Aplicaciones, Santa Fe, Argentina, November 7-10, 2006.

113. "Variational Multiscale Models for Large Eddy Simulation of Turbulence," (with V. Calo and Y. Bazilevs), ENIEF2006, XV Congreso sobre Metodos Numericos y sus Aplicaciones, Santa Fe, Argentina, November 7-10, 2006.

114. "Isogeometric Analysis: A Bridge between Computational Geometry and Computational Mechanics," University of Buenos Aires, Argentina, November 13, 2006.

115. "Sensitivity of Stabilization Matrices to Element Aspect Ratio and Low Mach Number," Boeing Co., Renton, WA, December 18, 2006.

116. "Isogeometric Analysis: A Bridge Between Computational Geometry and Computational Mechanics," Computer Science Department, Brigham Young University, January 11, 2007.
117. "Model Generation and Analysis," High Performance Computing Modernization Program Office, Department of Defense, Arlington, VA, January 26, 2007.
118. "Computational Geometry and Computational Mechanics," Center for Computation and Technology, Louisiana State University, Baton Rouge, Louisiana, February 2nd, 2007.
119. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Center for Computation and Technology, Louisiana State University, Baton Rouge, Louisiana, February 2nd, 2007.
120. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges," VMS 2007 – Workshop on Variational Mutiscale Methods and Stabilized Finite Elements, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland, February 12-13, 2007.
121. "Computational Geometry and Computational Mechanics," Workshop on Interplay Between Representation of Geometry and Numerical Solution of Partial Differential Equations, Centre of Mathematics for Applications, University of Oslo, Oslo, Norway, February 15-16, 2007.
122. "Computational Geometry and Computational Mechanics," DNV Computational Mechanics Forum, Det Norske Veritas, Oslo, Norway, February 165, 2007.
123. "Initiatives in Cardiovascular Engineering," University of Texas Health Science Center, Houston, Texas, February 23, 2007.
124. "Approximating the Fine-scale Green's Function," (with Austin Cottrell), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
125. "Continuity in Residual Based LES: C^1 vs. P^2," (with I. Akkermann, Y. Bazilevs, and V. Calo), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
126. "Weak Dirichlet Boundary Conditions in Fluid Mechanics with an Emphasis on Wall-bounded Turbulence," (with Y. Bazilevs, V. Calo and C. Michler), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
127. "A Multiphysics Model for Blood Flow and Drug Transport with Application to Patient-Specific Coronary Artery Flows," (with N. Brasher, V. Calo, and Y. Bazilevs), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
128. "Mesh Generation with Applications," (with Y. Zhang, Y. Bazilevs, S. Goswami, and C. Bajaj), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
129. "Residual-based Multiscale Models for Large Eddy Simulation of Turbulence," (with V. M. Calo and Y. Bazilevs), Finite Element Rodeo, University of Houston, Houston, Texas, March 2-3, 2007.
130. "Computational Geometry and Analysis," France-U.S.A. Conference on Applied and Numerical PDE's, University of Houston, Houston, Texas, March 9-10, 2007.
131. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Plenary Lecture, FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
132. "Advances in Stabilized Methods for Lagrangian Shock Hydrodynamics Using Q1/Q1 and P1/P1 Finite Element Discretizations, " (with G. Scovazzi, M. Christon and J. Shadid), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
133. "Residual-based Multiscale Models for Large Eddy Simulation of Turbulence," (with V. Calo and Y. Bazilevs), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
134. "Role of Continuity in Residual-based Multiscale Modeling of Turbulence," (with I. Akkerman, Y. Bazilevs, S. Hulshoff and V. Calo), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
135. "Patient-specific Simulations of Drug Delivery to the Walls of the Coronary Arteries," (with V. Calo, Y.Bazilevs, and N. Brasher), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
136. "YZ-beta Shock Capturing Operator for Time Dependent Advective-Diffusive Processes," (with Y. Bazilevs, V. Calo and T. Tezduyar), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.
137. "The Fine Scale Field in the Multiscale Discontinuous Galerkin Method: Implications for Stabilized and Variational Multiscale Methods," (with J.A. Cottrell), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.

138. "A Multiscale Discontinuous Galerkin Method with the Computational Structure of a Continuous Galerkin Method," (with G. Scovazzi, P. Bochev and A. Buffa), FEF '07 14th International Conference on Finite Elements in Flow Problems, Santa Fe, NM, March 26-28, 2007.

139. "Isogeometric Analysis," Computational Mechanics and Computational Signatures Program Review, Office of Naval Research, Arlington, VA, April 10-12, 2007.

140. "Computational Geometry and Computational Analysis," Department of Applied Mathematics, University of North Carolina, Chapel Hill, NC, April 13, 2007.

141. "Computational Geometry and Computational Mechanics," Mechanical Engineering 25th Anniversary Distinguished Lecture Series, Ohio State University, Columbus, Ohio, May 4, 2007.

142. "Isogeometric Higher-Order Methods," Plenary Lecture, International Workshop on Higher-Order Finite Element Methods, Herrsching am Ammersee, Germany, May 17-19, 2007.

143. "A Fully Integrated Isogeometric Approach to Fluid-Structure Interaction," Keynote Plenary Lecture, ECCOMAS Thematic Conference, Coupled Problems 2007, Santa Eulalia, Ibiza, Spain, May 21-23, 2007.

144. "Fluid-Structure Interaction Modeling of Blood Flow and Arterial Wall Deformation," (with Y. Bazilevs, V.M. Calo and Y. Zhang), ECCOMAS Thematic Conference, Coupled Problems 2007, Santa Eulalia, Ibiza, Spain, May 21-23, 2007.

145. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Workshop on Multiscale Methods in Solid and Fluid Mechanics, Brandenburg, Germany, June 1, 2007.

146. "The Fine-scale Field in the Multiscale Discontinuous Galerkin Method: Implications for Stabilized and Variational Multiscale Methods," (with J. A. Cottrell), McMat, ASME Applied Mechanics and Materials Conference, Austin, TX, June 3-7, 2007.

147. "A New F-bar Formulation for Nearly Incompressible Finite Strain Analysis," (with T. Elguedj, Y. Bazilevs and V. Calo), McMat, ASME Applied Mechanics and Materials Conference, Austin, TX, June 3-7, 2007.

148. "Weak Dirichlet Boundary Conditions for Wall-Bounded Turbulent Flows," (with C. Michler, Y. Bazilevs and V. Calo), McMat, ASME Applied Mechanics and Materials Conference, Austin, TX, June 3-7, 2007.

149. "A Multiphysics Model for Blood Flow and Drug Dispersion in Patient-Specific Coronary Artery Geometries," (with N. Brasher, V. Calo and Y. Bazilevs), McMat, ASME Applied Mechanics and Materials Conference, Austin, TX, June 3-7, 2007.

150. "Isogeometric Modeling and Analysis for Naval Ship Structures," Keynote Plenary Lecture, Computational Methods in Marine Engineering, ECCOMAS Thematic Conference, Barcelona, Spain, June 4-7, 2007.

151. "Isogeometric Analysis of Flows with Rotating Components," (with Y. Bazilevs and V. Calo), Computational Methods in Marine Engineering, ECCOMAS Thematic Conference, Barcelona, Spain, June 4-7, 2007.

152. "Advances in the Isogeometric Formulation of Continuum Mechanics," Seminario de Investigacion, Centro International de Metodos Numericos en Ingenieria (CIMNE), Universitat Politicnica de Catalunya, Spain, June 8, 2007.

153. "Isogeometric Discretizations in Structural Dynamics and Wave Propagation," Keynote Plenary Lecture, COMPDYN 2007, Computational Methods in Structural Dynamics and Earthquake Engineering, ECCOMAS Thematic Conference, Rethymno Crete, Greece, June 13-15, 2007.

154. "T-Splines and Isogeometric Analysis: Fundamentals," (with M. Scott, J. Evans and S. Lipton), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

155. "T-Splines and Isogeometric Analysis: Analysis," (with S. Lipton, Y. Bazilevs, J. Evans, and M. Scott), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

156. "T-Splines and Isogeometric Analysis: Applications," (with J. Evans, Y. Bazilevs, V.M. Calo, S. Lipton, and M. Scott), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

157. "A Fully Integrated Isogeometric Fluid-Structure Interaction Analysis," (with Y. Bazilevs, V.M. Calo and Y. Zhang), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

158. "Patient-Specific Modelling of Blood Flow and Drug Transport," (with N. Brasher, Y. Bazilevs and V.M. Calo), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

159. "Discrete Approximations in Structural Dynamics and Wave Propagation: p-FEM vs. k-NURBS – Part I, " (with G. Sangalli and A. Reali), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

160. "Discrete Approximations in Structural Dynamics and Wave Propagation: p-FEM vs. k-NURBS – Part II, " (with A. Reali and G. Sangalli), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

161. "B/F-Bar Projection Methods for Nearly Incompressible Analysis Using High Order NURBS," (with T. Elguedj, Y. Bazilevs and V.M. Calo), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

162. "Approximation of the Cahn-Hilliard Phase Field Model by Using Isogeometric Analysis," (with H. Gomez, Y. Bazilevs and V.M. Calo), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

163. "Variational Multiscale Residual-Based Models for Large-Eddy Simulation of Turbulence," (with V.M. Calo and Y. Bazilevs), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

164. "Studies of Refinement and Continuity in Isogeometric Analysis of Thin Walled Structures," (with J.A. Cottrell), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

165. "Monotone Variational Multiscale Methods," (with D. Demarco, V.M. Calo and J.A. Cottrell), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

166. "Numerical Investigation of Blood Flow and Drug Transport in Patient-Specific Coronary Arteries," (S. Hossain, Y. Bazilevs, N. Brasher, and V.M. Calo), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

167. "Patient-Specific Vascular NURBS Modeling for Isogeometric Analysis of Blood Flows," (with Y. Zhang, C. Bajaj, Y. Bazilevs, and S. Goswami), U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

168. "Isogeometric Higher Order Methods," U.S. National Congress on Computational Mechanics, San Francisco, July 23-26, 2007.

169. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Invited Plenary Lecture, International Conference on Theoretical and Numerical Fluid Dynamics III, Pacific Institute of Mathematical Sciences, Vancouver, B.C., Canada, August 11-17, 2007.

170. "A Vision of the Future: Patient Specific Cardiovascular Modeling and the Predictive Paradigm in Medicine," Lectio Doctoralis, Universita degli Studi di Pavia, Facolta di Ingegneria, Pavia Italy, September 24th, 2007.

171. "Isogeometric Discretizations in Structural Dynamics and Wave Propagation," ROSE School, European School for Advanced Studies in Reduction of Seismic Risk, Istituto Universitario di Studi Superiori di Pavia, Universita degli Studi di Pavia, Pavia, Italy, September 26, 2007.

172. "Isogeometric Modeling and Analysis of Fluid-structure Interaction with Particular Emphasis on Patient Specific Cardiovascular Simulation," Keynote Plenary Lecture, 44th Annual Meeting of the Society of Engineering Science, Texas A&M University, College Station, TX, October 21-24, 2007.

173. "Isogeometric Fluid-structure Interaction Analysis of Vascular Blood Flow," 44th Annual Meeting of the Society of Engineering Science, Texas A&M University, College Station, TX, October 21-24, 2007.

174. "Isogeometric Analysis," Newmark Distinguished Lecture, Department of Civil Engineering, University of Illinois, Urbana-Champaign, Illinois, November 5, 2007. Published on Web of UIUC, http://online.cen.uiuc.edu/webcourses/cee595/fall2007/Lecture06/

175. "Computational Fluid Dynamics: Progress and Status," Panel on CFD/EFD Choice – A Dilemma for Industry, ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 11-15, 2007.

176. "Timoshenko Lecture," ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 11-15, 2007. (Available on the iMechnica website: http://imechanica.org/node/2293.)

177. "Variational Multiscale Methods in CFD: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models – Part I, IMECE 2007 – 42690, ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 11-15, 2007.

178. "Variational Multiscale Methods in CFD: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models - Part II, IMECE 2007 – 42691, ASME International Mechanical Engineering Congress and Exposition, Seattle, Washington, November 11-15, 2007.

179. "Variational Multiscale Methods in CFD: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Boeing Co., Renton Washington, November 14, 2007.

180. "Engineering and Medicine: The Predictive Paradigm for the treatment of Cardiovascular Disease," Lectio Doctoralis, University of Padua, Padua, Italy, November 20, 2007.

181. "Variational Multiscale Methods in CFD: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Keynote Plenary Lecture, Multiscale Computational Methods for Solids and Fluids, ECCOMAS Thematic Conference, Ecole Normale Superieure de Cachan, France, November 28-30, 2007.

182. "Weak Dirichlet boundary conditions for wall-bounded turbulent flows," (with Y. Bazilevs, C. Michler, and V.M. Calo), CIMEC-INTEC-CONICET, Santa Fe, Argentina, December 20, 2007.
183. "B-bar and F-bar Projection Methods for Nearly Incompressible Linear and Nonlinear Elasticity and Plasticity using Higher-order NURBS Elements," (with T. Elguedj, Y. Bazilevs, and V.M. Calo), CREATE meeting, Austin, Texas, December 5, 2007.
184. "Isogeometric Analysis," Department of Mechanical Engineering Seminar, University of Michigan, Ann Arbor, January 11, 2008.
185. "Isogeometric Analysis," Pacific Institute of Mathematics – Syncrude Lecture, University of Alberta, Edmonton, Alberta, Canada, January 18, 2008.
186. "Isogeometric Analysis of Phase Field Models with Particular Emphasis on the Cahn-Hilliard and Navier-Stokes-Korteweg Equations," Keynote Plenary Lecture, ECCOMAS Multidisciplinary Jubilee Symposium, Technical University of Vienna, Vienna, Austria, February 17-20, 2008.
187. "Isogeometric analysis of phase-field models: Application to the Cahn-Hilliard and Navier-Stokes-Korteweg equations," ECCOMAS Multidisciplinary Jubilee Symposium, Technical University of Vienna, Vienna, Austria, February 17-20, 2008.
188. "Isogeometric Analysis," SXSVD, Gene Golub World Celebration Day, UT Austin, February 29th, 2008.
189. "Simulation Based Engineering Science," Keynote Plenary Lecture, Workshop on Computer Methods for Cardiovascular Devices, Bethesda, Maryland, March 18-19, 2008.
190. "Isogeometric Analysis of the Cahn-Hilliard equation," (H. Gomez Diaz, V.M. Calo, and Y. Bazilevs), Finite Element Rodeo and Circus, LSU, Baton Rouge, LA, March 7-8, 2008.
191. "T-Splines and Isogeometric Analysis," (with S. Lipton, V.M. Calo, J.A. Evans, M.Scott, and T. Sederberg), Finite Element Rodeo and Circus, LSU, Baton Rouge, LA, March 7-8, 2008.
192. "Improving Stability of Multiscale Formulations of Fluid Flow at Small Time Steps," (with M.C. Hsu, V.M. Calo, and T.E. Tezduyar), Finite Element Rodeo and Circus, LSU, Baton Rouge, LA, March 7-8, 2008.
193. "Approximation Properties of p- and k-methods Using Kolmogorovn-Width," (with J.A. Evans, and I. Babuska), Finite Element Rodeo and Circus, LSU, Baton Rouge, LA, March 7-8, 2008.
194. "Advances in Weak Imposition of Boundary Conditions for Wall-Bounded Turbulent Flows," (with C. Michler, and V.M. Calo), Finite Element Rodeo and Circus, LSU, Baton Rouge, LA, March 7-8, 2008.
195. "Isogeometric Analysis: Progress and Challenges," ONR Contractors Meeting, Computational Mechanics Program, Stanford University, Stanford, California, April 4, 2008.
196. "Isogeometric Analysis: Progress and Challenges," University of Houston, Department of Mathematics, April 11, 2008.
197. "Isogeometric Analysis of Phase Field Models with Particular Emphasis on the Cahn-Hilliard and Navier-Stokes-Korteweg Equations," ONR MURI Review, BMT Syntek, Arlington, Virginia, April 14-16, 2008.
198. "Isogeometric Analysis: Progress and Challenges," Scientific Computing and Imaging Institute Distinguished Lecture, University of Utah, Salt Lake City, Utah, May 2, 2008.
199. "Isogeometric Analysis: Progress and Challenges," National Medal of Science Symposium, Northwestern University, May 14, 2008.
200. "Isogeometric Analysis: Progress and Challenges," Japan Society for Computational Engineering and Science Annual Conference, Sendai, Japan, May 19, 2008.
201. "A Vision of the Future: Patient Specific Cardiovascular Modeling and the Predictive Paradigm in Medicine," Istituto Universitario di Studi Superiori di Pavia, Universita degli Studi di Pavia, Pavia, Italy, May 21st, 2008.
202. "Isogeometric Analysis: Progress and Challenges," Isitituto di Matematica Applicata e Tecnologie Informatiche, C.N.R., Pavia, Italy, May 22nd, 2008
203. "Isogeometric Analysis: Progress and Challenges," 3rd International Seminar on Innovative Scientific Computing for Challenging Multidisciplinary Design and Applications: Methods, Tools and Collaborative Environments," CSC, Finnish IT Center for Science, Espoo, Finland, May 26, 2008.
204. "Isogeometric Analysis: Progress and Challenges," Perspectives in Numerical Analysis, Helsinki Institute of Technology, Helsinki, Finland, May 27-29, 2008.
205. "Modeling and computation of patient-specific vascular fluid-structure interaction using Isogeometric Analysis," 6th International Conference on Computation of Shells and Spatial Structures, Cornell University, Ithaca, NY, May 28-31, 2008.
206. "Simulation of Engineering Applications Using Isogeometric Analysis," 3rd Annual TeraGrid Conference, Las Vegas, June 9-13, 2008.

207. "Variational and Multiscale Modeling," (with V.M. Calo, Y. Bazilevs, N. Brasher, P. Decuzzi, M. Ferrari, and C. Michler), Seminar of the Institute for Computational Engineering and Sciences (ICES), The University of Texas at Austin, June 12, 2008.

208. "Variational Multiscale Methods in Turbulence: Progress and Challenges," VMS 2008, Saarlands University, Saarbrucken, Germany, June 23-24, 2008.

209. "Isogeometric Analysis: Progress and Challenges," SIMULA, Oslo, Norway, June 25, 2008.

210. "Isogeometric Analysis: Progress and Challenges," Invited Plenary Lecture, 7th International Conference on Mathematical Methods for Curves and Surfaces, Tønsberg, Norway, June 26-July 1, 2008.

211. "Isogeometric Analysis: Progress and Challenges," Invited Semi-Plenary Lecture, 8th World Congress on Computational Mechanics and 5th European Conference on Computational Methods in Applied Science and Engineering, Lido, Venice, Italy, June 30-July 4, 2008.

212. "A Fully Integrated Fluid-structure Interaction Methodology and Application," (with V.M. Calo, J.R. Gohean, T. Ingebrigtsen, J. Isaksen, T. Kvamsdal, R.D. Moser, and Y. Zhang), Keynote Lecture, 8th World Congress in Computational Mechanics, Venice, Italy, June 30 - July 5, 2008.

213. "Blood Flow and Drug Transport: Application to Patient-Specific Coronary Artery and Capillary Network Flows," (with V.M. Calo, N. Brasher, Y. Bazilevs, P. Decuzzi, and M. Ferrari), invited speaker, 8th World Congress on Computational Mechanics and 5th European Conference on Computational Methods in Applied Science and Engineering, Lido, Venice, Italy, June 30-July 4, 2008.

214. "Isogeometric analysis of phase-field models: Application to the Cahn-Hilliard and Navier-Stokes-Korteweg equations," 8th World Congress on Computational Mechanics and 5th European Conference on Computational Methods in Applied Science and Engineering, Lido, Venice, Italy, June 30-July 4, 2008.

215. "Blood Flow and Drug Transport: Application to Patient-Specific Coronary Artery and Capillary Network Flows," (with V.M. Calo, N. Brasher, Y. Bazilevs, P. Decuzzi, and M. Ferrari), Escuela Tecnica Superior de Ingenieros de Caminos, Canales y Puertos, A Coruna University, June 26, 2008.

216. "Advances in Isogeometric Analysis in Computational Mechanics," Seminario de Investigacion, Centro Internacional de Metodos Numericos en Ingenieria (CIMNE), Campus Norte UPC, Barcelona, Spain, July 7, 2008.

217. "Residual-driven Variational Multi-scale Turbulence Modeling for Large Eddy Simulation of Incompressible Flows," Portugal-UT Austin CFD 2008, 1st Workshop on Computational Engineering: Fluid Dynamics, Instituto Superior Technico, Lisbon, Portugal, July 10-11, 2008.

218. "Isogeometric Analysis of Fluid-Structure Interaction," Portugal-UT Austin CFD 2008, 1st Workshop on Computational Engineering: Fluid Dynamics, Instituto Superior Technico, Lisbon, Portugal, July 10-11, 2008.

219. "Variational Multiscale Methods in Computational Fluid Dynamics: Recent Progress and Challenges with Emphasis on the Development of Turbulence Models," Mechanical Engineering Department Seminar, University of Tokyo, Tokyo, Japan, August 4, 2008.

220. "Stabilized Method," Short Course on the Finite Element Method in Flow Problems, Summer School, College of Science and Technology, Nihon University, Tokyo, Japan, August 7, 2008.

221. "Multiscale Method," Short Course on the Finite Element Method in Flow Problems, Summer School, College of Science and Technology, Nihon University, Tokyo, Japan, August 8, 2008.

222. "Isogeometric Analysis: Toward Unification of CAD and FEA," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, J. Evans, S. Lipton, M.A. Scott, and T.W. Sederberg), 6th International Conference on Engineering Computational Technology, Athens, Greece, September 2-5, 2008, Keynote Plenary Lecture.

223. "Variational Multiscale Residual-Drive Turbulence Modeling for Large Eddy Simulation of Incompressible Flows," (with Y. Bazilevs, V.M. Calo, J.A. Cottrell, A. Reali and G. Scovazzi), ERCOFTAC Workshop, Direct and Large-Eddy Simulation 7, Trieste, Italy, September 8-10, 2008, Keynote Plenary Lecture.

224. "Isogeometric Analysis: Toward Unification of Computer Aided Design and Finite Element Analysis," Department of Structural Engineering, Technical University (Politecnico) of Milan, October 9, 2008.

225. "Patient Specific Cardiovascular Modeling and the Predictive Paradigm in Medicine," UT Health Science Center, Houston, Texas, October 21, 2008.

226. "Isogeometric Analysis: Progress and Challenges," NAFEMS Regional Summit 2008, 2020 Vision of Engineering Analysis and Simulation, Hampton, Virginia, October 29-31, 2008. Plenary Lecture.

227. "Isogeometric Modeling and Analysis of Fluid-Structure Interaction with Particular Emphasis on Patient-specific Cardiovascular Simulation," ASME International Congress and Exposition, Boston, Massachusetts, October 31 to November 6, 2008. Plenary Lecture.

228. "Isogeometric Analysis of Phase-field Models: Application to the Cahn-Hilliard and Navier-Stokes-Korteweg Equations," ASME International Congress and Exposition, Boston, Massachusetts, October 31 to November 6, 2008. Plenary Lecture.

229. "Improving Stability of Multiscale Formulations of Fluid Flow at Small Time Steps," (with Y. Bazilevs, M.-C. Hsu, V. Calo, and T.E. Tezduyar), ASME International Congress and Exposition, Boston, Massachusetts, October 31 to November 6, 2008.

230. "Dynamics of Nanoparticles in Idealized and Patient-specific Blood Vessels," (with V. Calo, Y. Bazilevs, S. Hossain, P. Decuzzi, and M. Ferrari), ASME International Congress and Exposition, Boston, Massachusetts, October 31 to November 6, 2008.

231. "Patient Specific Cardiovascular Modeling and the Predictive Paradigm in Medicine," Invited Masterworks Lecture, Supercomputing '08, Austin, Texas, November 15-21, 2008.

232. "Isogeometric Analysis: Toward Unification of Computer Aided Design and Finite Element Analysis," CS Communication & Systems, Paris, France, December 12, 2008.

233. "Isogeometric Analysis: Progress and Challenges," keynote plenary lecture in honor of O.C. Zienkiewicz, 1921-2009, AfriComp 2009, 1st African Conference on Computational Mechanics, Sun City, South Africa, January 7-11, 2009.

234. "Isogeometric Analysis: Progress and Challenges," Seminar, School of Engineering, Swansea University, Swansea, Wales, U.K., January 15, 2009.

235. "Isogeometric and Variational Multiscale Methods in Computational Fluid Dynamics," Colloquium on Multiscale Methods in Computational Mechanics, Rolduc Conference Center, Rolduc, Netherlands, March 11-13, 2009.

236. "Variational Multiscale Residual-based Turbulence Modeling for Large Eddy Simulation of Incompressible Flows," (with Y. Bazilevs, V. Calo, J.A. Cottrell, A. Reali, and G. Scovazzi), Keynote Plenary Lecture, 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

237. "Isogeometric FSI: Theory, Algorithms and Computations," (with Y. Bazilevs, V. Calo and J. Zhang), Keynote Lecture, 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

238. "Efficient Quadrature for NURBS-based Isogeometric Analysis," (with A. Reali and G. Sangalli), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

239. "Simulation-based analysis of nanoparticle effectiveness for cancer treatment and imaging," (with V. Calo, P. Decuzzi and M. Ferrari), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

240. "Recent Advances and Applications of Residual-based VMS," (with Y. Bazilevs, M.-C. Hsu, V.M. Calo, C. Michler, and T.E. Tezduyar), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

241. "A robust residual-based variational multiscale method for large-eddy simulation based on time-dependent subgrid scales," (with P.Gamnitzer, V. Gravemier, V. Calo, Y. Bazilevs, and W. Wall), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

242. "Isogeometric Analysis of hydrodynamic noise generation," (with J. Evans), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

243. "Stabilized Shock Hydrodynamics. A Conservative Updated Lagrangian Approach," (with G. Scovazzi, J.N. Shadid and E. Love), 15th International Conference on Finite Elements in Flow Problems, FEF09, Chuo University, Chuo, Japan, April 1-3, 2009.

244. "Isogeometric Analysis: Toward Integration of CAD and FEA," Office of Naval Research, Contractors Meeting, Arlington, Virginia, April 13-15, 2009.

245. "Introduction to Computational Mechanics," University of Ulsan, Ulsan, South Korea, May 12, 2009.

246. "Introduction to Isogeometric Analysis," University of Ulsan, Ulsan, South Korea, May 13, 2009.

247. "The Impact of Computational Mechanics on Engineering Science and Practice," ASAIO Symposium, Efforts and Development on the Use of Computational Methods for Designing Artificial Organs, May 29, 2009.

248. "Isogeometric Analysis: Toward Integration of CAD and FEA," Norwegian University of Science and Technology, Trondheim, Norway, June 4, 2009.

249. "Isogeometric FSI: Theory, Algorithms and Computations," Invited Keynote Lecture, Coupled 2009, Computational Methods for Coupled Problems in Science and Engineering, Ischia Island, Italy, June 8-10, 2009.

250. "Isogeometric Analysis: Toward Integration of CAD and FEA," Det Norske Veritas, Oslo, Norway, June 12, 2009.

251. "Isogeometric Analysis," Plenary Lecture, Marine 2009, III International Conference on Computational Methods in Marine Engineering, Trondheim, Norway, June 15-17, 2009.

252. "Isogeometric Methods in Structural Dynamics and Wave Propagation," Plenary lecture, CompDyn 2009, 2nd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Island of Rhodes, Greece, June 22-24, 2009.

253. "Bézier-based isogeometric methods," (with M. Scott and M. Borden), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

254. "Computing with Bézier-based isogeometric elements: A tutorial," (with M. Borden and M. Scott), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

255. "Mathematical modeling of drug and drug-encapsulated nanoparticle transport in patient-specific artery walls," (with S. Hossain, S. Hossainy, Y. Bazilevs, and V. Calo), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

256. "Isogeometric analysis of turbulent hydrodynamic noise generation," (with J. Evans), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

257. "Sheet metal forming using an isogeometric shell formulation," (with D. Benson, Y. Bazilevs, and M.-C. Hsu), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

258. "Variational multiscale modeling of thermal turbulence," (with J. Pincipe, V. Calo and R. Codina), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

259. "Advances and applications of residual-based VMS," (with I. Akkerman, Y. Bazilevs, M.-C. Hsu, V. Calo, and C. Michler), USNCCM X, U.S. National Congress on Computational Mechanics, Columbus, Ohio, July 15-19, 2009.

260. "Nonlinear and Inelastic Isogeometric Analysis," Computational Plasticity X (COMPLAS X), Barcelona, Spain, September 2-4, 2009.

261. "Isogeometric Analysis: Toward Integration of CAD and FEA," Keynote Plenary Lecture, 3rd GACM Colloquium on Computational Mechanics for Young Scientists from Academia and Industry, Leibniz University, Hannover, Germany, September 21-23, 2009.

262. "Isogeometric Analysis," Aziz Lectures: Numerical Solution of Differential Equations, Department of Mathematics, University of Maryland, College Park, Maryland, October 12, 2009.

263. "Variational Multiscale Methods in Computational Fluid Dynamics," Applied Mathematics Colloquium, University of Maryland, College Park, Maryland, October 13, 2009.

264. "Introduction to Isogeometric Analysis," Hyundai Heavy Industries, Ulsan, Republic of Korea, November 5, 2009.

265. "NURBS-based Isogeometric Analysis: Studies on Efficient Quadrature and Collocation Techniques," Invited Lecture, ASME International Mechanical Engineering Congress and Exposition, Lake Buena Vista, Florida, November 13-19, 2009.

266. "Sheet Metal Forming Using an Isogeometric Shell Formulation," (with Y. Bazilevs, D.J. Benson and M.-C. Hsu), Invited Lecture, ASME International Mechanical Engineering Congress and Exposition, Lake Buena Vista, Florida, November 13-19, 2009.

267. "Isogeometric and Variational Multiscale Methods in CFD – I," Invited Lecture, ASME International Mechanical Engineering Congress and Exposition, Lake Buena Vista, Florida, November 13-19, 2009.

268. "Isogeometric and Variational Multiscale Methods in CFD – II," Invited Lecture, ASME International Mechanical Engineering Congress and Exposition, Lake Buena Vista, Florida, November 13-19, 2009.

269. "Patient Specific Modeling and the Predictive Paradigm in Medicine," Invited Research Briefing, National Academy of Sciences Annual Meeting, Washington, DC, April 24-27, 2010. Presentation at the web address: <http://2010video.nasonline.org.s3.amazonaws.com/2010am-hughes_thomas.html>

270. "Isogeometric Analysis: Toward Integration of CAD and FEA," SimTech Colloquium, University of Stuttgart, Stuttgart, Germany, May 4, 2010.

271. "Isogeometric Analysis: Toward Integration of CAD and FEA," Semi-plenary Lecture, ECCM 2010, IV European Conference on Computational Mechanics – Solids, Structures and Coupled problems in Engineering, Paris, France, May 16-21, 2010.

272. "An isogeometric approach to cohesive zone formulations," (with C. Verhoosel, M. A. Scott and R. De Borst), ECCM 2010, IV European Conference on Computational Mechanics – Solids, Structures and Coupled problems in Engineering, Paris, France, May 16-21, 2010.

273. "NURBS-based isogeometric analysis: efficient quadrature and collocation techniques," (with F. Auricchio, L. Beirao Da Veiga, A. Reali, and G. Sangalli), ECCM 2010, IV European Conference on Computational Mechanics – Solids, Structures and Coupled problems in Engineering, Paris, France, May 16-21, 2010.

274. "High strain rate shock hydrodynamics flow computations on tetrahedral finite elements," (with G. Scovazzi and J.N. Shadid), ECCM 2010, IV European Conference on Computational Mechanics – Solids, Structures and Coupled problems in Engineering, Paris, France, May 16-21, 2010.

275. "Isogeometric collocation methods," (with F. Auricchio, L. Beirao Da Veiga, A. Reali, and G. Sangalli), ECCM 2010, IV European Conference on Computational Mechanics – Solids, Structures and Coupled problems in Engineering, Paris, France, May 16-21, 2010.

276. "Isogeometric Analysis: Introduction and Overview," Invited Keynote Plenary Lecture, 11th International LS-DYNA Users Conference, Dearborn, Michigan, June 6-8, 2010.

277. "A large deformation, rotation-free, isogeometric shell," (with D. Benson, Y. Bazilevs, and M.-C. Hsu), US National Congress on Applied Mechanics, Penn State University, State College, Pennsylvania, June 27-July 2, 2010.

278. "Shape optimization with isogeometric analysis," (With S. Lipton and L. Dede), US National Congress on Applied Mechanics, Penn State University, State College, Pennsylvania, June 27-July 2, 2010.

279. "Structural topology optimization in a phase field approach," (with L. Dede and S. Lipton), US National Congress on Applied Mechanics, Penn State University, State College, Pennsylvania, June 27-July 2, 2010.

280. "Introduction to Computational Engineering and Science," School of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, July 14, 2010.

281. "Isogeometric Analysis: Toward Integration of CAD and FEA," Plenary Lecture, WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

282. "Personal Reminiscence of O.C. 'Olek' Zienkiewicz," WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

283. "Isogeometric analysis for topology optimization in a phase field approach," (with L. Dede, S. Lipton and V.M. Calo), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

284. "Dynamic variational multiscale modeling of turbulent incompressible flows," WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

285. "Constrained local refinement of T-splines," Keynote Lecture, (with M.A. Scott and T.W. Sederberg), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

286. "Isogeometric analysis of phase-field models," (with H. Gomez, V.M. Calo and X. Nogueira), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

287. "Isogeometric variational multiscale analysis of the turbulent backward-facing step: Comparison of strongly and weakly enforced no-slip boundary conditions," (with K. Chang), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

288. "Shape optimization using isogeometric analysis," (with S. Lipton and L. Dede), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

289. "Modeling of coupled drug and drug-encapsulated nanoparticle transport in multilayered patient-specific coronary artery walls under normal and diseased conditions," (with S. Hossain, S. Hossainy, Y. Bazilevs and V.M. Calo), WCCM/APCOM 2010, 9th World Congress on Computational Mechanics and 4th Asian Pacific Congress on Computational Mechanics, Sydney, Australia, July 19-23, 2010.

290. "Isogeometric Analysis," Invited Plenary Lecture representing the field of Numerical Analysis, ICM 2010, International Congress of Mathematicians, International Mathematics Union, Hyderabad, India, August 19-27, 2010. (This is the most important event in the field of mathematics every four years and being invited to give a plenary is considered the equivalent of a major award.) Presentation at the web address: http://player.bitgravity.com/debug/embedcode.php?ap=true&video=http%3A//bitcast-a.bitgravity.com/highbrow/livearchive40009/26aug-9.00to10.00.flv

291. "Isogeometric Analysis: A Calculus for Computational Mechanics," Invited Plenary Lecture, 7th International Conference on Engineering Computational Technology, Universidad Politecnica de Valencia, Valencia, Spain, September 14-17, 2010.
292. "Isogeometric Analysis," Invited Plenary Lecture, IFOST 2010, International Forum on Strategic Technology, University of Ulsan, Ulsan, South Korea, October 13-15, 2010.
293. "Isogeometric Analysis," Invited Seminar, Yonsei University, Seoul, South Korea, October 20, 2010.
294. "Analysis-Suitable T-Splines," (with M.A. Scott and T.W. Sederberg), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
295. "Converting Unstructured Quadrilateral Mesh to T-Spline Surface," (with J. Zhang, W. Wang and M.A. Scott), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
296. "An Application of Isogeometric Analysis in the Biomedical Field of Cardiovascular Mechanics," (with F. Aurrichio, S. Morganti and A. Reali), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
297. "NURBS-Based Isogeometric Analysis: Studies on Efficient Quadrature and Collocation Techniques," (with F. Aurrichio, L. Beirao da Veiga, F. Calabro, A. Reali and G. Sangalli), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
298. "Isogeometric Analysis and Phase-Field Modeling of Dynamic Linear Elastic Fracture Mechanics," (with M.J. Borden, C.M. Landis and C.V. Verhoosel), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
299. "Simulation of Failure Processes Using Isogeometric Analysis," (with R. de Borst, C.V. Verhoosel, M.A. Scott and M.J. Borden), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
300. "Mathematical Modeling of Coupled Drug and Drug-Encapsulated Nanoparticle Transport in Patient-Specific Coronary Artery Walls," (with S. Hossain, S. Hossainy, Y. Bazilevs and V. Calo), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
301. "Isogeometric Variational Multiscale Analysis of Turbulent Flow over a Wavy Wall," (with K. Chang, V. Calo and J.S. Lee), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
302. "Isogeometric Variational Multiscale Simulation of Laminar and Turbulent Flow through Annular Channel," (with H.T. Ahn and Y. Motiagh), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
303. "Divergence-Free B-Spline Discretizations of the Navier-Stokes Equations," (with J. Evans, A. Buffa, and G. Sangali), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
304. "Isogeometric Analysis of Topology Optimization Problems Based on the Phase-Field Model," (with L. Dede and S. Lipton), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
305. "Isogeometric Analysis for Phase-Field Models Coupled with Navier-Stokes Equations," (with J. Liu, L. Dede, J. Evans and H. Gomez), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
306. "Isogeometric Analysis on Phase-Field Models," (with H. Gomez, V. Calo, and X. Nogueira), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
307. "Isogeometric Shell Elements for Large Deformation Problems," (with D. Benson and Y. Bazilevs), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
308. "Modeling of Particle Transport and Adhesion in Vasculature," (with S. Hossain, Y. Zhang, G. Adriani, A. Van de Ven, M. Ferrari and P. Decuzzi), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
309. "Aneurysm Enlargement Utilizing a Fiber-Based Growth Model," (with F. Nugen and L. Dede), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
310. "Shape Optimization Using Isogeometric Analysis," (with S. Lipton, L. Dede and J. Zhang), IGA 2011: Isogeometric Methods – Integrating Design and Analysis, University of Texas, Austin, January 13-15, 2011.
311. "Isogeometric Analysis and Phase-Field Modeling of Fracture," (with M.J. Borden, C.M. Landis, M.A. Scott and C.V. Verhoosel), Finite Element Rodeo 2011, Texas A&M University, February 25-26, 2011.
312. "Isogeometric Analysis," Distinguished Lecture in Structural Engineering and Mechanics, University of California, Los Angeles, January 27, 2011.

313. "Isogeometric Analysis," Invited Seminar at the Chair of Structural Analysis, Technical University of Munich, Munich, Germany, March 22, 2011.
314. "Variational Multiscale Methods in Computational Fluid Dynamics," Invited Semi-plenary Lecture, FEF 2011, 16th International Conference on Finite Elements in Flow Problems, Munich, Germany, March 23-25, 2011.
315. "Provably Unconditionally Stable, Second-order Time-accurate, Mixed Variational Methods for Phase-field Models," (with H. Gomez), FEF 2011, 16th International Conference on Finite Elements in Flow Problems, Invited Semi-plenary Lecture, Munich, Germany, March 23-25, 2011.
316. "Isogeometric Analysis," ONR Computational Mechanics and Signatures Program Peer Review, Arlington VA, April 25-26, 2011.
317. "Isogeometric Analysis: Toward Integration of CAD and FEA," Invited Keynote Plenary Lecture, COMPDYN 2011, 3rd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Corfu, Greece, May 25-28, 2011.
318. "Isogeometric Analysis," Invited Plenary Lecture, SimTech 2011, International Conference on Simulation Technology, Stuttgart, Germany, June 14-17, 2011.
319. "Phase Field Models and Isogeometric Analysis," Invited Keynote Plenary Lecture, Coupled Problems 2011, Computational Methods for Coupled Problems in Science and Engineering IV, Kos Island, Greece, June 19-22, 2011.
320. "Isogeometric Analysis: Introduction and Overview," Invited Seminar, Cracow Computational Science Seminar, Cracow Polytechnic Universtiy, Cracow, Poland, June 24, 2011.
321. "Isogeomtric Analysis as a Higher-order Finite Element Methodology," Invited Keynote Plenary Lecture, HOFEIM 2011, Workshop on Higher Order Finite Element and Isogeometric Methods, Cracow, Poland, June 27-29, 2011.
322. "Patient Specific Modeling and the Predictive Paradigm in Medicine," New Fellows Seminar, Royal Society, London, July 13, 2011. Title of New Fellows : Audio file of seminar at the web address: <http://downloads.royalsociety.org/audio/misc/new_fellows_2011/Hughes.mp3>
323. "Isogeometric Analysis," Invited Plenary Lecture, U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
324. "Isogeometric Analysis of Dynamic Crack Propagation using a Phase Field Model," (with M.J. Borden, C. Landis, M.A. Scott, and C. Verhoosel), U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
325. "Modeling of Particle Transport and Adhesion in Authentic Vasculature," (With S. Hossein, Y.Zhang, G. Adriani, A.L. Vande Ven-Moloney, M. Ferrari, and P. Decuzzi), U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
326. "Isogeometric Collocation Techniques for Static and Dynamic Elasticity Problems," (with F. Auricchio, L. Beirao da Veiga, A. Reali, and G. Sangalli), U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
327. "Analysis Suitable T-Splines of Arbitrary Topology," (With M.A. Scott and M.J. Borden), U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
328. "An Efficient Quadrature Strategy for NURBS-based Isogeometric Analysis," (with F. Auricchio, F. Calabro A. Reali, and G. Sangalli), U.S. National Congress on Computational Mechanics, Minneapolis, Minnesota, July 24-28, 2011.
329. "Isogeometric Analysis: Integrating Design and Analysis," Invited Seminar, Department of Mechanical and Aerospace Engineering, Seoul National University, Seoul, Korea, August 18, 2011.
330. "Isogeometric Analysis and Computational Mechanics," Ship Hydrodynamics Workshop, Society of Naval Architecture of Korea, Seoul National University, Seoul, Korea, August 18-19, 2011.
331. "Isogeometric Analysis: Integrating Design and Analysis," SINTEF Project Meeting, Holmenkollen Park Hotel Rica, Oslo, Norway, September 5, 2011.
332. "Isogeometric Crack Propagation: Discrete and Phase-field Descriptions," Invited Plenary Lecture, COMPLAS XI, Barcelona, Spain, September 7-9, 2011.
333. "Isogeometric Crack Propagation: Discrete and Phase-field Descriptions," TCCM 2011, Trends and Challenges in Computational Mechanics, A conference in Honor of Peter Wriggers' 60th Birthday, University or Padua, Padua, Italy, September 12-14, 2011.
334. "Isogemetric Analysis: From Computational Geometry to Dynamic Brittle Fracture," Invited Lecture, Prager Medal Symposium, 48th Annual Technical Conference of the Society of Engineering Science, Northwestern University, Evanston, Illinois, October 12-14, 2011.

335. "Isogeometric Analysis," Winston Chen Distinguished Lecture, Harvard School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, October 19, 2011.

336. "Isogeometric Analysis: Progress and Perspectives," Invited Plenary Lecture, SIAM Conference on Geometric and Physical Modeling (GD/SPM11), Wyndham Orlando Resort, Orlando, Florida, October 24-27, 2011.

337. "Isogeometric Analysis," Fowler Distinguished Lecture, Department of Mechanical Engineering, Texas A&M University, College Station, Texas, November 16, 2011.

338. "Isogeometric Analysis," ACSEM12, Advances in Computational Science, Engineering and Mathematics, Conference in Honor of the 75th Birthday of Professor J.Tinsley Oden, University of Texas at Austin, Austin, Texas, January 19-20, 2012.

339. "Isogeometric Analysis: Recent Developments," John A. Blume Distinguished Lecture, Stanford University, Stanford, California, March 1, 2012.

340. "Isogeometric Analysis: Recent Developments," Invited Lecture, Workshop on Isogeometric Analysis and Applications, Linz, Austria, March 12-16, 2012.

341. "Isogeometric Analysis," ONR Computational Mechanics Program Review, Arlington VA, April 9-10, 2012.

342. "Isogeometric Analysis," Elsevier Distinguished Lecture in Mechanics," New Jersey Institute of Technology, Newark, New Jersey, April 11, 2012.

343. "Isogeometric and Variational Multiscale Methods in CFD," Invited Plenary Lecture, Korean Society of Computational Fluids Engineering Spring Conference, Jeju Island, South Korea, May 24-25, 2012.

344. "Isogeomtric Analysis: Introduction and Recent Developments," Keynote Plenary Lecture, LS DYNA International Users Conference, Dearborn, Michigan, June 4-6, 2012.

345. "Isogeometric Analysis," Invited Keynote Plenary Lecture, WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.

346. "Predicting Patient-specific Vascular Distribution for Nanoparticles," (with S. Hossain, M. Ferrari and Paolo Decuzzi), WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.

347. "Divergence-conforming B-spine Discretizations for Viscous Incompressible Flows," (with J.A. Evans), WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.

348. "Evaluation of a Growth and Remodeling Theory of Intracranial Aneurysms with Isogeometric Analysis," (with F. Nugen, L. Dede and T.C. Gasser), WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.

349. "Phase-field Models for Dynamic Crack Propagation," (with M.J. Borden and C.M. Landis), WCCM 2012, Tenth World Congress on Computational Mechanics, São Paulo, Brazil, July 8-13, 2012.

350. "Isogeometric Analysis," Invited Technical Seminar, Samsung Manufacturing Research Center, Suwon, South Korea, August 23, 2012.

351. "Recent Developments and Trends in Isogeometric Analysis," ICADA Project Meeting, Rica Nidelven Hotel, Trondheim, Norway, September 4, 2012.

352. "Isogeometric Analysis: Recent Developments," Semi-plenary Lecture, ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

353. Isogeometric Collocation Methods for Elasticity," (with F. Auricchio, L. Beirão da Veiga, A. Reali, and G. Sangalli), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

354. "Quadrature Rules for NURBS-based Isogeometric Analysis," (with F. Auricchio, F. Calabro, A. Reali, and G. Sangalli), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

355. "Phase-field Models for Dynamic Crack Propagation," (with M. Borden and C.M. Landis), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

356. "Isogeometric Analysis of Nearly Incompressible Large Strain Plasticity," ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

357. "An Isogeometric Analysis Approach to Model the Aortic Valve Behavior," (with F. Auricchio, S. Hartmann, S. Morganti, and A. Reali), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

358. "Predicting Patient-specific Vascular Distribution for Nanoparticles," (with S.S. Hossain, Y. Zhang, M. Ferrari, and P. Decuzzi), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences

and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

359. "Isogeometric Analysis with the Boundary Element Method and T-splines," (with R.N. Simpson, M.A. Scott, S. Lipton, and S.P.A. Bordas), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

360. "Isogeometric Boundary Element Analysis using Unstructured T-splines," (with M.A. Scott and R.N. Simpson), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

361. "Isogeometric Analysis and the Finite Cell Method," (with D. Schillinger, M.A. Scott, M.J. Borden, L. Dede, J.A. Evans, and E. Rank), ECCOMAS 2012, 6th European Conference on Computational Methods in Applied Sciences and Engineering, University of Vienna, Vienna, Austria, September 10-14, 2012.

362. "Isogeometric Analysis," Charlemagne Distinguished Lecture, Aachen Institute for Advanced Study in Computational Engineering Science, (AICES), RWTH – Aachen University, Aachen, Germany, October 24, 2012.

363. "Isogeometric collocation methods for elastostatics and dynamics," (with A. Reali, F. Auricchio, L. Bierao da Veiga, and G. Sangalli), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

364. "An adaptive isogeometric collocation method based on local hierarchical refinement of NURBS," (with D. Schillinger, J.A. Evans, M.A. Scott, and A. Reali), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

365. "Isogeometric modeling of the structural behavior of patient-specific aortic valves," (with F. Auricchio, S. Hartmann, S. Morganti, and A. Reali), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

366. "High order gradient, curl and divergence conforming spaces with an application to B-splines," (with R.H. Hiemstra and M. Gerritsma), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

367. "Blended isogeometric shells," (with D. Benson, S. Hartmann, Y. Bazilevs, and M.-C. Hsu), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

368. "Predicting patient-specific distribution of systemically injected nanoparticles in vascular networks," (with S.S. Hossain, Y. Zhang and P. Decuzzi), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

369. "The method of subgrid vortices: A new variational multiscale method for divergence conforming discretizations of the Navier-Stokes equations," (with J.A. Evans), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

370. "Fluid-structure interaction analysis with emphasis on nonmatching discretizations," (M.-C. Hsu, Y. Bazilevs and M. Sacks), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

371. "An unconditionally stable-in-energy, second-order accurate-in-time scheme for the isothermal Navier-Stokes-Korteweg equations," (with J. Liu, H. Gomez, J.A. Evans, and C.M. Landis), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

372. "Higher-order phase-field models for dynamic crack propagation," (with M.J. Borden and C.M. Landis), ACM 2013, Advances in Computational Mechanics, A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes, San Diego, California, February 24-27, 2013.

373. "The Chicken and Egg Problem in Computational Mechanics," NWU2013, Advances in Computational Mechanics with Emphasis on Fracture and Multiscale Phenomena, Evanston, Illinois, April 18-20, 2013.

374. "Instantiating the Isogeometric Vision in Design and Analysis," ONR Computational Mechanics Program Review, Arlington VA, April 23-24, 2013.

375. "Isogeometric Analysis," Raymond D. Mindlin Lecture, Department of Civil Engineering and Engineering Mechanics, Davis Auditorium, Shapiro Center, Columbia University, April 25, 2013.

376. "Isogeometric Analysis," KAIST, Korean Advanced Institute of Science and Technology, Daejeon, South Korea, May 14, 2013.

377. "Thermodynamically Consistent Modeling and Simulation of Liquid-Vapor Phase Transition," Plenary Lecture, 5th International Conference on Coupled Problems in Science and Engineering, IACM Special Interest Conference, Ibiza, Spain, June 17-19, 2013.

378. "Cell and Nanoparticle Transport in Tumor Microvasculature and its Uncertainty Quantification," (with W.K. Liu, T.-R. Lee, A.M. Kopacz, W. Stroberg, M.S. Greene, W. Chen, S. Hossain, Y. Zhang, and P. Decuzzi), 5th International Conference on Coupled Problems in Science and Engineering, IACM Special Interest Conference, Ibiza, Spain, June 17-19, 2013.

379. "Patient Specific Modeling and the Predictive Paradigm in Medicine," Lectio Doctoralis, University of A Coruña, A Coruña, Spain, June 21, 2013.

380. "Isogeometric Analysis: Introduction and Recent Developments," 2013 NIMS Summer School on Isogeometric Analysis, National Institute of Mathematical Sciences, Daejeon, South Korea, July 10-12, 2013.

381. "An Isogeometric Collocation Approach for Contact," (with L. De Lorenzis, J.E. Evans and A. Reali), ICCCM 2013, 3rd International Conference on Contact Mechanics, an ECCOMAS Thematic Conference, Lecce, Italy, July 10-12, 2013.

382. "Isogeometric Analysis: Introduction and Recent Developments," Webinar for American Bureau of Shipping, Houston, Texas, July 19, 2013.

383. "Methods for Improving Convergence and Accuracy of Phase-Field Models for Dynamic Fracture in Brittle and Ductile Materials," (with M. Borden and C. Landis), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

384. "Blended Isogeometric Shells," (with D. Benson, S. Hartmann, and Y. Bazilevs), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

385. "The Navier-Stokes-Korteweg Equations: Thermodynamics, Algorithms and Applications," (with J. Liu, H. gomez, C. Landis, and J. Evans), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

386. "Isogeometric Divergence-Conforming Collocation Methods for Incompressible Fluid Flow," (with J.A. Evans, R. Hiemstra and D. Schillinger), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

387. "Isogeometric Hodge Decomposition with Applications in Fluid Mechanics," (with R. Hiemstra, M. Gerritsma, and J.A. Evans), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

388. "A Viscoplastic Theory of Saccular Aneurysm Enlargement and Growth," (with F. Nugen and L. Dede), USNCCM12, 12th U.S. National Congress on Computational Mechanics, Raleigh, North Carolina, July 22-25, 2013.

389. "Phase-field modeling of ductile fracture," (with M.J. Borden and C.M. Landis), Invited Plenary Lecture, COMPLAS XII, Computational Plasticity XII, Fundamentals and Applications, Barcelona, Spain, September 3-5, 2013.

390. "Isogeometric collocation for rate-independent plasticity," (with L. De Lorenzis), COMPLAS XII, Computational Plasticity XII, Fundamentals and Applications, Barcelona, Spain, September 3-5, 2013.

391. "Isogeometric Analysis Update: Introduction, Overview and Possibilities," ICADA Project Meeting, Rica Nidelven Hotel, Trondheim, Norway, September 30, 2013.

392. "Isogeometric phase-field modeling of brittle and ductile fracture," Invited Plenary Lecture, CSE Scientific Computing Seminar on Atomistic and Continuum Modeling, Norwegian University of Science and Technology, Trondheim, Norway, October 2, 2013.

393. "Isogeometric Analysis, Phase Field Modeling and Fracture," Ted Belytschko Lecture (inaugural annual lecture honoring Ted Belytschko), Northwestern University, November 25, 2013.

394. "Local Hierarchical p-, hp-, and k-refinement in Isogeometric Analysis," (with R. Hiemstra, D. Toshniwal, D. Schillinger), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

395. "Fast and Accurate Reduced Bézier Element Quadrature for Efficient Finite Element Analysis," (with D. Schillinger and S.J. Hossain), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

396. "Isogeometric Immersed Boundary Fluid-Structure Interaction Analysis of Bioprosthetic Heart Valves," (with M.-C. Hsu, D. Kamensky, D. Schillinger, J. A. Evans, A. Aggarwal, Y. Bazilevs, and M. Sacks), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

397. "Isogeometric Analysis of Liquid-Vapor Phase Transitions: Thermodynamics, Algorithms and Applications," (with J. Liu, C. Landis, H. Gomez, and J.A. Evans), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

398. "An Introduction to Isogeometric Collocation Methods with Some Applications," (with A. Reali, F. Auricchio,

L. Beiráo da Veiga, H. Gomez, and G. Sangalli), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

399. "Recent Developments of Isogeometric Collocation: Imposition of Neumann Boundary Conditions, Contact and Plasticity Formulations," (with L. De Lorenzis, J.A. Evans and A. Reali), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

400. "Isogeometric Collocation: Incompressible Elasticity, Locking and Possible Solutions," (with S. Morganti, F. Auricchio, L. De Lorenzis, J.A. Evans, and A. Reali), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

401. "Isogeometric Boundary Element Methods on Smooth Domains," (with M. Taus and Greg Rodin), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

402. "A One-parameter Isogeometric Formulation for Timoshenko Beams," (with J. Kiendl, F. Auricchio and A. Reali), IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin Texas, January 7-10, 2014.

403. "Isogeometric Analysis," Presidents' Distinguished Lecture in Engineering, Science and Medicine, Texas Tech University, Lubbock, Texas, March 10, 2014.

404. "Thermodynamically Consistent Modeling and Simulation of Liquid-Vapor Phase Transitions," Invited Keynote Plenary Lecture, *Advances in Computational Fluid-Structure Interaction and Flow Simulation (AFSI 2014)*, A Conference Celebrating the 60th Birthday of Tayfun E. Tezduyar, Waseda University, Tokyo, Japan, March 19-21, 2014.

405. "Modeling Patient Specific Blood Flow and Particle Adhesion in Femoral Arteries: Insights into Peripheral Arterial Disease Management," (with S. Hossain, J. Zhang, X. Fu, J. Singh, D. Shah, and P. Decuzzi), *Advances in Computational Fluid-Structure Interaction and Flow Simulation (AFSI 2014)*, A Conference Celebrating the 60th Birthday of Tayfun E. Tezduyar, Waseda University, Tokyo, Japan, March 19-21, 2014.

406. "Conservation of Geometry and Physics in Numerical Simulation of Incompressible Flow," *Advances in Computational Fluid-Structure Interaction and Flow Simulation (AFSI 2014)*, A Conference Celebrating the 60th Birthday of Tayfun E. Tezduyar, Waseda University, Tokyo, Japan, March 19-21, 2014.

407. "Isogeometric Analysis: Where we are and where we are going," Invited Keynote Plenary Lecture, IGAA 2014, Workshop on Isogeometric Analysis and Applications, Annweiler, Germany, April 7-10, 2014.

408. "Recent developments of isogeometric collocation: Imposition of Neumann boundary conditions, contact and plasticity formulations," (with L. De Lorenzis, J. A. Evans and A. Reali), IGAA 2014, Workshop on Isogeometric Analysis and Applications, Annweiler, Germany, April 7-10, 2014.

409. "Isogeometric Analysis: Progress and Challenges," ONR Computational Mechanics Review, Strategic Analysis, Inc., Arlington, VA, May 28-29, 2014.

410. "Isogeometric Analysis: Where we are and where we are going," Invited Keynote Plenary Lecture," LS-DYNA International Users Conference, Dearborn, Michigan, June 8-10, 2014.

411. "Isogeometric Analysis: Introduction and Recent Developments," Building Bridges: Connections and Challenges in Modern Approaches to Numerical Partial Differential Equations, London Mathematical Society – EPSRC Durham Symposium, University of Durham, Durham, England, July 8-16, 2014. Two one-hour lectures.

412. "One-parameter formulations for shear deformable structures," (with J. Kiendl, F. Auricchio, and A. Reali), HOFEIM 2014, Frauenchiemsee Island, Germany, July 15-18, 2014.

413. "Isogeometric Analysis: Where we are and where we are going," HOFEIM 2014, Frauenchiemsee Island, Germany, July 15-18, 2014.

414. "Isogeometric collocation for rate-independent plasticity," (with L. De Lorenzis), HOFEIM 2014, Frauenchiemsee Island, Germany, July 15-18, 2014.

415. Isogeometric immersed-boundary method for fluid-structure interaction: Weak enforcement of interface constraints and application to bioprosthetic heart valves," (with M.-C. Hsu, D. Kamensky, D.Schillinger, J.A. Evans, Y. Bazilevs, and M.S. Sacks), HOFEIM 2014, Frauenchiemsee Island, Germany, July 15-18, 2014.

416. "Cost of collocation, accuracy of Galerkin: On the potential of higher-order collocation-type methods in IGA and *hp* FEM," (with D.Schillinger and J.A. Evans), HOFEIM 2014, Frauenchiemsee Island, Germany, July 15-18, 2014.

417. "Personal Recollections of Robert L. Taylor and His Contributions to Computational Mechanics," Robert L. Taylor 80th Birthday Celebration, Barcelona, Spain, July 20, 2014.

418. "Isogeometric Analysis: Where we are and where we are going," Invited Plenary Lecture, WCCM XI, 11th

World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

419. "Isogeometric one-parameter formulations for shear deformable structures," (with J. Kiendl, F. Auricchio and A. Reali), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

420. "Recent developments of isogeometric collocation: Neumann boundary conditions, contact and plasticity formulations," (with L. De Lorenzis, J.A. Evans and A. Reali), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

421. "Isogeometric collocation: incompressible elasticity, locking and possible solutions," (with S. Morganti, F. Auricchio, L. De Lorenzis, J.A. Evans, and A. Reali),WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

422. "Towards patient-specific simulations and validation of a tumor angiogenesis   model using isogeometric analysis," (G. Vilanova, I. Colominas and Hector Gomez), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

423. "Fluid–structure interaction analysis of bioprosthetic heart valves," (with M.-C. Hsu, D. Kamensky, D. Schillinger, J.A. Evans, Y. Bazilevs, and M.S. Sacks), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

424. "Local hierarchical p-, hp-, and k-refinement in isogeometric analysis," R. R. Hiemstra, D. Toshniwal and D. Schillinger), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

425. "A viscoplastic theory of saccular aneurysm enlargement and growth," (with F. Nugen, L. Dedè, M.l. Borden), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

426. "Immersed fluid-structure interaction for isogeometric shell structures, with application to bioprosthetic heart valves," (with D. Kamensky, M.-C. Hsu, D. Schillinger, J.A. Evans, Y. Bazilevs, and Michael S. Sacks), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

427. "Isogeometric analysis: Structural vibrations and dynamics," (with A. Reali and J.A. Evans), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

428. "Isogeometric collocation boundary element methods," (with M. Taus and Gregory J. Rodin), WCCM XI, 11th World Congress on Computational Mechanics, Barcelona, Spain, July 25-27, 2014.

429. "Isogeometric Analysis: Introduction and Recent Developments," ECCOMAS Advanced Course on Isogeometric Analysis (IGA): Fundamentals and Applications, Barcelona, Spain, July 25-27, 2014. Four forty-five minute lectures.

430. "Isogeometric Analysis," Invited Seminar, Department of Civil Engineering, Duke University, September 8, 2014.

431. "Isogeometric Analysis," Invited Seminar, Department of Civil Engineering, University of Pavia, September 24, 2014.

432. "Isogeometric Analysis: Where we are and where we are going," Invited Lecture, SMART 2014, First International Conference on Subdivision, Geometric and Algebraic Methods, Isogeometric Analysis and Refinability in Tuscany, La Certosa di Pontignano, University of Siena, Italy, September 29, 2014.

433. "Isogeometric Analysis: Ten Years After," Invited Lecture, IMA Special Workshop – Structure-Preserving Discretizations of Partial Differential Equations, University of Minnesota, October 22, 2014.

434. "Isogeometric Analysis," Invited Seminar, Institute for Mechanics of Materials and Structures, Vienna University of Technology, November 18, 2014.

435. "MRI-based Computational Modeling of Blood Flow and Nanomedicine Deposition in Patients with Peripheral Arterial Disease," (with S. Hossain, J. Zhang, X. Fu, G. Brunner, J. Singh, D. Shah, and P. Decuzzi), Biomedical Engineering Society Annual Meeting (BMES 2014), San Antonio, Texas, October 22-25, 2014.

436. "Liquid-Vapor Phase Transitions: Thermomechanical Theory, Entropy Variable Formulation, and Boiling Simulations," (with J. Liu, C.M. Landis and H. Gomez), Keynote Lecture, 18th International Conference on Finite Elements in Flow Problems (FEF 2015), Regent Taipei, Taiwan, March 16-18, 2015.

437. "Isogeometric Analysis: Ten Years After," Computer Science Research Institute (CSRI) Distinguished Lecture, Sandia National Laboratories, Albuquerque, New Mexico, April 13, 2015.

438. "Isogeometric Analysis: Ten Years After," Keynote Plenary Lecture, PANACM 2015, 1st Pan-American Congress on Computational Mechanics, in conjunction with MECOM 2015, the XI Argentine Congress on Computational Mechanics, Buenos Aires, Argentina, April 27-29, 2015.

439. "Immersogeometric Fluid-Structure Interaction Analysis of Bioprosthetic Heart Valves: Realistic Material Modeling and Experimental Validation," (with D. Kamensky, M.-C. Hsu and M. S. Sacks), 2015 Summer Biomechanics, Bioengineering and Biotransport Conference (SB^{3}C2015), Snowbird Resort, Utah, June 17-20, 2015.

440. "Analysis and Application of the Spectral Symbol of Matrices in IgA," (with H. Speleers, C. Garoni, C. Manni, A. Reali, and S. Serra-Capizzano), EUROMECH, 9th European Solid Mechanics Conference 2015, Carlos III University of Madrid, Leganés, Madrid, Spain, July 6-10, 2015.

441. "Isogeometric Analysis: Ten Years After," Keynote Plenary Lecture, AFSI 2015, Advances in Computational Fluid-Structure Interaction and Flow Simulation, Istanbul, Turkey, May 11-13, 2015.

442. "Isogeometric Analysis: Ten Years After," Keynote Plenary Lecture, IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

443. "Structure preserving immersed B-splines," (with D. Toshniwal and R.R. Hiemstra), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

444. "Thermodynamically Consistent Simulation of Boiling Flows Using Isogeometric Analysis," (with J. Liu, C. Landis and H. Gomez), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

445. "Isogeometric modeling and analysis of prostate cancer growth: on the development of a new patient-specific tissue-scale diagnostic model," (with G. Lorenzo, M.A. Scott, K. Tew, and H. Gomez), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

446. "Spectral Analysis and the Symbol of Matrices in IgA," (with H. Speleers, C. Garoni, C. Manni, A. Reali and S. Serra-Capizzano), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

447. "On Analysis Suitable T-splines," (with R. Hiemstra and D. Toshniwal), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

448. "Isogeometric collocation: mixed elasticity for plane strain problems," (with S. Morganti, L. De Lorenzis, J.A. Evans, and A. Reali), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

449. "Isogeometric collocation for large-deformation frictional contact problems," (with N. Nguyen-Thanh, R. Kruse and L. De Lorenzis), IGA 2015, III International Conference on Isogeometric Analysis, Trondheim, Norway, June 1-3, 2015.

450. "Isogeometric Analysis: Where we are and where we are going," Invited Lecture, NAVAIR Structural Mechanics TIM Conference, Falls Church, VA, June 24-26, 2015.

451. "Isogeometric Analysis: Ten Years After," Plenary Lecture, Aachen Conference on Computational Engineering Science, RWTH Aachen University, Aachen, Germany, July 23-24, 2015.

452. "Isogeometric Analysis: Ten Years After," Keynote Plenary Lecture, 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

453. "Applications and Extensions of Bézier Projection Including Isogeometric Petrov-Galerkin Methods," (with D.C. Thomas and M.A. Scott),13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

454. "Isogeometric Boundary Element Methods," (with M. Taus and G. Rodin), 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

455. "Boiling Flows: Thermomechanical Theory, Entropy-stable Algorithm, and Simulations," 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

456. "Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement," (with Y. Zhang, X. Wei, and M.A. Scott), 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

457. "Immersogeometric Fluid – Thin Structure Interaction Analysis. Enhanced Conservation and Application to Heart Valve Simulation," (with D. Kamensky, M.-C. Hsu, J.A. Evans, and M.S. Sacks), 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

458. "Initiation and Progression of Saccular Aneurysm Enlargement from Medical Image Data," (with F. Nugen, L. Dede and M. Borden), 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-30, 2015.

459. "Isogeometric Phase-field Modeling of Brittle and Ductile Fracture," Keynote Plenary Lecture, XIII International Conference on Computational Plasticity, Fundamentals and Applications, COMPLAS XIII, Barcelona, Spain, September 1-3, 2015.

460. "Isogeometric Analysis applications in structural biomechanics involving complex geometries, explicit dynamics, large deformations, inelasticity, contact, and buckling," (with A. Reali, F. Auricchio, M. Conti, M. Ferraro, S. Morganti, and R.L. Taylor), XIII International Conference on Computational Plasticity, Fundamentals and Applications, COMPLAS XIII, Barcelona, Spain, September 1-3, 2015.

461. "Truncated Hierarchical Catmull-Clark Subdivision with Local Refinement," (with Xiaodong Wei, Yongjie Jessica Zhang, and Michael A. Scott), SIAM Conference on Geometric Design and Physical Modeling, Salt

Lake City, Utah, October 12-14, 2015.

462. "Patient Specific Computer Modeling and the Predictive Paradigm in Cardiovascular Medicine," Invited Lecture to the Full Assembly of the Austrian Academy of Sciences (Gesamtakademie), Vienna, Austria, October 16, 2015.

463. "Isogeometric Analysis: Ten Years After," Michigan Institute for Computational Discovery & Engineering (MICDE), University of Michigan, Ann Arbor, December 2nd, 2015.

464. "Isogeometric Analysis: Present, Past, and Future," Workshop on the Mathematical Foundations of Isogemetric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, February 7-13, 2016.

465. "Isogeometric Analysis: Present, Past, and Future," Householder Distinguished Seminars, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 8-9, 2016.

466. "Mathematical Modeling of Fluid-Structure Interaction In Bioprosthetic Heart Valves: Numerical Approximation And Experimental Validation," (with David Kamensky, Ming-Chen Hsu, John G. Lesicko, Mitchell A. Katona, Jordan L. Graves, Samuel J. Petter, and Michael S. Sacks), SB^{3}C2016, Summer Biomechanics, Bioengineering and Biotransport Conference, National Harbor, MD, June 29-July 2, 2016.

467. "Computational Cardiovascular Medicine: Coronary and Peripheral Artery Disease," UT Austin | Portugal International Collaboration for Emerging Technologies CoLab Annual Conference, Rectorate UNL, Campus de Campolide, Lisbon, Portugal, May 23-24, 2016.

468. "Future Prospects of Computational Medicine," UT Austin | Portugal International Collaboration for Emerging Technologies CoLab Annual Conference, Rectorate UNL, Campus de Campolide, Lisbon, Portugal, May 23-24, 2016.

469. "Isogeometric Analysis: Past, Present, Future," HOFEIM 2016, International Workshop on High-Order Finite Element and Isogeometric Methods," Mishkenot Shaananim Conference Center, Jerusalem, Israel, May 30-June2, 2016.

470. "IGA Collocation, aka "the ultimate reduced quadrature method": Some results, applications and open problems," (with A. Reali), HOFEIM 2016, International Workshop on High-Order Finite Element and Isogeometric Methods," Mishkenot Shaananim Conference Center, Jerusalem, Israel, May 30-June2, 2016.

471. "Isogeometric Analysis: Past, Present, Future," Plenary Lecture, ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

472. "High-order Explicit Structural Dynamics with Isogeometric Collocation," (with R. Hiemstra and A. Reali), ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

473. "G^1 Polar Spline Patches," (with D.Toshniwal and H. Speleers), ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

474. "Initiation and Enlargement of Intracranial Saccular Aneurysms using a Rate-sensitive Inelastic Theory of Growth Simulated with Isogeometric Analysis from Patient-specific Geometry with Comparison to Alternative theories," (with F. Nugen, L. Dede, and M.J. Borden), ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

475. "Optimal and Reduced Quadrature Rules for Tensor Product and Hierarchically Refined Splines in Isogeometric Analsysis," (with R. Hiemstra, F. Calabro and D. Schillinger), ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

476. "Isogeometric Collocation for Rate-independent Plasticity," (with F. Fahrendorf and L. De Lorenzis), ECCOMAS Congress 2016, European Congress on Computational Methods in Applied Sciences and Engineering, Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 5-10, 2016.

477. "Isogeometric collocation: Results, applications and open problems," (with A. Reali), XXI Convegno Italiano di Meccanica Computazionale, VIII Riunione del Gruppo Meteriali Aimeta, Lucca, Italy, June 27-29, 2016.

478. "Isogeometric Analysis: Past, Present, Future," Plenary Lecture, WCCM XII, 12th World Congress on Computational Mechanics, and APCOM VI, 6th Asia-Pacific Congress on Computational Mechanics, Seoul, Korea, July 24-29, 2016.

479. "IGA Collocation, aka "the ultimate reduced quadrature method": Some results, applications and open problems," (with A. Reali), WCCM XII, 12th World Congress on Computational Mechanics, and APCOM VI, 6th Asia-Pacific Congress on Computational Mechanics, Seoul, Korea, July 24-29, 2016.

480. "Modeling and Simulation of Prostate Cancer: Advances in the Development of a New Patient-specific Tissue-

scale Diagnostic Model," (with G. Lorenzo, H. Gomez, M.A. Scott, and K. Tew), WCCM XII, 12th World Congress on Computational Mechanics, and APCOM VI, 6th Asia-Pacific Congress on Computational Mechanics, Seoul, Korea, July 24-29, 2016.

481. "Patient Specific Computer Modeling and the Predictive Paradigm in Cardiovascular Medicine," Slovak University of Technology, Bratislava, Slovakia, October 3rd, 2016. http://www.sjf.stuba.sk/docs//docs/aktuality/hughes-1_oznam.pdf

482. "Isogeometric Analysis: Past, Present, Future," **Inaugural Ernst Melan Distinguished Lecture in Engineering Science,** Vienna University of Technology, Vienna, Austria, October 5th, 2016. http://www.imws.tuwien.ac.at/fileadmin/mediapool-werkstoffe/Diverse/Lehre/Einladung_ErnstMelanLecture_Tom_Hughes_Oct2016.pdf

483. "Isogeometric Analysis: Past, Present, Future," **Keynote Plenary Lecture,** USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

484. "Error Analysis for an Immersogeometric Cardiovascular Fluid—Structure Interaction Framework, (with Yue Yu*, David Kamensky, Ming-Chen Hsu, and John Evans), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

485. "Truncated Hierarchical Volumetric Splines over Unstructured Hexahedral Meshes," (with Xiaodong Wei* and Jessica Zhang), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

486. "Multi-sided Holes and Singular Parameterizations," (with Deepesh Toshniwal* and Hendrik Speleers), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

487. "High-Order Explicit Dynamics Using Isogeometric Collocation," (with René Hiemstra* and Alessandro Reali), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

488. "Isogeometric Collocation: Results, Applications, and Open Problems," (with Alessandro Reali*), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

489. "Immersogeometric Fluid-Structure Interaction Analysis with div-Conforming B-splines: Application to Heart Valve Simulation," (with David Kamensky*, Ming-Chen Hsu, John A. Evans, Yuri Bazilevs, and Michael Sacks), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

490. "Phase-field Models for Predicting Failure Mechanisms in Solids," (with Michael Borden*, Di Miao and Pulama Bhattacharya), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

491. "Isogeometric Finite Element Modeling of Phase-Fields on Deforming Surfaces," (with Christopher Zimmerman*, Chad Landis and Roger Sauer), USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, La Jolla, California, October 10-12, 2016.

492. "Patient Specific Computer Modeling and the Predictive Paradigm in Cardiovascular Medicine," Emory University, Atlanta, Georgia, November 16, 2016.

493. "Isogeometric Analysis: Past, Present, Future," **Lindbergh Lecture,** Department of Mechanical Engineering, University of Wisconsin, Madison, February 9, 2017.

494. "Smooth splines on unstructured quadrilateral and hexahedral meshes," (with D. Toshniwal*, H. Speleers, N. Lei, S Zheng, and X.D. Gu), IACM 19th International Conference on Finite Elements in Flow Problems - FEF 2017, Rome, Italy, April 5-7, 2017.

495. "High-order, Smooth and Pointwise Divergence-free Vector Field Discretization of the Incompressible Navier-Stokes Equations on Simplicial Meshes," (with R. Hiemstra*, H. Speleers, M.-C. Hsu, A. Krishnamurthy, and D. Toshniwal), IACM 19th International Conference on Finite Elements in Flow Problems - FEF 2017, Rome, Italy, April 5-7, 2017.

496. "Patient Specific Modeling and the Predictive Paradigm in Cardiovascular Medicine," Southeastern Universities Research Association (SURA), Board of Trustees Meeting, Cook Hotel and Conference Center, Louisiana State Universtiy, Baton Rouge, Louisiana, April 19, 2017.

497. "How to build smooth splines on unstructured quadrilateral meshes suited for isogeometric analysis," (with Hendrik Speleers* and Deepesh Toshniwal), Symposium on Solid and Physical Modeling (SPM-2017), Shape Modeling International (SMI-2017) Symposium, International Convention on Shape, Solid, Structure, & Physical Modeling (S3PM-2017), Berkeley, California, June 19-23, 2017.

498. "Tissue-scale, patient-specific modeling and simulation of prostate cancer," (with Guillermo Lorenzo*, Michael

A. Scott, Kevin Tew, and Hector Gomez), Congress on Numerical Methods in Engineering CMN2017, Valencia, Spain, July 3-5, 2017.

499. "Isogeometric Analysis: Past, Present, Future," **Invited Plenary Lecture,** EMI 2017, Engineering Mechanics Institute Conference, San Diego, June 4-7, 2017.

500. "Construction of Smooth Spline Functions on Unstructured Meshes for Isogeometric Analysis," (with Hendrik Speleers* and Depesh Toshniwal), EMI 2017, Engineering Mechanics Institute Conference, San Diego, June 4-7, 2017.

501. "Divergence-conforming Immersogeometric Analysis of Heart Valve Fluid-structure Interaction," (with David Kamensky*, Ming-Chen Hsu, John A. Evans, Yuri Bazilevs, and Michael S. Sacks), EMI 2017, Engineering Mechanics Institute Conference, San Diego, June 4-7, 2017.

502. "Dynamic Augmented Boundary Condition Enforcement, with Application to Immersogeometric Fluid-structure Interaction," (with Yue Yu*, David Kamensky, Ming-Chen Hsu, Yin Yang Lu, and Yuri Bazilevs), EMI 2017, Engineering Mechanics Institute Conference, San Diego, June 4-7, 2017.

503. "Isogeometric Analysis: Past, Present, Future," **Invited Keynote Presentation**, 14th U.S. National Congress on Computational Mechanics (USNCCM14), Palais des Congrès de Montréal, QC, Canada, July 17-20, 2017.

504. "A Computational Framework for Tissue-scale, Patient-specific Prediction of Prostate Cancer Growth," (with Guillermo Lorenzo*, Michael Scott, Kevin Tew, and Hector Gomez), 14th U.S. National Congress on Computational Mechanics (USNCCM14), Palais des Congrès de Montréal, QC, Canada, July 17-20, 2017.

505. "CAD-based Patient-specific Vascular NURBS Modeling for Isogeometric Analysis," (with Travis Sanders*, Benjamin Urick, Shaolie Hossain, and Jessica Zhang), 14th U.S. National Congress on Computational Mechanics (USNCCM14), Palais des Congrès de Montréal, QC, Canada, July 17-20, 2017.

506. "Applying Isogeometric Blended Shells to U-spline Surfaces," (with Zhihui Zou*, Michael Scott, Derek Thomas, Bastian Oesterle, and Manfred Bischoff), 14th U.S. National Congress on Computational Mechanics (USNCCM14), Palais des Congrès de Montréal, QC, Canada, July 17-20, 2017.

507. "Isogeometric Finite Elements," **Invited Keynote Plenary Lecture,** ECCOMAS Thematic Conference on Modern Finite Element Technologies, Mathematical and Mechanical Aspects (MFET 2017), Physikzentrum, Bad Honnef, Germany, August 21-23, 2017.

508. "Phase Field Modeling of Brittle and Ductile Fracture, Corrosion and Fatigue," (with Chad M. Landis, Michael J. Borden, Deepesh Toshniwal, Amin Anvari, and Isaac Lee), **Invited Plenary Lecture,** COMPLAS 2017, Fourteenth International Conference on Computational Plasticity – Fundamentals and Applications, Barcelona, Spain, September 5-7, 2017.

509. "Isogeometric Analysis: The Past is Never the Future," **Invited Keynote Plenary Lecture,** IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

510. "Arbitrary degree, smooth, compatible spline spaces n unstructured quadrilateral and hexahedral meshes," (with D. Toshniwal*, H. Speleers, N. Lei, S. Zheng, and X.D. Gu), IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

511. "Hierarchical Refined Stable B-splines for Trimmed Geometries," (with B. Marussig*), IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

512. "Smooth polar B-splines for design and analysis," (with H. Speleers*, D. Toshniwal, and R. Hiemstra), IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

513. "Fast Formation and Assembly in Isogeometric Analysis with Applications in Linear Elasticity," (with R. Hiemstra*, G. Sangalli, M. Tani, and F. Calabrò), IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

514. "Isogeometric Finite Element Modeling of Phase Fields on Deforming Surfaces," (with R.A. Sauer*, C. Zimmermann, and K.K. Mandadapu), IGA 2017 – Fifth International Conference on Isogeometric Analysis, University of Pavia, Pavia, Italy, September 11-13, 2017.

515. "isogeometric Analysis," **First Inaugural Piola Lecture,** University of Pavia, Pavia, Italy, September 14, 2017.

516. "Patient Specific Computer Modeling and the Predictive Paradigm in Cardiovascular Medicine," **Invited Lecture,** Budapest University of Technology and Economics, Budapest, Hungary, October 4, 2017.

517. "Isogeometric Analysis," Invited Seminar, Mathematics Department, Vanderbilt University, Nashville, Tennessee, November 16, 2017.

518. "The Isogeometric Approach to Analysis," **Keynote Plenary Lecture,** IGAA 2018 – Isogeometric Analysis and Applications, Delft University of Technology, Delft, The Netherlands, April 23-27, 2018.

519. "The Isogeometric Approach to Analysis," **Keynote Plenary Lecture,** Advances in Fluid Structure Interaction, and Flow Simulation, A Conference in Honor of the 75th Birthday of Thomas J.R. Hughes, Banff Springs, Canada, May 2-4, 2018.

520. "A mathematical model for tissue-scale, patient-specific prediction of prostate cancer growth," (with Guillermo Lorenzo*, Alessandro Reali, and Hector Gomez), SERAM, Congress of the Spanish Society for Medical Radiology, Pamplona, Spain, May 24-27, 2018.

521. "Isogeometric Analysis," **Plenary Lecture,** International Congress on Applied Mathematics, Hong Kong City University, China, June 3-8, 2018.

522. "The Isogeometric Approach to Analysis," **Keynote Plenary Lecture,** LS-DYNA International Conference and User Meeting, Edward Hotel and Conference Center, Dearborn, MI, June 10-12, 2018.

523. "The Isogeometric Approach to Analysis," **Plenary Lecture,** ICOSAHOM 2018, Imperial College of Science, Technology and Medicine, London, England, July 9-13, 2018.

524. "The Isogeometric Approach to Analysis," **Semi-Plenary Lecture,** 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

525. "Isogeometric Analysis on Meshes with Polar Singularities: B-spline Construction," (with Hendrik Speleers*, Deepesh Toshniwal and René Hiemstra), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

526. "On the Isogeometric Modeling of Phase Transformations on Deformed Surfaces," (with Roger A. Sauer, Christopher Zimmermann*, Deepesh Toshniwal, Chad Landis, and Kranthi K. Mandadapu), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

527. "CAD-integrated Template-based Patient Specific Vascular Modeling for Ispogeometric Analysis, (with Benjamin Urick*, Travis Sanders, Shaolie Hossain, and Jessica Zhang), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

528. "Fast Formation and Assembly in Isogeometric Analysis with Applications in Linear Elasticity," (with René Hiemstra*, Francesco Calabro, Mattia Tani, and Giancarlo Sangalli), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

529. "Isogeometric Analysis on Meshes with Polar Singularities: Applications to High-order PDEs and Structure-preserving Discretizations," (with Deepesh Toshniwal* and Hendrik Speleers), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

530. "Blended B-spline Construction on Unstructured Quadrilateral and Hexahedral Meshes with Optimal Convergence Rates in Isogeometric Analysis," (with Xiaodong Wei, Yongjie Zhang*, Deepesh Toshniwal, Hendrik Speleers, Xin Li, Carla Manni, and John Evans), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

531. "Moment Guided Isogeometric Analysis for the Boltzmann Equation," (with Michael Abdelmalik*), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

532. "Seamless Integration of Isogeometric Trimmed Shell Analysis at Large Deformations Based on the STEP Exchange Format," (with Y. Guo*, J. Heller, M. Ruess, and D. Schillinger), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

533. "Error Estimates for Dynamic Augmented Lagrangian Boundary Condition Enforcement, with Application to Immersogeometric Fluid-Structure Interaction," (with Xin Yang Lu, David Kamensky, Ming-Chen Hsu, Yuri Bazilevs, and Yue Yu), 13th World Congress on Computational Mechanics (WCCM XIII) and 2nd Pan American Congress on Computational Mechanics (PANACM II), New York City, July 22-27, 2018.

534. "The Isogeometric Approach to Analysis," **Plenary Lecture,** International Symposium on IsoGeometric Analysis and Mesh Generation (IGA & Mesh 2018), Hi Chance (Dalian) Science & Technology Center, Dalian, China, August 3-5, 2018.

535. "Isogeometric trimmed shell analysis: From structured to unstructured meshes," (with Y. Guo*, R. Hiemstra, D. Toshniwal, M. Ruess, and D. Schillinger), IGA 2018: Integrating Design and Analysis, AT&T

Convention Center, Austin, Texas, October 10-12, 2018.

536. "Mixed Collocation Isogeometric Methods for Incompressible Elasticity and Poromechanics," (with S. Morganti*, F. Auricchio, C. Callari, L. De Lorenzis, J. Evans, and A. Reali), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

537. "An IGA framework for studying the effect of 3D shape on plaque vulnerability," (with S. Hossain*, M.J. Johnson, and T. Sanders), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

538. "Symmetry-aware reparameterization," (with L. Quan, R. Hiemstra, K. Shepherd, D. Toshniwal, and D. Panozzo), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

539. "Untrimmed splines - I: Analysis suitable CAD," (with R. Hiemstra*, K. Shepherd, D. Toshniwal, L. Quan, and D. Panozzo), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

540. "Bounds on the dimension of non-uniform degree spline spaces on triangulations, (with D. Toshniwal*), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

541. "A CAD-integrated patient-specific vascular modeling pipeline for IGA," (with M. Johnson*, B. Urick, T. Sanders, S. Hossain, and Y. Zhang), AT&T Convention Center, Austin, Texas, October 10-12, 2018.

542. "Low-rank isogeometric analysis for the Boltzmann equation," (with M. Abdelmalik*), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

543. "Phase-field methods on deforming surfaces," (C. Zimmermann*, D. Toshniwal, C. Landis, K. Mandadpu, and R. Sauer), IGA 2018: Integrating Design and Analysis, AT&T Convention Center, Austin, Texas, October 10-12, 2018.

544. "Isogeometric Analysis Methods for Design of More Efficient Vehicles," (with R. Hiemstra, M. Johnson, L. Quan, K. Shepherd, and D. Toshniwal), National Science Foundation Industry/University Cooperative Research Center (IUCRC) for Efficient Vehicles and Sustainable Transportation Systems (EV-STS), University of Louisville, Vogt Engineering Center, 334 Eastern Parkway, Louisville, Kentucky, 40292, November 8-9, 2018.

545. "The Isogeometric Approach to Analysis," **Plenary Lecture,** Mechanics of Solids, Structures and Fluids Track, ASME IMECE 2018, The American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition, David L. Lawrence Convention Center, Pittsburgh, Pennsylvania, November 9-15, 2018.

546. "Analysis-suitable CAD Models based on Watertight Boolean Operations," (with Benjamin Marussig*, Benjamin Urick, Elaine Cohen, Richard H. Crawford, and Richard F. Riesenfeld), GAMM 2019, the 90th Annual Meeting of the International Association of Applied Mathematics and Mechanics, Vienna, Austria, February 18-22, 2019.

547. "Phase field modeling of dynamic brittle fracture of thin shells," (with Karsten Paul*, Christopher Zimmermann, Kranthi K. Mandadpu, Chad Landis, and Roger Sauer), GAMM 2019, the 90th Annual Meeting of the International Association of Applied Mathematics and Mechanics, Vienna, Austria, February 18-22, 2019.

548. "Integrating quantitative imaging and computational modeling to predict the spatiotemporal distribution of ^{186}Re nanoliposomes for recurrent glioblastoma treatment," (with Ryan T. Woodall*, David A. Hormuth II, Michael R.A. Abdelmalik, Chengyue Wu, Xinzeng Feng, Williams T. Phillips, Ande Bao, Andrew J. Brenner, and Thomas E. Yankeelov), Paper number 10948-130, SPIE Medical Imaging Symposium, 16 - 21 February 2019, San Diego, California.

549. "An Almost Meshless Talk about Mesh-based Isogeometric Analysis," **Keynote Plenary Lecture,** Meshless Methods and Advances in Computational Mechanics – In Celebration of Professor J.S. Chen's 50th Birthday, Pleasanton Marriott Hotel, Pleasanton, California, March10th–12th, 2019.

550. "Kinetic Theory for Computational Fluid Dynamics," (with Michael Abdelmalik,* Harald van Brummelen and Irene Gamba), 20th International Symposium on Finite Elements in Flow Problems (FEF2019), Chicago, March 29-April 4, 2019.

551. "An in silico study of mechanical obstruction of prostate cancer growth by benign prostatic hyperplasia with clinical implications," (with Guillermo Lorenzo,* Alessandro Reali and Hector Gomez), HOFEIM-2019, High Order Finite Elements and Isogeometric Methods, Pavia, Italy, May 28-31, 2019.

552. "Some Applications of Isogeometric Analysis," **Keynote Plenary Lecture,** Advances in Computational Fluid-Structure Interaction and Flow Simulation – A Conference on New Methods and Challenging Computations (AFSI 2019), Okinawa, Japan, June 24-26, 2019.

553. "Finite Element Boltzmann Schemes for Compressible Fluid Dynamics," (with Michael Abdelmalik), Advances in Computational Fluid-Structure Interaction and Flow Simulation – A Conference on New Methods and Challenging Computations (AFSI 2019), Okinawa, Japan, June 24-26, 2019.

554. "Reconstruction of Gap-free Intersections for Trimmed NURBS Surfaces," (with B. Urick, R.H. Crawford, E. Cohen, and R.F. Riesenfeld), International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, IDETC/CIE2019, August 18-21, 2019, Anaheim, CA, USA.

555. "Mathematical Aspects of Isogeometric Analysis and Applications: A Status Report," **Keynote Plenary Lecture,** Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, July 15-20, 2019.

556. "A solver for the isogeometric k-method," (with G. Sangalli*, M. Tani, F. Calabro, R. Hiemstra, G. Loli, and M. Montardini), Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, July 15-20, 2019.

557. **"**Polynomial Splines of Non-uniform Degree on T-meshes: Combinatorial Bounds on the Dimension," (with Deepesh Toshniwal* and Bernard Mourrain), Workshop on the Mathematical Foundations of Isogeometric Analysis, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany, July 15-20, 2019.

558. "My 50+ Years in the Finite Element Method," Modern Inverse Problems, Annual Meeting & Summer School 2019 of the RWTH Aachen IRTG-2379, Austin, Texas, July 23-26, 2019.

559. "Modeling and Simulation of Solidification with Isogeometric Interface Tracking Methods, (with Konstantin Key, Florian Zwicke and Stefanie Elgeti), Modern Inverse Problems, Annual Meeting & Summer School 2019 of the RWTH Aachen IRTG-2379, Austin, Texas, July 23-26, 2019.

560. "Boundary Conforming Smooth Spline Spaces for Isogeometric Analysis," (with Janis Born and Leif Kobbelt), Modern Inverse Problems, Annual Meeting & Summer School 2019 of the RWTH Aachen IRTG-2379, Austin, Texas, July 23-26, 2019.

561. "The Effect of 3D Shape on Plaque Vulnerability and Targeted Nanomedicine Delivery," (with Shaolie Hossain*, Michael Johnson, and Travis Sanders),15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.

562. "Isogeometric Reissner-Mindlin Shell Based on Mixed Formulation," (with Zhihui Zou*, Michael Scott, Derek Thomas, Bastian Oesterle, Manfred Bischoff, and Wolfgang Dornisch), 15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.

563. "An Adaptive Local Refinement Based on LR NURBS and Its Application to a Dynamic Phase Field Model for Brittle Shell Structures," (with Karsten Paul*, Christopher Zimmermann, Kranthi K. Mandadapu, Chad M. Landis, and Roger A. Sauer), 15th US National Congress on Computational Mechanics (USNCCM), Austin, Texas, July 28-August 1, 2019.

564. "The Isogeometric Approach to Phase Field Modeling of Fracture," **Invited Keynote Plenary Lecture,** COMPLAS 2019, 15th International Conference on Computational Methods in Plasticity, Barcelona, Spain, September 3-5, 2019.

565. "Special Lecture Honoring the Memory of Professor Erwin Stein," **Invited Lecture,** COMPLAS 2019, 15th International Conference on Computational Methods in Plasticity, Barcelona, Spain, September 3-5, 2019.

566. "The Isogeometric Approach to Analysis," **Invited Keynote Plenary Lecture,** PCM-CMM, 4th Polish Congress on Mechanics, 23rd International Conference on Computer Methods in Mechanics, September 8-12, 2019.

567. "Isogeometric Analysis: Crossing the Finish Line," **Invited Keynote Plenary Lecture,** IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

568. "An Inverse Shape Design Method Considering Polymeric Solidification," (with K. Key,* F. Zwicke and S. Elgeti), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

569. "Extraction and Optimization of Watertight Spline Layouts from Trimmed Geometries using Dual Loops," (with Kendrick Shepherd,* René Hiemstra and Lulin Quan), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

570. "Watertight Boolean Operations: A framework for creating analysis-suitable CAD Models," (with B. Urick, B. Marussig,* E. Cohen, R.H. Crawford, and R.F. Riesenfeld), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

571. "Reaction computations on trimmed locally refined meshes," (with D. D'Angella,* S. Kollmansberger, E. Rank, and A. Reali), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

572. "An adaptive higher order phase field formulation for brittle fracture of deforming surfaces," (with K. Paul, C.

Zimmermann, K.K. Mandadapu, C.M. Landis, and R. Sauer*), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

573. "Smooth Splines on Meshes with Polar Singularities," (with D. Toshniwal* and H. Speleers), IGA 2019, 7th International Conference on Isogeometric Analysis, Munich, Germany, September 18-20, 2019.

574. "Isogeometric Analysis," Invited Lecture, **Tedari-Callinan Distinguished Lecture,** University of Pennsylvania, Philadelphia, October 1, 2019.

575. "Stabilized and Variational Multiscale Methods: A brief history of ideas and origins," **Invited Keynote Lecture**, G.I. Taylor Medal Symposium: Variational Multiscale Methods in Mechanics, 56th Annual Meeting of the Society of Engineering Science, Washington University in St. Louis, October 13-15, 2019.

576. "Development of an image-informed mathematical model of convection-enhanced delivery of nanoliposomes for individual patients," (with Ryan T. Woodall*, David A. Hormuth II, Michael R.A. Abdelmalik, Chengyue Wu, Xinzeng Feng, William T. Phillips, Ande Bao, Andrew J. Brenner, and Thomas E. Yankeelov), 2019 SNO-SCIDOT Joint Conference on Therapeutic Delivery to the CNS, Phoenix, AZ, November 20-21, 2019.

577. "Calibration of an advection-diffusion model of convection-enhanced delivery of nanoliposomes to patient data," (with Ryan T. Woodall,* David A. Hormuth II, Michael R.A. Abdelmalik, Chengyue Wu, Xinzeng Feng, William T. Phillips, Ande Bao, Andrew J. Brenner, Thomas E. Yankeelov), Society for Neuro-Oncology, 2019 SNO-SCIDOT Joint Conference on Therapeutic Delivery to the CNS, Phoenix, Arizona, November 20- 21, 2019.

578. "Isogeometric Analysis," Invited Lecture, **Purdue Engineering Distinguished Lecture**, College of Engineering, Purdue University, December 5-6, 2019.

579. "Isogeometric Analysis: Recent Progress and New Directions," **Invited Keynote Plenary Lecture,** Ansys Simulation World Event, Virtual Conference, June 10-11, 2020. (Recorded Zoom lecture.)

580. "An image-based mechanistic computational model for early prediction of organ-confined untreated prostate cancer growth (poster)," (with G. Lorenzo*, A. Reali, H. Gomez, T. E. Yankeelov), AACR 2020, American Society for Cancer Research Annual Conference (Virtual II), San Diego Convention Center, San Diego, California, June 22-24, 2020.

581. "Image-based mechanistic modeling of prostate cancer for personalized forecasting of tumor growth," (with Guillermo Lorenzo*, Alessandro Reali, Hector Gomez, and Thomas E. Yankeelov), Annual Meeting of the Society of Mathematical Biology (SMB 2020), Virtual Conference, August 17-20, 2020.

582. "GSC Stabilization," (with K. Key, F. Baidoo, M. Abdelmalik, and S. Elgeti), IRTG Annual Meeting, Modern Inverse Problems, Annual Meeting & Summer School 2020 of the RWTH Aachen IRTG-2379, Aachen, Germany, July 14-17, 2020.

583. "Girl Scout Cookies Stabilization, (with K. Key, F. Baidoo, M. Abdelmalik, and S. Elgeti), IRTG Annual Meeting, Modern Inverse Problems, Annual Meeting & Summer School 2020 of the RWTH Aachen IRTG-2379, Aachen, Germany, July 14-17, 2020.

584. "Isogeometric Analysis: Recent Progress and New Directions," **Invited Keynote Plenary Lecture,** VIGA 2020, Virtual Isogeometric Conference, August 11-12. (Recorded Zoom lecture.)

585. "My 50+ Years in Mechanics and Computation," **Invited Keynote Plenary Lecture, (A.C. Eringen Medal Lecture),** Virtual Technical Meeting, Society of Engineering Science, September 29 to October 1, 2020.

586. "Integrating theory and population data to forecast the spatiotemporal spread of COVID-19," (with Guillermo Lorenzo*, Alex Viguerie, Ferdinando Auricchio, Davide Baroli, Alessia Patton, Alessandro Reali, Thomas E. Yankeelov, Alessandro Veneziani), UT Conference on COVID-19, November 10-11, 2020.

587. "Isogeometric Analysis: Origins, Status and Recent Progress," KTH Royal Institute of Technology, **Solid Mechanics Keynote Virtual Seminar,** January 14, 2021.

588. "Artificial Intelligence: A Matter of Life and Death," (with Y. Bromberg and Christopher K. Zarins), Brooklyn Tech Alumni Foundation Think Tank, I am Brooklyn Tech Virtual Celebration, January 27, 2021.

589. "My 50+ Years in Mechanics and Computation," **Sandia National Laboratories' Center for Computing Research Distinguished Lecture,** Sandia National Laboratories, Albuquerque, NM, February 3, 2021.

590. "A fast and low-memory isogeometric Galerkin method for Karhunen-Loève approximation of random fields with emphasis on large-scale 3D applications," (with Michal Mika, René Hiemstra, Dominik Schillinger and Peter Wriggers), GAMM Conference 2021, Kassel, Germany, March 15-19, 2021.

591. "Isogeometric Analysis: Origins, Status, Recent Progress, and Structure Preserving Methods," **Opening Plenary Colloquium,** Colloquia of the Excellence Project, Department of Mathematics, University of Rome, Tor Vergata, April 26th, 2021.

592. "Isogeometric Analysis and Mesh Generation," **International Meshing Round Table, Opening**

Plenary/Keynote (virtual), June 22nd, 2021.

593. "Isogeometric Analysis: Mathematical and Engineering Perspectives," **Opening Plenary Lecture (virtual), Workshop on the Theory and Application of Isogeometric Analysis,** Tianyuan Mathematical Center in Northeast China, Jilin University, Changchun, China, July 20-22, 2021.

594. "Image-based computational modeling of prostate cancer growth to assist clinical decision-making," (with Guillermo Lorenzo, Alessandro Reali, Hector Gomez, and Thomas Yankeelov), 16th US National Congress on Computational Mechanics, Chicago, IL, July 25-29, 2021.

595. "Dynamic Brittle Fracture of Thin Shell Structures based on a Phase Field Approach," (with Karsten Paul, Christopher Zimmermann, Thang X. Duong, Chad M. Landis, Kranthi K. Mandadapu, and Roger A. Sauer), 16th US National Congress on Computational Mechanics, Chicago, IL, July 25-29, 2021.

596. "My 50+ Years in Computational Mechanics," **Plenary Lecture in Celebration of USACM's 30th Anniversary,** 16th US National Congress on Computational Mechanics, Chicago, IL, July 25-29, 2021.

597. "FEA and IGA in Nonlinear Computational Mechanics: Emphasis on Phase Field Modeling of Fracture," (with Chad Landis, Yusheng Lo, Michael J. Borden) **Virtual Plenary Lecture,** COMPLAS 2021, XVI International Conference on Computational Plasticity, Fundamentals and Applications, September 7, 2021.

598. "Isogeometric Analysis: Motivation, Status and Current Directions," **Opening Keynote Lecture,** High Performance Computing Modernization Program (HPCMP), User Group Meeting (UGM), September 22nd, 2021.

599. "Isogeometric Analysis: Status and Trends," **Opening Plenary Lecture,** VIGA 2020, Virtual International Conference on Isogeometric Analysis, Lyon, France, September 27, 2021.

600. "Optimized Patient-Specific Catheter Placement for Convection-Enhanced Nanoparticle Delivery in GBM," (Chengyue Wu, David Hormuth, Chase Christenson, Michael Abdelmalik, Ryan Woodall, William Phillips, Thomas Hughes, Andrew Brenner, and Thomas Yankeelov), poster presentation, Biomedical Engineering Society (BMES) 2021 Annual Meeting, October 6-9, 2021, in Orlando, Florida.

601. "Adaptive Isogeometric Coarsening-Refinement Strategies for Phase Field Fracture Models," (Karsten Paul, Roger A. Sauer, Chad M. Landis and Thomas J.R. Hughes), RWTH Aachen University, IRTG Annual Workshop, November 15-17, 2021.

602. "Toward image-guided modeling of patient-specific rhenium-186 nanoliposome distribution via convection-enhanced delivery for glioblastoma multiforme," (Chengyue Wu, David A. Hormuth, Chase Christenson, Michael Abdelmalik, William T. Phillips, Thomas J.R. Hughes, Andrew Brenner, and Thomas Yankeelov), 2021 Society for Neuro-Oncology Annual Scientific Meeting, November 18-21, 2021, Hynes Convention Center, Boston, Massachusetts.

603. "Biomechanical interactions between prostate cancer and coexisting benign prostatic hyperplasia," (Guillermo Lorenzo, Thomas J. R. Hughes, Hector Gomez, Thomas E. Yankeelov, and Alessandro Real), USACM Thematic Conference (virtual) on Role of Mathematical and Computational Modeling in Cancer Research, January 10-11, 2022.

604. "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," Plenary Lecture, Emerging Topics in Mechanics, a Conference Celebrating the the 60th Anniversary of Professor Yonggang Huang, Houston, Texas, March 23-25, 2022.

605. "Patient-specific forecasting of prostate cancer growth during active surveillance using an imaging-informed mechanistic model," (Guillermo Lorenzo, Jon S. Heiselman, Michael A. Liss, Michael I. Miga, Hector Gomez, Thomas E. Yankeelov, Thomas J. R. Hughes, Alessandro Reali), American Association for Cancer Research, AACR 2022, New Orleans, Louisiana, April 8-13, 2022.

606. "Isogeometric Analysis: Mathematical and Engineering Perspectives," Invited Seminar, Mathematics Department of North Carolina State University (virtual), April 29, 2022.

607. "Isogeometric Analysis: Mathematical and Engineering Perspectives," Babuška Forum, Oden Institute for Computational Engineering and Sciences, University of Texas at Austin, May 6th, 2022.

608. "Image-informed computational models and methods for prediction of cancer growth and treatment response," TRACK Number 3000, (Guillermo Lorenzo, David A. Hormuth II, Chengyue Wu, Ernesto A.B.F. Lima, Michael R.A. Abdelmalik, Alessandro Reali, Thomas J.R. Hughes, and Thomas E. Yankeelov), 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022.

609. "Isogeometric space-time adaptivity for phase-field-based fracture of shells," (Karsten Paul, Thomas J.R. Hughes, Chad M. Landis and Roger A. Sauer), 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022.

610. "Isogeometric collocation: A mixed displacement-pressure method for nearly incompressible elasticity in small

and large deformations," (Simone Morganti, Michele Torre, Frederik Fahrendorf, Laura De Lorenzis, John A. Evans, Thomas J.R. Hughes, Alessandro Reali), 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022.

611. "Personalized computational forecasting of prostate cancer growth during active surveillance," (Guillermo Lorenzo, Jon S. Heiselman, Michael A. Liss, Michael I. Miga, Hector Gomez, Thomas E. Yankeelov, Thomas J. R. Hughes, Alessandro Reali), MS 16, 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022.

612. "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," **Opening Plenary Lecture,** 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2022), Oslo, Norway, June 5-9, 2022, ~2,000 attendees present live.

613. "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," **Distinguished Lecture,** Chinese Association for Computational Mechanics, June 29, 2022 (virtual), over 4,000 attendees on Zoom.

614. "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," **The General Lecture (Plenary),** European Solid Mechanics Conference, Galway Ireland, July 7, 2022, ~1,300 attendees present live.

615. "Isogeometric Reconstruction and Crash Analysis of a 1996 Body-in-White Dodge Neon," (Kendrick M. Shepherd, Xianfeng David Gu and Thomas J. R. Hughes), 15th World Congress on Computational Mechanics (WCCM-XV), 8th Asian Pacific Congress on Computational Mechanics (APCOM-VIII), 31 July – 5 August 2022, Yokohama, Japan, July 31 – August 5, 2022.

616. "The Finite Element Method and Computational Mechanics: Past, Present and a Vision of the Future," Invited Seminar, Mathematics Department of North Carolina State University (virtual), October 7, 2022.

617. "Patient-specific imaging-based forecasting of prostate cancer growth during active surveillance," (Guillermo Lorenzo, Jon S. Heiselman, Michael A. Liss, Michael I. Miga, Hector Gomez, Thomas E. Yankeelov, Thomas J. R. Hughes, Alessandro Reali), Annual Meeting of the Society for Mathematical Biology 2022 (SMB2022), held jointly with the 12th European Conference on Mathematical and Theoretical Biology in Heidelberg (Germany), September 19-23, 2022.

618. "Integrating preclinical, clinical, and imaging data within biomechanistic models to characterize tumor dynamics and therapeutic response," (G. Lorenzo, J.S. Heiselman, M.A. Liss, M.I. Miga, H. Gomez, T.E. Yankeelov, T.J.R. Hughes, A. Reali), 12th European Conference on Mathematical and Theoretical Biology (ECMTB22), Heidelberg, Germany, September 18-24, 2022. **This poster was one of the winners of the poster competition that took place during the conference.**

619. "Deep Operator Networks Inspired by Approximations to Variational Formulations," (Dhruv Patel, Michael Abdelmalik, Deep Ray, Thomas J.R. Hughes, and Assad Oberai*), SIAM Mathematics of Data Science (MDS) Conference, September 26-30, 2022, San Diego.

620. "Image-guided Subject-specific Modeling of Glymphatic Transport and Amyloid Deposition," (M. J. Johnson, M. AbdelMalik, F. Baidoo, A. Badachhape, T.J.R. Hughes and S.S. Hossain), 2022 Biomedical Engineering Society Annual Meeting, San Antonio, October, 2022.

621. "The Finite Element Method and Computational Mechanics: Past, Present and Future," **Plenary Lecture,** Monie A. Ferst Award Symposium, Georgia Institute of Technology, October 3, 2022.

622. "Variationally Mimetic Deep Operator Networks," (Assad Oberai*, Dhruv Patel, Michael Abdelmalik, Deep Ray, Thomas J.R. Hughes), Monie A. Ferst Award Symposium, Georgia Institute of Technology, October 3, 2022.

623. "Biomechanical interplay between benign prostatic hyperplasia and prostate cancer," (Guillermo Lorenzo, Thomas J. R. Hughes, Hector Gomez, Thomas E. Yankeelov, and Alessandro Reali), IGA 2022, 10th International Conference on Isogeometric Analysis, Banff, Canada, 6-9 November 2022.

624. "The Finite Element Method, Computational Mechanics, and Isogeometric Analysis: Past, Present and Future," **Opening Plenary Lecture,** IGA 2022, 10th International Conference on Isogeometric Analysis, Banff, Canada, 6-9 November 2022.

625. "Patient-specific computational models to forecast prostate cancer growth," (Tom Hughes, Aradhana Venkatesan and Guillermo Lorenzo), 3nd Annual Research Retreat of the Joint Center for Computational Oncology: Oden Institute for Computational Engineering and Sciences, MD Anderson Cancer Center, and Texas Advanced Computing Center, Avaya Auditorium, UT Austin, November 9, 2022.

626. "Patient-specific, organ-scale forecasting of prostate cancer growth in active surveillance," (G. Lorenzo, C. Wu, J.P. Yung, J.F. Ward, H. Gomez, A. Reali, T.E. Yankeelov, A.M. Venkatesan, T.J.R. Hughes), AACR Annual Meeting 2023, Orlando, FL, USA, April 14-19, 2023. Poster presentation.

627. "A computational study of the effect of 3D plaque shape on local hemodynamics and plaque instability," (Michael Johnson, Shaolie Hossain, Tom Hughes), Poster Presentation, 10th Annual Cardiovascular Research Institute Symposium, Cardiovascular Research Institute of Baylor College of Medicine, April 5th, 2023.

628. "Computational Modeling of Prostate Cancer," (Guillermo Lorenzo, Jon S. Heiselman, Michael A. Liss, Michael I. Miga, Hector Gomez, Thomas E. Yankeelov, Thomas J.R. Hughes*, Alessandro Reali), **Opening Keynote Lecture,** Expanding Texas Leadership in Computational Oncology Throughout the Cancer Continuum: A CPRIT Symposium, Dell Medical School, University of Texas at Austin, Austin, Texas, April 20, 2023.

629. "The Finite Element Method and Isogeometric Analysis: Mathematical and Engineering Perspectives," **Plenary Lecture,** ICAM 2023, International Conference on Applied Mathematics, City University of Hong Kong, 30 May through 3 June, 2023.

630. "Variational multiscale moment methods for the Boltzmann equation," (M. Abdelmalik, F.A. Baidoo, I.M. Gamba, L.Caffarelli, T.J.R. Hughes), ICAM 2023, International Conference on Applied Mathematics, City University of Hong Kong, 30 May through 3 June, 2023.

631. "Isogeometric Analysis, Progress and Opportunity," **Opening Plenary Lecture,** IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21 June, 2023.

632. "Residual-Based Variational Stabilization of Isogeometric Finite Element Methods for Advection-Diffusion-Reaction Problems," (K. Key*, F.A. Baidoo, S. Elgeti, and T.J.R. Hughes), IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21 June, 2023.

633. "Modeling of Glymphatic Transport and Amyloid Deposition," (Michael J. Johnson, Michael R.A. Abdelmalik, Frimpong A. Baidoo, Andrew Badachhape, Thomas J.R. Hughes and Shaolie S. Hossain), IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21 June, 2023.

634. "Variationally Mimetic Operator Networks," (Michael Abdelmalik, Dhruv Patel, Deep Ray, Assad Oberai, Thomas JR Hughes), IGA 2023, 11th International Conference on Isogeometric Analysis, Lyon, France, 18-21 June, 2023.

635. "Personalized MRI-informed predictions of prostate cancer growth during active surveillance," (G. Lorenzo, C. Wu, J.P. Yung, J.F. Ward, H. Gomez, A. Reali, T.E. Yankeelov, A.M. Venkatesan, T.J.R. Hughes), SMB 2023, Columbus, OH, July 17-21, 2023.

636. "Patient-Specific Optimization of Catheter Placement for Convection-Enhanced Nanoparticle Delivery in recurrent GBM," (C. Wu, D.A. Hormuth II, C. Christenson, M.R.A. Abdelmalik, R.T. Woodall, W.T. Phillips, T.J.R. Hughes, A.J. Brenner, T.E. Yankeelov), SMB 2023, Columbus, OH, July 17-21, 2023.

637. "Patient-specific, imaging-informed computational forecasting of prostate cancer growth during active surveillance," (G. Lorenzo, C. Wu, J.P. Yung, J.F. Ward, H. Gomez, A. Reali, T.E. Yankeelov, A.M. Venkatesan, T.J.R. Hughes), USNCCM 17, Seventeenth United States National Congress on Computational Mechanics, Albuquerque, New Mexico, July 23-27, 2023.

638. "Variationally Mimetic Operator Network," (Deep Ray, Dhruv Patel, M. R. A. Abdelmalik, T. J. R. Hughes, and A. A. Oberai), USNCCM 17, Seventeenth United States National Congress on Computational Mechanics, Albuquerque, New Mexico, July 23-27, 2023.

639. "A Parametric Study of the Effect of 3D Plaque Shape on Plaque Instability in a Patient-Specific Coronary Artery Tree," (Shaolie Hossain, Michael Johnson, Thomas J.R. Hughes), USNCCM 17, Seventeenth United States National Congress on Computational Mechanics, Albuquerque, New Mexico, July 23-27, 2023.

640. "Isogeometric Body-in-White Crash Analysis," (Kendrick M. Shepherd, Xianfeng David Gu, Thomas J. R. Hughes), USNCCM 17, Seventeenth United States National Congress on Computational Mechanics, Albuquerque, New Mexico, July 23-27, 2023.

641. "Phase-field Fracture: From the Small to the Large," **Plenary Lecture,** COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023.

642. "Biomechanical interplay between benign prostatic hyperplasia and prostate cancer," (G. Lorenzo*, T. Hughes, T. Yankeelov, H.Gomez, A. Reali), COMPLAS 2023, Seventeenth International Conference on Computational Plasticity (A conference celebrating the 70th birthday of Eugenio Oñate), Barcelona, Spain, September 5-7, 2023.

643. "Phase-field Fracture: From the Small to the Large," **Plenary Lecture,** Emerging Topics in Mechanics, a conference celebrating the 60th birthday of Huajian Gao, Houston, Texas, September 13-15, 2023.

644. "Noninvasive assessment of coronary artery plaque vulnerability," (Michael Johnson*, Michael Abdelmalik, Gilwoo Choi, Shaolie Hossain, Thomas Hughes, Sabrina Lynch, Kersten Petersen, Gregory Rodin, Michiel

Schaap, Charles Taylor, Nan Xiao, Christopher Zarins), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

645. "A simple and efficient mixed discretization strategy to eliminate membrane locking in isogeometric thin shells," (Roger Sauer*, Zhihui Zou, Thomas Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

646. "Some recent progress on phase-field fracture modeling, (Chad Landis*, Yu-Sheng Lo, Thomas J.R. Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

647. "Variationally mimetic operator networks to approximate solution operators, with application to cryoablation tumor treatment," (Fred Nugen*, Michael Abdelmalik, Jacinta Browne, Thomas Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

648. "Subject specific modeling of glymphatic transport and amyloid deposition," (Shaolie Hossain*, Michael Johnson, Michael Abdelmalik, Frimpong Baidoo, Andrew Badachhape, Thomas J.R. Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

649. "Personalized forecasting of prostate cancer growth during active surveillance using an imaging-informed biomechanistic model," **Keynote Lecture,** (Guillermo Lorenzo*, Chengyue Wu, Joshua P. Yung, John F. Ward, Hector Gomez, Alessandro Reali, Thomas E. Yankeelov, Aradhana M. Venkatesan, Thomas J.R. Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

650. "Isogeometric crash analysis," **Keynote Lecture,** (Kendrick Shepherd*, Thomas J.R. Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

651. "Variational Multiscale Moment Models Derived from the Boltzmann Equation, for Rarefied Fluids," (Michael Abdelmalik, Frimpong Baidoo*, Luis Caffarelli, Irene Gamba, Thomas Hughes), Advances in Computational Mechanics (ACM 2023), A Conference Celebrating the 80th Birthday of Thomas J. R. Hughes, AT&T Conference Hotel and Conference Center, Austin, TX, October 22nd to October 25, 2023.

652. "Patient-specific, imaging-informed computational forecasting of prostate cancer growth during active surveillance," (Guillermo Lorenzo, Chengyue Wu, Joshua P. Yung, John F. Ward, Hector Gomez, Alessandro Reali, Thomas E. Yankeelov, Aradhana M. Venkatesan, Thomas J.R. Hughes*), 2023 Annual Retreat of the Joint Center for Computational Oncology, MD Anderson Cancer Center, Houston, Texas, November 15, 2023.

653. "Imaging-Based Forecasting of Prostate Cancer Histopathology and Progression during Active Surveillance," (Guillermo Lorenzo*, Chengyue Wu, Joshua P. Yung, John F. Ward, Hector Gomez, Alessandro Reali, Thomas E. Yankeelov, Aradhana M. Venkatesan, Thomas J.R. Hughes), 2023 Annual Retreat of the Joint Center for Computational Oncology, MD Anderson Cancer Center, Houston, Texas, November 15, 2023.

654. "Stabilized and Variational Multiscale Methods: A brief history of ideas, origins, progress and opportunities," **Invited seminar,** University of Houston, Department of Mathematics, Houston, Texas, November 15, 2023.

655. "Phase Field Fracture: From the Small to the Large," (Thomas J.R. Hughes*, Chad Landis, Yusheng Lo, and Michael Borden), Center for Subsurface Modeling (CSM) Industrial Affiliates Meeting, Oden Institute, UT Austin, March 21, 2024.

656. "A variationally mimetic operator network," (Deep Ray,* Dhruv Patel, Michael Abdelmalik, Assad A. Oberai & Thomas J. R. Hughes), AMS Spring Southeastern Sectional Meeting, Florida State University, March 23-24, 2024.

657. "Personalized MRI-informed forecasting of prostate cancer progression during active surveillance," (G. Lorenzo*, C. Wu, J.P. Yung, J.F. Ward, H. Gomez, A. Reali, T.E. Yankeelov, A.M. Venkatesan, T.J.R. Hughes), 2024 Annual Meeting of the American Association for Cancer Research (San Diego, April 5-10, 2024).

658. "Variational Multiscale Moment Methods for the Boltzmann Equations," (F. Baidoo*, I. Gamba, T. Hughes, M. Abdelmalik), ECCOMAS CONGRESS 2024, 9th European Congress on Computational Methods in Applied Sciences and Engineering, June 3-7, 2024, Lisboa, Portugal.

659. "Variationally Mimetic Operator Networks," (D. Patel, D. Ray, M. Abdelmalik*, T. Hughes, A. Oberai), ECCOMAS CONGRESS 2024, 9th European Congress on Computational Methods in Applied Sciences and Engineering, June 3-7, 2024, Lisboa, Portugal.

660. "Personalized Imaging-Informed Forecasting of Prostate Cancer Progression during Active Surveillance," (G. Lorenzo*, C. Wu, J. P. Yung, J. F. Ward, H. Gomez, A. Reali, T. E. Yankeelov, A. M. Venkatesan, T. J. R. Hughes), ECCOMAS CONGRESS 2024, 9th European Congress on Computational Methods in Applied Sciences and Engineering, June 3-7, 2024, Lisboa, Portugal.

661. "Phase Fields and Computational Mechanics," **Plenary Lecture,** 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, WCCM-PANACM 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada, July 21–26, 2024.

662. "Patient-specific, organ-scale prediction of prostate cancer growth and clinical progression during active surveillance," (Guillermo Lorenzo, Chengyue Wu, Joshua P. Yung, John F. Ward, Hector Gomez, Alessandro Reali, Thomas E. Yankeelov, Aradhana M. Venkatesan, Thomas J. R. Hughes*),16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, WCCM-PANACM 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada, July 21–26, 2024.

663. "Variational multiscale moment methods for the Boltzmann equation," (F. Baidoo*, M. Abdelmalik, I. Gamba, T. Hughes,), 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, WCCM-PANACM 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada, July 21–26, 2024.

664. "Image-guided subject-specific modeling of glymphatic transport and amyloid deposition," (Shaolie Hossain,* Michael Johnson, Michael Abdelmalilk, Frimpong Baidoo, Andrew Badachhape, Thomas Hughes), 16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics, WCCM-PANACM 2024, Vancouver Convention Centre, Vancouver, British Columbia, Canada, July 21–26, 2024.

665. "An Overview of Some Mathematical Results in Isogeometric Analysis," **Keynote Plenary Lecture,** AFSI 2024. Advances in Computational Fluid-Structure Interaction and Flow Simulation, A Conference Celebrating the 70th Birthday of Tayfun Tezduar, Sapporo, Japan, August 19th, 2024

666. "The Finite Element Method and Isogeometric Analysis: Past, Present, Future" **Laufer Distinguished Lecture**, Aerospace and Mechanical Engineering Department, Viterbi School of Engineering, University of Southern California, August 28, 2024.

PATENTS/COPYRIGHTED SOFTWARE:

"Method for Predictive Modeling for Planning Medical Interventions and Simulating Physiological Conditions" (with C.A. Taylor and C.K. Zarins), Patent No. US 6,236,878 B1, May 22, 2001.

"Construction of Spline Surfaces to Provide Inter-Surface Continuity," (with B. Urick, R.H. Crawford, E. Cohen, and R.F. Riesenfeld). Provisional Application for Patent, filed February 16, 2016, Application Number: 62295892, Assignees: Board of Regents of the University of Texas System and the University of Utah.

U.S. Patent Application (approved)
No. 15/433,823 (Series Code/Serial Number)
Publication No. US20180365371A1 (2018/0365371)
Title: "Mechanisms for Constructing Spline Surfaces to Provide Inter-Surface Continuity"

European Patent Application
No. 17753759.4
Regional Phase in Europe (EPO) of International Application No. PCT / US2017 / 017985
Publication No. EP3417381A1
Title: "Mechanisms for Constructing Spline Surfaces to Provide Inter-Surface Continuity"

International Patent Application
No. PCT / US2017 / 017985
Publication No. WO2017142953A1 (2017/142953)
Title: "Mechanisms for Constructing Spline Surfaces to Provide Inter-Surface Continuity"

Inventor(s): URICK B, HUGHES T J R, CRAWFORD R H, COHEN E, RIESENFELD R F

Patent Assignee Name(s) and Code(s):
UNIV TEXAS SYSTEM(TEXA-C),
UNIV UTAH RES FOUND(UTAH-C)

Derwent Primary Accession Number: 2017-57925E

Patents Cited by Examiner: 5

Publication Date: December 20, 2018

"Tissue-Scale, Patient-Specific Modeling and Simulation of Prostate Cancer Growth," (with H. Gomez and G. Lorenzo), International Patent Application, filed August 24, 2016, Application Number PCT/ES2016/070609. The Receiving Office is the Spanish Patent Office and the International Searching Authority is the European Patent Office (EPO).

U.S. Patent Application Serial No. 18/135,580, Filed April 17, 2023, "TISSUE-SCALE, PATIENT-SPECIFIC MODELING AND SIMULATION OF PROSTATE CANCER GROWTH," (Thomas J. R. Hughes, Hector Gomez, Guillermo Lorenzo, Alessandro Reali, Thomas E. Yankeelov), This patent application is a continuation-in-part of U.S. Patent Application No. 16/327,875 filed February 25, 2019, which is a national stage filing under 35 USC 371 of International Patent Application No. PCT/ES2016/070609 filed August 24, 2016, both of which are incorporated by reference as if fully set forth herein.

U.S. Patent Application, Derwent Primary Accession Number 2023-91731E, "Modeling possible progression of prostate cancer in subject for treating benign prostatic hyperplasia and prostate cancer, involves performing operations on computer system to generate tumor growth model for prostate gland of subject, and simulating evolution of tumor in prostate gland of subject," (Inventors: Thomas J. R. Hughes, Hector Gomez, Guillermo Lorenzo, Alessandro Reali, Thomas E. Yankeelov), Patent Number US2023274842-A1, August 31, 2023.

RESEARCH TOPICS
1. Computational Mechanics
2. Finite Element Methods
3. Isogeometic Analysis
4. Stabilized and Variational Multiscale Methods
5. Phase-field Modeling
6. Computaitonal Medicine

GRANTS AND CONTRACTS (Current)

NEW PROJECTS FUNDED-INDIVIDUAL

Begin/end Dates	Total Award	Your 00-01 Portion	Reporting Center	Sponsor
			Name of Research Center	Name of Agency Sponsor
Project Title				

NEW PROJECTS FUNDED-JOINT

Begin/end Dates	Total Award	Your 00-01 Portion	Reporting Center	Sponsor
			Name of Research Center	Name of Agency Sponsor

CONTINUING PROJECTS—JOINT

Begin/end Dates	Total Award	Your 00-01 Portion	Reporting Center	Sponsor
Project Title	"PFI-RP: Noninvasive Technology to Determine an Individual's Risk of Having a Heart Attack"			
9/1/19– 12/31/23	$650,000	100%		NSF
Project Title	"Patient-specific computational models to forecast prostate cancer growth"			
9/1/2021 – 8/31/2024	$50,000	$25,000		Oden Institute, MD Anderson, TACC Pilot Project Program
Project Title	"Imaging-Based Forecasting of Prostate Cancer Histopathology and Progression during Active Surveillance"			
9/1/2023 8/31/25	$50,000	$25,000		Oden Institute, MD Anderson, TACC, Joint Center for Computational Oncology
Project Title	"A mechanistic understanding of glymphatic transport and its implications in neurodegenerative disease"			
9/1/2023 8/31/2025	$439,367	$219,683		NIH

CONTINUING EDUCATION: (from 2002)

1. "Nonlinear Finite Element Analysis," Short Course, Berlin, Germany, September 13, 2002 (Nine 1.5 hour lectures).
2. "Nonlinear Finite Element Analysis," Short Course, San Diego, CA, December 9-13, 2002 (Nine 1.5 hour lectures).
3. "Nonlinear Finite Element Analysis," Graduate Course in the ROSE School (European School for Advanced Studies in reduction of Seismic Risk), Istituto Universitario di Studi Superiori, Universita degli Studi di Pavia, Pavia, Italy, May 18 – June 2, 2003 (Ten 3.0 hour lectures).
4. "Multiscale Methods in Science and Engineering," Short Course, Sandia National Laboratories, Albuquerque, NM, July 7-11, 2003 (Five 2.0 hour lectures).
5. "Finite Element Methods in Fluid Mechanics," Short Course, Chuo University, Tokyo, Japan, August 6-8, 2003 (Two 1.5 hour lectures).
6. "Nonlinear Finite Element Analysis," Short Course, Paris, France, December 15-19, 2003 (Nine 1.5 hour lectures).
7. "Nonlinear Finite Element Analysis," Short Course, San Diego, CA, December 13-17, 2004 (Nine, 1.5 hour lectures).
8. "Nonlinear Finite Element Analysis," Short Course, Paris, France, June 6-10, 2005 (Nine, 1.5 hour lectures).
9. "Stabilized Methods, Variational Multiscale Methods, and Isogeometric Analysis," two-week, twenty-hour advanced course, Sandia National Laboratory, Albuquerque, NM, October 17-28, 2005.
10. "Nonlinear Finite Element Analysis," Short Course, Austin, Texas, May 22-26, 2006 (Nine 1.5 hour lectures).
11. "Nonlinear Finite Element Analysis," Short Course, Berlin, Germany, May 28 – June 1, 2007 (Nine 1.5 hour lectures.)
12. "Nonlinear Finite Element Analysis," Short Course, Austin, October 29-November 2, 2007. (Nine 1.5 hour lectures.)
13. "Nonlinear Finite Element Analysis," Short Course, Paris, France, December 8-12, 2008. (Nine 1.5 hour lectures.)
14. "Nonlinear Finite Element Analysis," Short Course, Austin, Texas, August 17-21, 2009. (Nine 1.5 hour lectures.)
15. "Introduction to Stabilized and Multiscale Methods in Computational Fluid Dynamics," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, October 26 to November 4, 2009. (Twelve hours of lectures.)

16. "Introduction to the Discontinuous Galerkin Method," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, March 22 to April 2., 2010 (Six hours of lectures.)

17. "Nonlinear Finite Element Analysis," Short Course, Berlin, Germany, May 10-14, 2010. (Eleven 1.5 hour lectures.)

18. "Introduction to Isogeometric Analysis," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, July 12-16, 2010. (Three hours of lectures.)

19. "The Finite Element Method: Linear Static Analysis," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, March 4-20, May 11-20, August 8-26, 2011. (Twenty-four hours of lectures.)

20. "Isogeometric Summer School," Centro Internazionale Matematico Estivo (CIME), Grand Hotel S. Michele, Cetraro, Italy, June 18-22, 2012. Delivered two-hour keynote lecture, "Isogeometric Analysis: Introduction and Overview."

21. "Flow Simulation by the Finite Element Method," Nihon University, Tokyo, Japan, August 7-9, 2012. Delivered two 1.5 hour lectures entitled, "Isogeometric Analysis" and the "Variational Multiscale Method in Turbulent Flows."

22. "Isogeometric Analysis: Fundamentals and Applications," ECCOMAS Advanced School, University of Vienna, Vienna, Austria, September 7-9, 2012. Delivered four-hour keynote lecture, "Isogeometric Analysis: Introduction and Recent Developments."

23. "The Finite Element Method: Linear Static Analysis," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, May 8-22, August 14-23, 2012. (Twenty-four hours of lectures.)

24. "Isogeometric Analysis," Institute of Structural Mechanics, University of Stuttgart, Stuttgart, Germany, October 29-31, 2012. Delivered three one-hour lectures.

25. "Stabilized and Variational Multiscale Method in Computational Fluid Dynamics," Short Course, Department of Naval Architecture & Ocean Engineering, University of Ulsan, Ulsan, Republic of Korea, March 8-22, May 6-26, August 9-26, 2013. Delivered eight three-hour lectures.

26. "Isogeometric Analysis: Introduction and Recent Developments," National Institute of Mathematical Sciences (NIMS) Summer School on Isogeometric Analysis, Daejeon, South Korea, July 10-12, 2013. Delivered two-hour keynote lecture.

27. "Isogeometric Analysis: Introduction and Recent Developments," Building Bridges: Connections and Challenges in Modern Approaches to Numerical Partial Differential Equations, London Mathematical Society – EPSRC Durham Symposium, University of Durham, Durham, England, July 8-16, 2014. Delivered two-hour keynote lecture.

28. "Isogeometric Analysis: Introduction and Recent Developments," ECCOMAS Advanced Course on Isogeometric Analysis (IGA): Fundamentals and Applications, Barcelona, Spain, July 25-27, 2014. Four forty-five minute lectures.

29. "Isogeometric Analysis," Short Course, Vienna University of Technology, Karlsplatz 13, 1040 Vienna, Austria, October 15, 2015. Four 90 minute lectures.

30. "Isogeometric Analysis," Short Course, Room 3.10, Department of Mathematics, Instituto Superior Técnico, Lisbon, Portugal, May 25, 2016. Six hours of lectures.

31. "ECCAM Advanced School on Isogeometric Analysis – Fundamentals and Applications," Creta Maris Conference Center, Hersonissos, Crete Island, Greece, June 10-12, 2016. Three hours of lectures.

32. "Computational Plasticity," a series of lectures for interested UT graduate students in EM and ICES, held during July and August 2016. These lectures were prepared in response to requests from students who attended my spring semester class. Eight hours of lectures.

33. "Isogeometric Analysis," Short Course, RWTH Aachen University, Aachen, Germany, August 30-31, 2016. Eight hours of lectures.

34. "Finite Elements in Fluids," Short Course, Nihon University, Tokyo, Japan, August 7-9, 2017. Three hours of lectures.

35. "Origins of IGA, and Coreform's Instantiation of the Vision," Opening Keynote Lecture, Coreform Short Course, Orem, Utah, May 14-15, 2024.

36. Short Course: Isogeometric Analysis: Theory, Applications and New Trends, 8-12 July, 2024, Lake Como School of Advanced Studies, Fondazione Alessandro Volta, Villa del Grumello, Como, Italy. Delivered the first three 1½ hour lectures.

Workshops (from 2011)
1.   Organizer, IGA 2011, Isogeometric Analysis Workshop, ICES, University of Texas at Austin, Austin, Texas, January 13-15, 2011.
2.   Organizer, IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin, Texas, January 7-10, 2014.
3.   Organizer, IGA 2014, Isogeometric Methods – Integrating Design and Analysis, an ICES and USACM Thematic Conference, Austin, Texas, October 10-12, 2018.

Ph.D. SUPERVISION COMPLETED (California Institute of Technology):
Wing Kam Liu
Alec Brooks
Tayfun Tezduyar
Jim Winget
Itzhak Levit

Ph.D. SUPERVISION COMPLETED (Stanford University):
Arthur Muller
Michel Mallet
Bob Ferencz
Greg Hulbert
Gary Stanley
Don Flaggs
Joao Dias
Leo Franca
Farzin Shakib
Zdenek Johan
Isaac Harari
Frederic Chalot
Ken Jansen
Arif Masud
Guillermo Hauke
Jim Stewart
Vinay Rao
Charles Taylor
Gonzalo Feijoo
Luca Mazzei
Mark Spiegel
Farzam Roknaldin
Gerald Engel
Guglielmo Scovazzi
Victor Calo

Ph.D. SUPERVISION COMPLETED (University of Texas at Austin):
Bazilevs, J., ICES, Summer 2006, "Isogeometric Analysis of Turbulence and Fluid-Structure Interaction."
Cottrell, J. A., ICES, Spring 2007, "Isogeometric Analysis and Numerical Modeling of the Fine Scales within the Variational Multiscale Method."
Hossain, S., ME, Fall 2009, "Mathematical Modeling of Coupled Drug and Drug-encapsulated Nanoparticle Transport in Patient-specific Coronary Artery Walls."
Scott, M.A., ICES, Fall 2011, "T-Splines as a Design-Through-Analysis Technology."
Evans, J.A., ICES, Fall 2011, "Divergence-conforming B-spline Discretizations for Viscous Incompressible Flow."

Borden, M.J., ICES, Summer 2012, "Isogeometric Analysis of Phase-field Models for Dynamic Brittle and Ductile Fracture."

Liu, J., ICES, Fall 2014, "Thermodynamically Consistent Modeling and Simulation of Multiphase Flows."

Taus, M., ICES, Fall 2015, "Isogeometric Analysis for Boundary Integral Equations," co-advisor.

Kamensky, D., ICES, Summer 2016, "Immersogeometric fluid–structure interaction analysis of bioprosthetic heart valves," co-advisor.

Urick, B., ME, Summer 2016, "Reconstruction of Tensor Product Spline Surfaces to Integrate Surface-Surface Intersection Geometry and Topology while Maintaining Inter-Surface Continuity," co-advisor.

Nugen, F., ME, Spring 2017, "Advances in saccular aneurysm biomechanics: enlargement via rate-sensitive inelastic growth, bio-mathematical stages of aneurysm disease, and initiation profiles."

Zhu, A., ICES, Summer 2017, "Inverse Problems for Basal Properties in a Thermomechanically Coupled Ice Sheet Model," co-advisor.

Toshniwal, D. CSEM, Spring 2019, "Unstructured splines: Non-uniform degrees, parameterization singularities, and application to elasticity-coupled electrodeposition."

Hiemstra, R. CSEM, Summer 2019, "Enabling Higher Order Isogeometric Analysis for Applications in Structural Mechanics."

Shepherd, K. CSEM, Spring 2021, "Isogeometric Analysis-Suitable Geometry: Rebuilding CAD Surface Geometries via Quadrilateral Layouts."

Michael Johnson, CSEM, Spring 2024, "Noninvasive Assessment of Coronary Artery Plaque Vulnerability Using Computational Solid Mechanics."

Ph.D. SUPERVISION COMPLETED (ROSE School, Universtiy of Pavia):

A. Reali, Fall 2005, "Advanced Computational Techniques for the Study of Traditional and Innovative Seismic Devices," co-advisor.

M.S. SUPERVISION COMPLETED (ROSE School, Universtiy of Pavia):

A. Reali, Fall 2004, "An Isogeometric Analysis Approach for the Study of Structural Vibrations," co-advisor.

M.S. SUPERVISION COMPLETED (University of Texas at Austin):

N. Brasher, ICES, Summer 2007, "Development of a Multiphysics Model for Blood Flow and Drug Transport with Application to Patient-specific Coronary Artery Flow."

M.-C. Hsu, ASE/EM, Summer 2008, "Improving Robustness of Multiscale Formulations of Fluid Flow at Small Time Steps."

Ph.D. SUPERVISION IN PROGRESS (Current):

Frimpong, Baidoo, CSEM
Cochran, Jeff, CSEM
Lee, Geonyeong, ASE/EM
Derya Bakiler, CSEM
Minyeong Kim, CSEM

OTHER STUDENT RESEARCH COMMITTEES (Current)

Ph.D. Committees –

Kun Huang (Gamba)

Jacob Salazar Solano (Demkowicz)

OTHER RESEARCH SUPERVISION (Since 2003)

Garth Wells, ICES Visiting Scholar, 2003
Annalisa Buffa, ICES Visiting Scholar, 2004-05
Alessandro Reali, ICES Visiting Scholar, 2004
Lourenco Beirao da Viegas, ICES Visiting Scholar, 2005
Andres Tejada-Martinez, ICES Visiting Scholar, 2005
Giancarlo Sangalli, ICES Visiting Scholar, 2004-05, 2006, 2007-08

Guillermo Hauke, ICES Visiting Scholar, 2004, 2005-06
Victor Calo, ICES Post-doc, 2005-08
Jessica Zhang, ICES UT Post-doc 2005-06
Stefan Lenz, ICES Visiting Scholar, 2005-06
Trond Kvamsdal, ICES Visiting Scholar, 2005-06
Steve Hulshoff, ICES Visiting Scholar 2006
Alessandro Reali, ICES Visiting Scholar, 2007-08
Isaac Harari, ICES Visiting Scholar, 2006
Jurijs Bazilevs, ICES Post-doc, 2006-08
Jessica Zhang, ICES Post-doc 2005-07
Garth Wells, ICES Visiting Professor, 2007
Ido Akkerman, ICES Visiting Scholar, 2006-07
Hector Gomez Diaz, ICES Visiting Professor, 2007
Dolores Demarco, ICES Visiting Scholar, 2007
David Benson, ICES Visiting Professor, 2007-08
J. Austin Cottrell, ICES Post-doc 2007-2008
Peter Gamnitzer, ICES Visiting Scholar, 2008
Thomas Elguedj, ICES Visiting Scholar, 2008
Guillermo Hauke, ICES Visiting Professor, Fall 2008
Hector Gomez Diaz, ICES Visiting Professor, Fall 2008
Stephane Valance, ICES Post-doc, Fall 2008 - Summer 2009
Robert L. Taylor, ICES Visiting Professor, Spring 2009
Thomas Elguedj, ICES Visiting Professor, Summer 2009
Franco Brezzi, ICES Visiting Professor, Summer 2009
Donatella Marini, ICES Visiting Professor, Summer 2009
Alessandro Reali, ICES Visiting Professor, Summer 2009
Giancarlo Sangalli, ICES Visiting Professor, Summer 2009
Lourenco Beirao da Veiga, ICES Visiting Professor, Summer 2009
Ferdinando Auricchio, ICES Visiting Professor, Summer 2009
Fehmi Cirak, ICES Visiting Professor, Summer 2009
Satyendra Tomar, ICES Visiting Scholar, Summer 2009
Clemens Verhoosel, ICES Visiting Scholar, Summer 2009
Pascal Aubertin, ICES Post-doc, Spring 2009
Luca Dede, ICES Post-doc, Spring 2009 - Summer 2011
Hector Gomez Diaz, ICES Visiting Professor, January 2011
Ferdinando Auricchio, ICES Visiting Professor, Spring 2010
Alessandro Reali, ICES Visiting Professor, January 2011
Bernhard Schrefler, ICES Visiting Professor, Spring 2010
Santiago Badia, ICES Visiting Scholar, Spring 2010
Simone Morganti, ICES Visiting Scholar, January 2011
Clemens Verhoosel, ICES Visiting Scholar, January 2011
Shaolie Hossein, ICES Post-doc, Spring 2010 – Summer 2011
Travis Sanders, ICES Undergraduate Intern, Summer 2010
Giancarlo Sangalli, ICES Visiting Professor, January 2011
Lourenco Beirao da Veiga, ICES Visiting Professor, January 2011
Hyung-Taek Ahn, ICES Visiting Professor, January 2011
Bert Juettler, ICES Visiting Professor, January 2011
Thomas Takacs, ICES Visiting PhD Student, January 2011
Cesar Fernandez-Casanova, ICES Visiting PhD Student, March 11th to September 3rd, 2011
Dominik Shillinger, ICES Visiting PhD Student, May 1st to July 31st, 2011
Hugo Santos, ICES Visiting Post-doc, Fall 2010 to Summer 2011
Shaolie Hossein, ICES Post-doc, Spring 2010 to Summer 2016
Cesar Fernandez-Casanova, ICES Visiting PhD Student, March 11th to September 3rd, 2011
Rob Simpson, ICES Visiting Professor, September 19th to October 16th, 2011, January 2nd to 20th, July 30th to August 2nd, 2012
Hector Gomez, ICES Visiting Professor, October 31st to November 18th, 2011

Shaikh Hossain, ICES Visiting Professor, July 1st to December 31st, 2011
Tor Dokken, ICES Visiting Scholar, October 27th to November 4th, 2011
Ilker Temizer, ICES Visiting Professor, January 11th to 31st, 2012
Atanas Stavrev, ICES Visiting Scholar, January 20th to June 30th, 2012
Dominik Schillinger, ICES Visiting Scholar, February 29th, 2012 to August 31st, 2013
Maria Jose Duarte, ICES Visiting Scholar, September 1st, 2012 to July 12th, 2013
John Evans, ICES Post-doc, January 1st, 2012 to August 16th, 2013
Trond Kvamsdal, ICES Visiting Professor, September 24th, 2012 to January 18th, 2013
Hiroshi Hasebe, ICES Visiting Professor, September 1st, 2012 to November 16th, 2013
Michael Borden, ICES Post-doc, September 1st, 2012 to August 31st, 2013
Ming-Chen Hsu, ICES Post-doc, September 1st, 2012 to August 31st, 2013
Hector Gomez, ICES Visiting Professor, November 11th, 2012 to December 8th, 2012, February 18th to 22nd, 2012.
Carla Manni, ICES Visiting Professor, February 8th to February 23rd, 2013
Hendrik Speleers, ICES Visiting Scholar, February 8th to February 23rd, 2013
Josef Kiendl, ICES Visiting Scholar, January 21st, 2013 to February 22nd, 2013
Simone Morganti, ICES Visiting Scholar, January 21st, 2013 to February 22nd, 2013
Laura De Lorenzis, ICES Visiting Professor, December 3rd, 2012 to December 17th, 2012
Alessandro Reali, ICES Visiting Professor, February 10th to February 23rd, 2013
Lourenco Beirao da Veiga, ICES Visiting Professor, February 16th to 23rd, 2013
Robin Bouclier, ICES Visiting Scholar, January 28th, 2013 to May 3rd, 2013
Thomas Elguedj, ICES Visiting Professor, March 1st, 2013 to March 6th, 2013
Martina Matzen, ICES Visiting Scholar, February 18th, 2013 to April 28th, 2013
Alexandros Ginnis, ICES Visiting Scholar, December 5th, 2012 to December 19th, 2012
Konstantinas Kostas, ICES Visiting Scholar, December 5th, 2012 to December 19th, 2012
Michael Scott, ICES Visiting Professor, December 14th, 2012 to December 19th, 2012
René Hiemstra, ICES Visiting Scholar, December 1st, 2012 to December 16th, 2012
Giancarlo Sangalli, ICES Visiting Professor, April 3rd to 5th and 11th to 17th, 2013
Robert Simpson, ICES Visiting Scholar, April 8th to 12th, 2013
Satyendra Tomar, ICES Visiting Scholar, July 29th to August 23rd, 2013
Cesar Casanova, ICES Visiting Scholar, April 1st to December 31st, 2013
Natarajan Sukumar, ICES Visiting Professor, December 12th to December 18th, 2013
Isaac Harari, ICES Visiting Professor, January 1st to June 30th, 2014
Laura De Lorenzis, ICES Visiting Professor, January 7th to 18th, 2014
Josef Kiendl, ICES Visiting Scholar, January 7th to 21st, 2014
Alessandro Reali, ICES Visiting Professor, January 7th to 21st, 2014
Simone Morganti, ICES Visiting Professor, January 7th to 21st, 2014
Carla Manni, ICES Visiting Professor, January 7th to 25th, 2014
Hendrik Speleers, ICES Visiting Professor, January 7th to 25th, 2014
Guillermo Vilanova, ICES Visiting Scholar, October 1st, 2013 to January 31st, 2014
Federico Marini, ICES Visiting Scholar, November 20th, 2013 to May 19th, 2014
Shaolie Hossain, ICES Visiting Professor, September 1st, 2013 to August 31st, 2014
Cédric Adam, ICES Visiting Scholar, March 18th, 2014 to May 16th, 2014
Derek Thomas, ICES Visiting Scholar, May 5th, 2014 to May 9th, 2014
Richard Riesenfeld, ICES Visiting Professor, February 9th to May 9th, 2014
Elaine Cohen, ICES Visiting Professor, February 9th to May 9th, 2014
Shaikh Hossain, ICES Visiting Professor, January 1st, 2013 to December 31st, 2014
Pablo Antolin, ICES Visiting Scholar, January 6th to January 17th, 2014
Derek Thomas, ICES Visiting Professor, September 1st, 2014 to August 31st, 2015.
Azzeddine Soulaimani, ICES Visiting Professor, October 28th, 2014 to November 15th, 2014.
Laura De Lorenzis, ICES Visiting Professor, October 28th, 2014 to November 8th, 2014.
Robert Simpson, ICES Visiting Professor, December 1st, 2014 to December 12th, 2014.
Michael Scott, ICES Visiting Professor, December 8th, 2014 to December 9th, 2014.
Bernd Simeon, ICES Visiting Professor, March 2nd-6th, 2015.
Carla Manni, ICES Visiting Professor, February 23rd to March 6th, 2015.
Hendrik Speleers, ICES Visiting Professor, February 23rd to March 6th, 2015.
Alessandro Reali, ICES Visiting Professor, March 4th-14th, 2015.

Francesco Calabro, ICES Visiting Professor, March 2nd-14th, 2015.
Stefano Serra Capizzano, ICES Visiting Professor, February 23rd-28th, 2015.
Assad Oberai, ICES Visiting Professor, March 22nd-26th, 2015.
Adelia Sequeiria, ICES Visiting Professor, July 3rd-11th, 2015.
Guillermo Hauke, ICES Visiting Professor, August 3rd-8th, 2015.
Assad Oberai, ICES Visiting Professor, October 19-23, 2015.
Michael Borden, ICES Visiting Professor, October 28-30, 2015.
Trond Kvamsdal, ICES Visiting Professor, November 1st-7th, 2015.
Mats Larson, ICES Visiting Professor, November 1st-7th, 2015.
Roger Sauer, ICES Visiting Professor, February 29th to March 18, 2016.
Jorge Tiago, ICES Visiting Scholar, April 6th-20th, 2016
Benjamin Marussig, ICES Visiting Scholar, June 20th, 2016 to July 13th, 2017.
Aleksander Pederson, ICES Visiting Scholar, June 13th, 2016 to May 1st, 2017.
Yue Yu, ICES Visiting Professor, January 30th to March 22nd, 2017.
Ping Zhu, ICES Visiting Scholar, December 27th, 2016 to January 26th, 2018.
Shahriar Shahrokhabadi, ICES Visiting Scholar, April 1st, 2017 to June 30th, 2017.
Hendrik Speleers, ICES Visiting Professor, October 7th to 17th, 2016, February 21st to March 20th, 2017, June 8th to 18th, 2017.
Lulin Quan, ICES Visiting Scholar, June 12th, 2017 to June 11th, 2018.
Ching-Kai "Kavi" Chou, ICES Visiting Scholar, September 1st, 2017 to August 31st, 2018.
Michael Abdelmalik, ICES Visiting Scholar, October 11th, 2017 to May 14th, 2019.
Alessia Patton, ICES Visiting Scholar, March 15th to April 15th, 2018.
Sasa Lukic, ICES Visiting Scholar, March 27th, 2018 to July 13th, 2018
Hiroshi Hasebe, ICES Visiting Professor, April 2nd, 2018 to March 24th, 2019.
David d'Angella, ICES Visiting Scholar, July 30th, 2018 to September 21st, 2018.
Hendrik Speleers, Oden Institute Visiting Professor, April 22, 2019 through May 03, 2019,
Satyendra Tomar, Oden Institute Visiting Professor, April 22, 2019 through May 30, 2019
Michael Abdelmalik, Oden Institute Visiting Professor, June 16, 2018 through May 14, 2019
Jochen Hinz, Oden Institute Visiting Scholar, April 1, 2019 through June 30, 2019
Lulin Quan, Oden Institute Visiting Scholar, June 12, 2018 through June 11, 2019
Michal Mika, Oden Institute Visiting Scholar, April 1, 2019 through September 30, 2019
Karsten Paul, Oden Institute Visiting Scholar, July 2, 2019 through March 17, 2020
Konstantin Key, Oden Institute Visiting Scholar, July 2, 2019 through March 17, 2020
Michael Abdelmalik, Oden Institute Postdoc, August 21st, 2019 through August 31st, 2021
Guillermo Lorenzo, Oden Institute Postdoc, August 21st, 2019 through August 31st, 2022
Yaqiang Xue, Oden Institute Visiting Scholar, October 18th, 2019 through October 25th, 2020
Zhihui Zuo, Oden Institute Postdoc, September 1st, 2020 through August 31st, 2023
Robert Nagy, Oden Institute Visiting Scholar, September 15th, 2021 through August 31st, 2022
Konstantin Key, Oden Institute Visiting Scholar, April 26th, 2022 through June 24th, 2022
Konstantin Key, CATS, AICES, RWTH Aachen University, Germany, PhD Dissertation Committee, July 2022
Ramy Nemer (I was President of his PhD Examination Committee) PSL University, Mines, ParisTech (formerly Ecole des Mines), Fall 2021
Ed Akin, Visiting Professo from Rice University, September 1, 2023 through August 31, 2024
Zhihui Zuo, Oden Institute Postdoc, September 1st, 2020 through August 31st, 2024
Charles Taylor, HeartFlow, Inc., visitor, 2023
Pouria Behnoudfar, Curtin University, Australia, visitor, 2023
Mats Larson, Umea University, Sweden, visitor, 2023
Mahdi Esmaily, Cornell University, visitor, 2023

ADDITIONAL TEACHING ACTIVITIES

Supervisor, Maytee Chantharayukhonthorn, ASE/EM undergraduate student, Computational Science and Engineering Certificate, Fall 2013 and Spring 2014.

Supervisor, Maytee Chantharayukhonthorn, ASE/EM undergraduate student, ICES Intern, Summer 2014.
Supervisor, Maytee Chantharayukhonthorn, ASE/EM undergraduate student, Honors Program Thesis Supervisor, 2014-2015.
Supervisor, Maytee Chantharayukhonthorn, ASE/EM undergraduate student, Honors Program Thesis Supervisor, 2015-2016.
Supervisor, Michael Johnson, ASE/EM undergraduate student, ICES Intern Fellow, Summer 2016.

Brief biography:

Thomas J.R. Hughes
Institute for Computational Engineering and Sciences (ICES)
Department of Aerospace Engineering and Engineering Mechanics
The University of Texas at Austin
hughes@ices.utexas.edu

Thomas J.R. Hughes holds B.E. and M.E. degrees in Mechanical Engineering from Pratt Institute and an M.S. in Mathematics and Ph.D. in Engineering Science from the University of California at Berkeley. He taught at Berkeley, Caltech and Stanford before joining the University of Texas at Austin. At Stanford he served as Chairman of the Division of Applied Mechanics, Chairman of the Department of Mechanical Engineering, Chairman of the Division of Mechanics and Computation, and occupied the Mary and Gordon Crary Family Chair of Engineering. At the University of Texas at Austin he is Professor of Aerospace Engineering and Engineering Mechanics and occupies the Peter O'Donnell Jr. Chair in Computational and Applied Mathematics.

Dr. Hughes is a fellow of the American Academy of Mechanics (AAM), the American Institute of Aeronautics and Astronautics (AIAA), the American Society of Civil Engineers (ASCE), the American Society of Mechanical Engineers (ASME), the U.S. Association for Computational Mechanics (USACM), the International Association for Computational Mechanics (IACM), the Society of Industrial and Applied Mathematics (SIAM), the American Association for the Advancement of Science (AAAS), and the Engineering Mechanics Institute (ASCE). He is co-editor of the international journal Computer Methods in Applied Mechanics and Engineering, a founder and past President of USACM and IACM, past Chairman of the Applied Mechanics Division of ASME, and past Chairman of the U.S. National Committee on Theoretical and Applied Mechanics (USNC/TAM).

Selected Honors and Awards

He has been awarded the Walter L. Huber Civil Engineering Research Prize and the von Karman Medal from ASCE, the Melville, Worcester Reed Warner, and Timoshenko Medals from ASME, the Computational Mechanics Award from the Japan Society of Mechanical Engineers, the von Neumann Medal from USACM, the Gauss-Newton Medal from IACM, the Grand Prize from the Japan Society of Computational Engineering and Science (JSCES), the Humboldt Research Award for Senior Scientists from the Alexander von Humboldt Foundation, the Compuatational Mechanics Award from the Japanese Association for Computational Mechanics (JACM), the Wilhelm Exner Medal from the Austrian Association für SME (Oesterreichischer Gewerbeverein,

OGV), the International Scientific Career Award from the Argentinian Association for Computational Mechanics (AMCA), the SIAM/ACM Prize in Computational Science and Engineering, the Southeastern Universities Research Association (SURA) Distinguished Scientist Award, the O.C. Zienkiewicz Medal from the Polish Association for Computational Mechanics (PACM), the A.C. Eringen Medal from the Society for Engineering Science (SES), the Ralph E. Kleinman Prize (SIAM), the William Benter Prize in Applied Mathematics from the Liu Bie Ju Centre for Mathematical Sciences City, University of Hong Kong, and the Monie A. Ferst from Sigma Xi, the Scientific Research Honor Society. He has also been awarded Distinguished Membership in ASCE, and the ASME Medal, the highest awards of ASCE and ASME, respectively.

He has received honorary doctorates from the Université catholique de Louvain, the University of Pavia, the University of Padua, the Norwegian University of Science and Technology (Trondheim), Northwestern University (Evanston), and the University of A Coruña.

In 1999 he was the first engineer to hold the Cattedra Galileiana (Galileo Galilei Chair), Scuola Normale Superiore, Pisa. In 2000 he held the Eshbach Professorship at Northwestern University.

Dr. Hughes is a member of the U.S. National Academy of Sciences, the U.S. National Academy of Engineering, the American Academy of Arts and Sciences, and the Academy of Medicine, Engineering and Science of Texas, and a Foreign Member of the Royal Society of London, the Austrian Academy of Sciences (Section for Mathematics and the Physical Sciences), and the Istituto Lombardo Accademia di Scienze e Lettere (Mathematics Section).

The Special Achievement Award for Young Investigators in Applied Mechanics is an award given annually by the Applied Mechanics Division of ASME. In 2008 this award was renamed the *Thomas J.R. Hughes Young Investigator Award*.

In 2012 the Computational Fluid Mechanics Award of the United States Association of Computational Mechanics was renamed the *Thomas J.R. Hughes Medal*.

Upon graduation from UC Berkeley, Dr. Hughes received the Bernard Freidman Memorial Prize in Applied Mathematics, the only engineer to have ever done so. At Stanford University, he received the Dean's Award for Academic Accomplishment. At the University of Texas at Austin he has received the Joe J. King Professional Engineering Achievement Award, the Billy and Claude R. Hocott Distinguished Centennial Engineering Research Award, and the University Co-op Career Research Excellence Award. At Pratt Insitutue he has received the Alumni Achievement Award.

Citation Impact

Web of Science has recognized Dr. Hughes as a Highly Cited Researcers in 2001, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022. He was identified in 2001 as one of the original 100 most highly cited authors in Engineering and 15 most highly cited authors in Computer Science.

As of September 24, 2024, there are 146,487citations to his published work and his h-index is 158 (Ref. Google Scholar under "Hughes TJR"), and 63,053 citations and h-index of 124 (Reference: General Search, All Databases, Web of Science, for "Hughes TJR"). but whose counting? Updated information can be found at:

http://scholar.google.com/citations?user=6tPdlYAAAAAJ&hl=en

Selected Contributions and Impact

One of Dr. Hughes's recent major innovations is Isogeometric Analysis [1,13], geometrically exact methods in computational mechanics aimed at the unification of computer aided design and engineering analysis methodologies. Presently, designers generate CAD (Computer Aided Design) files and these must be translated into analysis-suitable geometries, meshed and input to large-scale finite element analysis codes. The conversion process involves many steps, is tedious and labor intensive, is estimated to consume approximately 80% of overall analysis time, and is the major bottleneck in the engineering design-through-analysis process and product development cycle. Isogeometric Analysis provides a pathway to break down the barriers between engineering design and analysis by reconstituting the entire process, but at the same time maintaining compatibility with existing practices. The fundamental step is to focus on one, and only one, geometric model, which can be utilized directly as an analysis model, or from which geometrically precise analysis models can be efficiently built. In the few years since its inception, Isogeometric Analysis has already become the most active area of research in both Computational Mechanics and Computer Aided Geometric Design (CAGD). The original paper [1], published in late 2005, has already been cited over 6350 times (Google Scholar).

According to Tom Sederberg, a luminary in CAGD, a Bézier Award and SIGGRAPH Computer Graphics Award recipient, and Founder of the CAGD firm T-Splines, Inc. (recently acquired by Autodesk), "For over forty years, the two academic disciplines of computer aided design and finite element analysis progressed relatively independently of each other. This is also true of the corresponding CAD and computer aided engineering (CAE) industries. Tom Hughes, through his invention of isogeometric analysis (IGA), has created a paradigm shift in which researchers from both fields now realize that their two fields can be harmonized at a more fundamental level than anybody previously understood. From my perspective, IGA is the most significant research contribution that has ever simultaneously impacted the design and analysis fields. This development surprised everyone and has led to IGA becoming the current most active research topic in CAGD.

"What is particularly exciting about IGA is that in addition to being beautiful in a theoretical sense, it also has tremendous real-world potential. Industries that rely on CAD and CAE have a combined market capitalization of trillions of dollars, and huge inefficiencies currently exist because CAD and CAE are not as unified as IGA shows they can be.

"Although hundreds of researchers are now actively studying IGA, Tom Hughes clearly remains the key central figure in this revolution. He invented IGA and has been its most energetic champion. Indeed, it required someone of Tom's towering stature to get the IGA snowball rolling

down the mountain. The only person I can think of in the field of CAGD that rivals Tom's broad and deep academic impact is Carl De Boor, a National Medal of Science recipient."

Professor Chandra Bajaj, another CAGD luminary, has added, "The recent formalization and exposition of IGA by Professor Tom Hughes has swept through the CAGD community as a veritable tsunami. It has invigorated and challenged researchers and developers alike into re-evaluating their various spline finite elements proposed earlier for shape design, to now conform to the necessary additional criteria to make them amenable for computational finite element analysis."

Dr. John Hallquist, Founder and CEO of Livermore Software Technology, developer of LS-DYNA, the leading commercial automotive crashworthiness and metal forming software, stated "Professor Hughes's recent developments in Isogeometric Analysis are being implemented in LS-DYNA as a production capability and are gaining much interest from our entire user base. Although such technology requires time to gain users acceptance, the vast improvements in accuracy and the ease of use of the isogeometric technology will revolutionize today's commercial finite element market over the next decade."

Dr. Hughes has also made fundamental contributions to the development of computational fluid dynamics (CFD) as an engineering design and analysis methodology. He was the first to solve a basic problem in CFD with the development of SUPG, demonstrating that higher-order accuracy and stability could be simultaneously achieved by the same method. The original paper [2] is the most cited in the history of the Finite Element Method and one of the most cited papers in history on the Navier-Stokes equations. SUPG has been applied to numerous problems in engineering and has inspired new areas of CFD and mathematical research, referred to as Stabilized and Variational Multiscale Methods.

One of Dr. Hughes's groundbreaking works on Stabilized Methods was [3] in which he mathematically and computationally demonstrated how to overcome a fundamental mathematical obstacle, the Babuska-Brezzi condition, and yet attain a stable and accurate numerical formulation for viscous flow. Prior to the appearance of [3], this was assumed to be impossible. [3], and the above-cited paper on SUPG, demonstrated that Stabilized Methods provided a new technological direction for CFD, enabling the simplest and lowest-order finite elements to be used effectively, as well as higher-order generalizations. The robust combination of good stability and higher-order accuracy, combined with geometrical flexibility, constituted the essential prerequisites for application to complex industrial problems.

Utilizing the methodology of Stabilized Methods [6], Dr. Hughes and his graduate students developed aerodynamic analysis technologies that have been used to solve many vexing problems involving compressible flows and have been adopted by airplane manufacturers, such as Dassault Aviation and Boeing. Stabilized Methods represent the core technologies of many industrial and commercial computational fluid dynamics computer programs.

The Variational Multiscale Method [4] placed Stabilized Methods on a firm theoretical footing and also provided a mathematically precise setting for the development of new turbulence

modeling procedures and multiphase fluid formulations, which are very active contemporary research areas.

Early research in the computer simulation of arterial blood flow utilized overly simple, idealized models and the relevance to medical practice was very limited. However, a new era in vascular research began with [5] co-authored with Dr. Hughes's graduate student Charles Taylor and the vascular surgeon Christopher Zarins, in which, for the first time, realistic, patient-specific models were employed, not only to simulate pre-operative, diseased configurations, but also to analyze post-operative outcomes. This has evolved into the concept of "predictive medicine" in which patient-specific computer modeling and engineering analysis methodologies are used to evaluate the efficacy of various possible treatments and to plan and design the optimal intervention based upon predictions of outcomes (Patent No. US 6,236,878 B1, May 22, 2001). This work has had an enormous impact on research activities throughout the world and is presently being commercialized (http://heartflow.com). Charles Taylor eventually became a faculty member and Director of Vascular Research at Stanford, and Founder and Chief Technology Officer of HeartFlow, Inc. He described the technology developed by Dr. Hughes in the following way: "I can attest to the impact that Tom Hughes's work in computational mechanics has had on the field of blood flow modeling, including HeartFlow's technology. Ultimately, success in patient-specific modeling of blood flow has required the integration of many disparate technologies, from computational mechanics to mathematical physiology to imaging, image-processing, computational geometry and clinical science. Any research or commercial effort can only be successful if the foundational technology in each of these areas is robust. Of course, any commercial effort requires identification of the right clinical problem to solve with this technology as well as significant efforts to drive adoption of a technology that is very foreign to physicians. Software systems for patient-specific modeling of blood flow are only as strong as their weakest link. Tom Hughes's engineering and scientific work in computational fluid dynamics provided the foundation for my own developments in patient-specific modeling of blood flow as well as that of my students, of which many are now in academic or industry positions working in this field. I would regard my own work in computational mechanics as more focused on specialization of the stabilized methods Tom Hughes developed into the field of modeling blood flow, especially with the treatment of boundary conditions. The robust computational mechanics foundation Tom Hughes established made it possible for me to direct the majority of my own efforts to issues related to physiology, imaging and image processing. I also believe that the robustness of the stabilized methods Tom Hughes developed is one of the reasons why HeartFlow has been able to focus most of our efforts on solving the very complex physiologic modeling and image processing challenges necessary to commercialize patient-specific modeling of coronary blood flow. For us, solving the governing equations of blood flow has truly become 'the easy part' because of the stabilized finite element methods for solving the incompressible Navier-Stokes equations that Tom Hughes pioneered. We have been able to highly optimize our meshes including anisotropy and boundary layer meshing in large part because of how robust and accurate stabilized finite element methods are."

In a series of seminal contributions on contact and impact [12], plates and shells [10, 11], structural dynamics [7], incompressible materials response [8], and large-deformation inelastic constitutive equations [9, 14], Dr. Hughes developed fundamental computational solid and structural mechanics methodologies [15] that became integral components of industrial and commercial

nonlinear structural analysis computer programs, such as LS-DYNA, Abaqus, and MARC, that are used throughout the world every day. According to Dr. John Hallquist, Founder and CEO of Livermore Software Technology, and a National Academy of Engineering member, "The importance of Professor T.J.R. Hughes's contributions to commercial finite element codes, notably to the success of LS-DYNA, cannot be overstated. His earliest contributions included for low-order elements the B-bar method for eliminating volumetric locking in solids and shear locking in shells, which made these elements very cost effective for large scale computations for both explicit and implicit time integration. The latter employs his consistent tangent formulation for optimal convergence. The Hughes-Liu shell, beam, and derivative elements remain important options in LS-DYNA today. His developments in time integration include the rotary mass scaling for shells for stable explicit computations and our subcycling implementation. Subcycling appears to be crucial for automated multi-scale analysis in high performance parallel computing by requiring little additional user input. The important hyperelastic material implementation in the LS-DYNA shell elements follows a key publication by Hughes. His early work in contact was eventually extended to shell single surface buckling calculations that made finite element methods practical for automobile crashworthiness simulations by the late 1980s."

Lectures

Dr. Hughes has delivered numerous invited, named, plenary and keynote lectures at national and international congresses. He has delivered multiple plenary lectures at World Congresses of Computational Mechanics and United States National Congresses of Computational Mechanics. He also has been a plenary lecturer at the International Congress of Mathematicians. This congress, held every four years, is the largest and most important event in the field of mathematics and being invited to deliver a plenary lecture is a major recognition. Dr. Hughes was selected to represent the field of Numerical Analysis at ICM 2010, the International Congress of Mathematicians, International Mathematics Union, Hyderabad, India, August 19-27, 2010. In the over one-hundred-year history of the congress, Dr. Hughes was only the second engineer to have been invited to deliver a plenary lecture. The first was Theodore von Karman in 1928.

References

Archival Journal Publications

1. T.J.R. Hughes, J.A. Cottrell and Y. Bazilevs, Isogeometric Analysis: CAD, Finite Elements, NURBS, Exact Geometry, and Mesh Refinement, *Computer Methods in Applied Mechanics and Engineering*, Vol. 59, 4135-4195, 2005.

> This paper created the concept of Isogeometric Analysis, a unification of computer aided design and computer aided engineering. Since this first publication, Isogeometric Analysis has become the most active research area in both computer aided geometric design and computational mechanics.

2. A.N. Brooks and T.J.R. Hughes, Streamline Upwind/Petrov-Galerkin Formulation for Convection Dominated Flows with Particular Emphasis on the Incompressible Navier-Stokes Equations, *Computer Methods in Applied Mechanics and Engineering*, Vol. 32, 199-259, 1982.

This is the most cited paper in the history of the finite element method and one of the most cited papers in history on the Navier-Stokes equations and computational fluid dynamics. It introduced a method referred to as SUPG, the first robust and accurate finite element methodology for incompressible viscous flows. SUPG has been applied to numerous engineering design and analysis problems and initiated a new direction in computational fluid dynamics research referred to as Stabilized Methods.

3. T.J.R. Hughes, L.P. Franca and M. Balestra, A New Finite Element Formulation for Computational Fluid Dynamics: V. Circumventing the Babuska-Brezzi Condition: A Stable Petrov-Galerkin Formulation of the Stokes Problem Accommodating Equal-order Interpolation, *Computer Methods in Applied Mechanics and Engineering*, Vol. 59, 85-100, 1986.

This was one of the most important contributions to the development of Stabilized Methods. It showed how the simplest finite elements, which had failed in all previous formulations, could be effectively used to attain stable and accurate viscous flow simulations. The methodology developed in this paper, in combination with that of Reference 2 above, have been applied to numerous practical problems and incorporated in industrial and commercial flow computer programs.

4. T.J.R. Hughes, Multiscale Phenomena: Green's Functions, the Dirichlet-to-Neumann Formulation, Subgrid Scale Models, Bubbles, and the Origins of Stabilized Methods, *Computer Methods in Applied Mechanics and Engineering*, Vol. 127, 387-401, 1995.

This paper provided a firm theoretical basis for Stabilized Methods and a new foundational concept for the development of turbulence modeling procedures and formulations of complex flow phenomena. Many works in these areas utilizing this framework have appeared in the literature and been applied to complex fluid analysis and design calculations.

5. C.A. Taylor, T.J.R. Hughes and C.K. Zarins, Finite Element Modeling of Blood Flow in Arteries, *Computer Methods in Applied Mechanics and Engineering*, Vol. 158, 155-196, 1998.

This paper initiated the predictive paradigm in medicine in which patient specific computer modeling and engineering analysis technologies were used to evaluate the efficacy of planned interventions. This concept is an active research area throughout the world and is currently being commercialized.

6. T.J.R. Hughes, L.P. Franca and GM. Hulbert, A New Finite Element Formulation for Computational Fluid Dynamics: VIII. The Galerkin/Least-Squares Method for Advective-Diffusive Equations, *Computer Methods in Applied Mechanics and Engineering*, Vol. 73, 173-189, 1989.

7. H.M. Hilber, T.J.R. Hughes and R.L. Taylor, Improved Numerical Dissipation for Time Integration Algorithms in Structural Dynamics, *Earthquake Engineering and Structural Dynamics*, Vol. 5, 283-292, 1977.

8. T.J.R. Hughes, Generalization of Selective Integration Techniques to Nonlinear and Anisotropic Media, *International Journal for Numerical Methods in Engineering*, Vol. 15, 1413-1418, 1980.

9. T.J.R. Hughes and J. Winget, Finite Rotation Effects in Numerical Integration of Rate Constitutive Equations Arising in Large Deformation Analysis, *International Journal for Numerical Methods in Engineering*, Vol. 15, 1862-1867, 1980.

10. T.J.R. Hughes and W.K. Liu, Nonlinear Finite Element Analysis of Shells: Part I - Three-Dimensional Shells, *Computer Methods in Applied Mechanics and Engineering*, Vol. 26, 331-362, 1981.

11. T.J.R. Hughes and T.E. Tezduyar, Finite Elements Based Upon Mindlin Plate Theory with Particular Reference to the Four-Node Bilinear Isoparametric Element, *Journal of Applied Mechanics*, Vol. 48, 587-596, 1981.

12. T.J.R. Hughes, R.L. Taylor, J.L. Sackman, A. Curnier, and W. Kanoknukulchai, A Finite Element Method for a Class of Contact-Impact Problems, *Computer Methods in Applied Mechanics and Engineering*, Vol. 8, 249-276, 1976.

Books

13. J.C. Simo and T.J.R. Hughes, *Computational Inelasticity,* Springer, New York, 1998.

14. T.J.R. Hughes, *The Finite Element Method: Linear Static and Dynamic Finite Element Analysis,* Dover, Mineola, New York, 2000.

15. J.A. Cottrell, T.J.R. Hughes and Y. Bazilevs, *Isogeometric Analysis: Toward Integration of CAD and FEA,* Wiley, Chichester, U.K., 2009.

16. E. Stein, R. De Borst and T.J.R. Hughes, *Encyclopedia of Computational Mechanics*, Wiley, second edition, 2018.