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Education

UNIVERSITY OF MINNESOTA
Ph.D. in Aerospace Engineering and Mechanics 1992

UNIVERSITY OF MINNESOTA
B.S. in Aerospace Engineering and Mechanics 1988

WARSAW UNIVERSITY
Physics 1983 – 1986

Employment

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JÜLICH AACHEN RESEARCH ALLIANCE, JÜLICH, GERMANY
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RICE UNIVERSITY, HOUSTON, TX
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AACHEN INSTITUTE FOR ADVANCED STUDY
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CHUO UNIVERSITY, TOKYO, JAPAN
GRADUATE SCHOOL OF SCIENCE AND ENGINEERING
Guest Professor Apr 2016, Sep 2019, Sep 2022

GERMAN RESEARCH SCHOOL FOR SIMULATION SCIENCES GMBH
President Aug 2010 – Dec 2016
Vice-President Apr 2008 – Jul 2010

TECHNICAL UNIVERSITY OF MUNICH, GARCHING, GERMANY
DEPARTMENT OF MECHANICAL ENGINEERING
Deputy Head of Chair for Comp. Mechanics Aug 2003 – Sep 2004

RICE UNIVERSITY, HOUSTON, TX
DEPARTMENT OF MECHANICAL ENGINEERING AND MATERIALS SCIENCE
Assistant Professor Jul 1999 – Jun 2003

UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MN
ARMY HIGH PERFORMANCE COMPUTING RESEARCH CENTER
Research Assistant Professor Oct 1994 – Jul 1999

UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MN
ARMY HIGH PERFORMANCE COMPUTING RESEARCH CENTER
Research Associate Nov 1992 – Sep 1994

Honors and Awards Semi-plenary Speaker at the 14th World Congress on Computational Mechanics in Paris, January 2021.

Plenary Speaker at the 12th World Congress on Computational Mechanics in Seoul, July 2016.

Fellow of the International Association for Computational Mechanics, July 2014.

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Publications Journal Articles:

1. F. Gonzalez, S. Elgeti, M. Behr, and F. Auricchio, “A Deforming-Mesh Finite-Element Approach Applied to the Large-Translation and Free-Surface Scenario of Fused Deposition Modeling”, accepted to *International Journal for Numerical Methods in Fluids*, (2022).
2. S. Wittschieber, L. Demkowicz, and M. Behr, “Stabilized Finite Element Method for a Fully-Implicit Logarithmic Reformulation of the Oldroyd-B Constitutive Law”, *Journal of Non-Newtonian Fluid Mechanics*, **306** (2022) 104838.
3. M. Make, T. Spenke, N. Hosters, and M. Behr, “Spline-Based Space-Time Finite Element Approach for Fluid-Structure Interaction Problems With a Focus on Fully Enclosed Domains”, *Computers and Mathematics with Applications*, **114** (2022) 210–224.
4. S. Hube, M. Behr, S. Elgeti, M. Schön, J. Sasse, and C. Hopmann, “Numerical Design of Distributive Mixing Elements”, *Finite Elements in Analysis and Design*, **204** (2022) 103733.
5. M. von Danwitz, P. Antony, F. Key, N. Hosters, and M. Behr, “Four-Dimensional Elastically Deformed Simplex Space-Time Meshes for Domains with Time Variant Topology”, *International Journal for Numerical Methods in Fluids* **93** (2021) 3490–3506.
6. F. Guglietta, M. Behr, G. Falcucci, and M. Sbragaglia, “Loading and Relaxation Dynamics of a Red Blood Cell”, *Soft Matter* **17** (2021) 5978–5990.
7. F. Guglietta, M. Behr, L. Biferale, G. Falcucci, and M. Sbragaglia, “Lattice Boltzmann Simulations on the Tumbling to Tank-Treading Transition: Effects of Membrane Viscosity”, *Philosophical Transactions A* **379** (2021) 20200395.
8. L. Gesenhues and M. Behr, “Simulating Dense Granular Flow Using the $\mu(I)$ -Rheology Within a Space-Time Framework”, *International Journal for Numerical Methods in Fluids* **93** (2021) 2889–2904.
9. J. Helmig, F. Key, M. Behr, and S. Elgeti, “Combining Boundary-Conforming Finite Element Meshes on Moving Domains Using a Sliding Mesh Approach”, *International Journal for Numerical Methods in Fluids* **93** (2021) 1053–1073.
10. F. Guglietta, M. Behr, L. Biferale, G. Falcucci, and M. Sbragaglia, “On the Effects of Membrane Viscosity on Transient Red Blood Cell Dynamics”, *Soft Matter* **16** (2020) 6191–6205.
11. S. Haßler, A. Ranno, and M. Behr, “Finite-Element Formulation for Advection-Reaction Equations with Change of Variable and Discontinuity Capturing”, *Computer Methods in Applied Mechanics and Engineering* **369** (2020) 113171.
12. T. Spenke, N. Hosters, and M. Behr, “A Multi-Vector Interface Quasi-Newton Method with Linear Complexity for Partitioned Fluid-Structure Interaction”, *Computer Methods in Applied Mechanics and Engineering* **361** (2020) 112810.

13. S. Haßler, L. Pauli, and M. Behr, “The Variational Multiscale Formulation for the Fully-Implicit Log-Morphology Equation as a Tensor-Based Blood Damage Model”, *International Journal for Numerical Methods in Biomedical Engineering* **35** (2019) e3262.
14. M. von Danwitz, V. Karyofylli, N. Hosters, and M. Behr, “Simplex Space-Time Meshes in Compressible Flow Simulations”, *International Journal for Numerical Methods in Fluids* **91** (2019) 29–48.
15. V. Karyofylli, L. Wendling, M. Make, N. Hosters, and M. Behr, “Simplex Space-Time Meshes in Thermally Coupled Two-Phase Flow Simulations of Mold Filling”, *Computers & Fluids* **192** (2019) 104261.
16. J. Helmig, M. Behr, and S. Elgeti, “Boundary-Conforming Finite Element Methods for Twin-Screw Extruders: Unsteady – Temperature-Dependent – Non-Newtonian Simulations”, *Computers & Fluids* **190** (2019) 322–336.
17. M. Brüderlin, N. Hosters, and M. Behr, “Reduced-Order Model for Robust Aeroelastic Control”, *CEAS Aeronautical Journal* **10** (2019) 367–384.
18. L. Wendling, M. Behr, A. Hopf, F. Kraemer, C. Weber, and P. Turner, “CFD Simulations of Oil Jets for Piston Cooling Applications Comparing the Level Set and the Volume of Fluid Method”, *SAE Technical Paper 2019-01-0155* (2019).
19. N. Hosters, J. Helmig, A. Stavrev, M. Behr, and S. Elgeti, “Fluid-Structure Interaction with NURBS-Based Coupling”, *Computer Methods in Applied Mechanics and Engineering* **332** (2018) 520–539.
20. M. Brüderlin, N. Hosters, and M. Behr, “Robust Active Control of a Winglet with Elastic Suspension at Transonic Flow”, *Journal of Guidance Control and Dynamics* **41** (2018) 526–534.
21. V. Karyofylli, M. Frings, S. Elgeti, and M. Behr, “Simplex Space-Time Meshes in Two-Phase Flow Simulations”, *International Journal for Numerical Methods in Fluids* **86** (2018) 218–230.
22. M. Brüderlin, M. Zimmer, N. Hosters, and M. Behr, “Numerical Simulation of Vortex Generators on a Winglet Control Surface”, *Aerospace Science and Technology* **71** (2017) 651–660.
23. B. Keith, P. Knechtges, N.V. Roberts, S. Elgeti, M. Behr, and L. Demkowicz, “An Ultraweak DPG Method for Viscoelastic Fluids”, *Journal of Non-Newtonian Fluid Mechanics* **247** (2017) 107–122.
24. L. Pauli and M. Behr, “On Stabilized Space-Time FEM for Anisotropic Meshes: Incompressible Navier-Stokes Equations and Applications to Blood Flow in Medical Devices”, *International Journal for Numerical Methods in Fluids* **85** (2017) 189–209.
25. F. Zwicke, P. Knechtges, M. Behr and S. Elgeti, “Automatic Implementation of Material Laws: Jacobian Calculation in a Finite Element Code with TAPENADE”, *Computers and Mathematics with Applications*, **72** (2016) 2808–2822.
26. A. Stavrev, L.H. Nguyen, R. Shen, V. Varduhn, M. Behr, S. Elgeti and D. Schillinger, “Geometrically Accurate, Efficient, and Flexible Quadrature Techniques for the Tetrahedral Finite Cell Method”, *Computer Methods in Applied Mechanics and Engineering*, **310** (2016) 646–673.
27. L. Gesenhues, L. Pauli and M. Behr, “Strain-Based Blood Damage Estimation for Computational Design of Ventricular Assist Devices”, *The International Journal of Artificial Organs*, **39** (2016) 166–170.
28. S. Frauholz, B. Reinartz, S. Müller and M. Behr, “Transition Prediction for Scramjet Intakes Using the γ - Re_{θ_t} Model Coupled to Two Turbulence Models”, *Journal of Propulsion and Power*, **31** (2015) 1404–1422.
29. R. Siegbert, N. Yesildag, M. Frings, F. Schmidt, S. Elgeti, H. Sauerland, M. Behr, C. Windeck, C. Hopmann, Y. Queudeville, U. Vroomen, and A. Bührig-Polaczek, “Individualized Production in Die-Based Manufacturing Processes Using Numerical Optimization”, *International Journal of Advanced Manufacturing Technology*, **80** (2015) 851–858.
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32. S. Frauholz, A. Bosco, B.U. Reinartz, S. Müller and M. Behr, “Investigation of Hypersonic Intakes Using Reynolds Stress Modeling and Wavelet-Based Adaptation”, *AIAA Journal*, **52** (2014) 2765–2781.
33. A. Püttmann, M. Nicolai, M. Behr and E. von Lieres, “Stabilized Space-Time Finite Elements for High-Definition Simulation of Packed-Bed Chromatography”, *Finite Elements in Analysis and Design*, **86** (2014) 1–11.
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39. E. Schlauch, M. Ernst, R. Seto, H. Briesen, M. Sommerfeld and M. Behr, “Comparison of Three Simulation Methods for Colloidal Aggregates in Stokes Flow: Finite Elements, Lattice Boltzmann and Stokesian Dynamics”, *Computers & Fluids*, **86** (2013) 199–209.
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41. T. Nguyen, M. Behr, B. Reinartz, O. Hohn and A. Gülhan “Effects of Sidewall Compression and Relaminarization in a Scramjet Inlet”, *Journal of Propulsion and Power*, **29** (2013) 628–638.
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44. S. Elgeti, H. Sauerland, L. Pauli and M. Behr, “On the Usage of NURBS as Interface Representation in Free-Surface Flows”, *International Journal for Numerical Methods in Fluids*, **69** (2012) 73–87.
45. J. Nam, M. Behr and M. Pasquali, “Space-time Least-Squares Finite Element Method for Convection-Reaction System with Transformed Variables”, *Computer Methods in Applied Mechanics and Engineering*, **200** (2011) 2562–2576.
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54. B. Hentschel, I. Tedjo, M. Probst, M. Wolter, M. Behr, C. Bischof and T. Kuhlen, “Interactive Blood Damage Analysis for Ventricular Assist Devices”, *IEEE Transactions on Visualization and Computer Graphics*, **14** (2008) 1515–1522.
55. M. Behr, “Simplex Space-Time Meshes in Finite Element Simulations”, *International Journal for Numerical Methods in Fluids*, **57** (2008) 1421–1434.
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57. O. Coronado, D. Arora, M. Behr and M. Pasquali, “A Simple Method for Simulating Viscoelastic Fluid Flows with a Generalized Log-conformation Formulation”, *Journal of Non-Newtonian Fluid Mechanics*, **147** (2007) 189–199.
58. O. Coronado, D. Arora, M. Behr and M. Pasquali, “Four-Field Galerkin/Least-Squares Formulation for Viscoelastic Fluids”, *Journal of Non-Newtonian Fluid Mechanics*, **140** (2006) 132–144.
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63. D. Arora, M. Behr and M. Pasquali, “A Tensor-Based Measure for Estimating Blood Damage”, *Artificial Organs*, **28** (2004) 1002–1015.
64. M. Behr, D. Arora, Y. Nosé and T. Motomura, “Performance Analysis of Ventricular Assist Devices Using Finite Element Flow Simulation”, *International Journal for Numerical Methods in Fluids*, **46** (2004) 1201–1210.
65. F. Abraham, M. Behr and M. Heinkenschloss, “The Effect of Stabilization in Finite Element Methods for the Optimal Boundary Control of the Oseen Equations”, *Finite Elements in Analysis and Design*, **41** (2004) 229–251.
66. M. Behr, “On the Application of Slip Boundary Condition on Curved Boundaries”, *International Journal for Numerical Methods in Fluids*, **45** (2004) 43–51.
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68. M. Behr and F. Abraham, “Free-Surface Flow Simulations in the Presence of Inclined Walls”, *Computer Methods in Applied Mechanics and Engineering*, **191** (2002) 5467–5483.
69. M. Behr and D. Arora, “Computational Analysis of Blood Flow in Ventricular Assist Devices”, *Acta of Bioengineering and Biomechanics*, **4** (2002) 546–547.
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73. M. Behr and T.E. Tezduyar, "Shear-Slip Mesh Update Method", *Computer Methods in Applied Mechanics and Engineering*, **174** (1999) 261–274.
74. I. Güler, M. Behr and T.E. Tezduyar, "Parallel Finite-Element Computation of Free-Surface Flows", *Computational Mechanics*, **23** (1999) 117–123.
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76. T.E. Tezduyar, S. Aliabadi and M. Behr, "Enhanced-Discretization Interface-Capturing Technique (EDICT) for Computation of Unsteady Flows with Interfaces", *Computer Methods in Applied Mechanics and Engineering*, **155** (1998) 235–248.
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78. T. Tezduyar, S. Aliabadi, M. Behr, A. Johnson, V. Kalro and M. Litke, "Flow Simulation and High Performance Computing", *Computational Mechanics*, **18** (1996) 397–412.
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80. M. Behr, D. Hastreiter, S. Mittal and T.E. Tezduyar, "Incompressible Flow Past a Circular Cylinder: Dependence of the Computed Flow Field on the Location of the Lateral Boundaries", *Computer Methods in Applied Mechanics and Engineering*, **123** (1995) 309–316.
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87. T.E. Tezduyar, M. Behr, S.K. Aliabadi, S. Mittal, and S.E. Ray, "A New Mixed Preconditioning Method for Finite Element Computations", *Computer Methods in Applied Mechanics and Engineering*, **99** (1992) 27–42.
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Conference Papers:

93. M. Frings, B. Berkels, M. Behr, and S. Elgeti, “Comparison of Optimization Algorithms for the Slow Shot Phase in HPDC”, in *AIP Conference Proceedings*, **1960** (2018) 110005.
94. V. Karyofylli, M. Schmitz, C. Hopmann, and M. Behr, “Adaptive Temporal Refinement in Injection Molding”, in *AIP Conference Proceedings*, **1960** (2018) 090008.
95. M. Frings, M. Behr, and S. Elgeti, “Objective Functions for the Shape Optimization of Temperature Control Channels in High-Pressure Die Casting”, in *Proceedings in Applied Mathematics and Mechanics*, **17** (2017) 737–738.
96. Ch. Hopmann, M. Behr, R. Siegbert, S. Elgeti, K. Kurth and C. Windeck, “Improving the Automated Optimization of Profile Extrusion Dies by Applying Appropriate Optimization Areas and Strategies”, in *Proceedings of the Polymer Processing Society 29th Annual Meeting PPS-29*, Nuremberg, Germany, (2014).
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99. M. Brüderlin, N. Hosters, B.-H. Chen, A. Boucke, J. Ballmann and M. Behr, “Numerical Prediction and Post-Test Numerical Analysis of the ASDMAD Wind Tunnel Tests in ETW”, in *International Forum on Aeroelasticity & Structural Dynamics 2013*, Bristol, UK, (2013).
100. N. Hosters, M. Klaus, G. Schieffer, M. Behr and H.-G. Reimerdes, “Towards Aerothermoelastic Simulations of Supersonic Flow Through Nozzles”, in *Progress in Propulsion Physics 4*, EUCASS Proceedings Series, St. Petersburg, Russia, (2013).
101. S. Frauholz, M. Behr, B.U. Reinartz and S. Müller, “Numerical Simulation of Hypersonic Air Intake Flow in Scramjet Propulsion Using a Mesh-Adaptive Approach”, Paper AIAA 2012-5976, in *Proceedings of the 18th AIAA/3AF International Space Planes and Hypersonic Systems and Technologies Conference*, Tours France, (2012).
102. J. Ballmann, A. Boucke, B.-H. Chen, L.Reimer, M. Behr, A. Dafnis, C. Buxel, S. Buesing, H.-G. Reimerdes, K.-H. Brakhage, H. Olivier, M. Kordt, J. Brink-Spalink, F. Theurich and A. Büscher, “Aero-Structural Wind Tunnel Experiments with Elastic Wing Models at High Reynolds Numbers (HIRENASD - ASDMAD)”, AIAA Paper 2011-0882, *Proceedings of 49th Aerospace Sciences Meeting*, Orlando, Florida, (2011).
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149. M. Schäfer, M. Behr, M. Mehl, and B. Wohlmuth, “Recent Advances in Computational Engineering”, *Proceedings of the 4th International Conference on Computational Engineering (ICCE 2017)*, Springer, (2018).

Book Chapters:

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154. G. Wellmer, L. Reimer, H. Flister, M. Behr and J. Ballmann, “A Comparison of Fluid-/Structure Coupling Methods for Reduced Structural Models”, in B. Eisfeld *et al.*, editors, *Management and Minimisation of Uncertainties and Errors in Numerical Aerodynamics*, Notes on Numerical Fluid Mechanics and Multidisciplinary Design, Springer, **122** (2013) 181–218.

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Patents:

168. A. Hopf, F. Kraemer, C. Weber, P. Turner, K.-P. Heinig, L. Wendling, M. Behr, K.-M. Mayer, G. Bartsch, K. Kuhlbach, B. Steiner, G. Grosch, “Volcano-shaped inlet of piston oil-cooling gallery”, US Patent 11,326,549, May 10, 2022.

Presentations

Invited Presentations:

1. Siemens R&D Exchange Day, Aachen, September 2021.
2. 25th Intl Congress of Theoretical and Applied Mechanics, online, August 2021.

3. 16th US National Congress on Computational Mechanics, online, July 2021.
4. 14th World Congress on Computational Mechanics (semi-plenary), online, January 2021.
5. CISM advanced webinar E2015, Udine, Italy, December 2020
6. CISM advanced webinar E2014, Udine, Italy, December 2020
7. IDEA League classroom, Milano, Italy, December 2020
8. IRTG 2078 seminar, Karlsruhe, Germany, September 2020
9. Technical University of Hamburg Seminar, Hamburg, Germany, February 2020.
10. APCOM 2019 (keynote), Taipei, Taiwan, December 2019.
11. Japan Society of Civil Engineers Seminar, Tokyo, Japan, October 2019.
12. Chuo University Seminars, Tokyo, Japan, October 2019 (3).
15. 5th German-Japanese Workshop on Comp. Mechanics, Dresden, Germany, September 2019.
16. 15th US Congress on Computational Mechanics, Austin, USA, July 2019.
17. Equadiff 2019, Leiden, Netherlands, July 2019.
18. Finite Elements in Flow Problems (keynote), Chicago, USA, April 2019.
19. Seoul National University Seminar, Seoul, Korea, October 2018.
20. KSCM-GACM Workshop, Seoul, Korea, October 2018.
21. University of Pavia Seminar, Pavia, Italy, October 2018.
22. MOX Seminar, Milan, Italy, October 2018.
23. ESAO Congress, Madrid, Spain, September 2018.
24. 13th World Congress on Computational Mechanics, New York, USA, July 2018.
25. Kármán Conference on Interactive Materials, Bergisch Gladbach, Germany, July 2018.
26. NRW Academy of Sciences and Arts, Düsseldorf, Germany, April 2018.
27. Graduation address of the SimTech study program, Stuttgart, Germany, June 2017.
28. Coupled Problems, Rhodos, Greece, June 2017.
29. Computational & Mathematical Biomedical Engineering, Pittsburgh, USA, April 2017.
30. 4th Japanese-German Workshop on Computational Mechanics, Sendai, Japan, March 2017.
31. MFO Workshop on Space-Time Methods, Oberwolfach, Germany, March 2017.
32. 6th Munich Vascular Conference, Munich, Germany, December 2016.
33. RICAM Special Semester, Linz, Austria, November 2016.
34. TechNet Alliance Fall Meeting, Tabiano Castello, Italy, October 2016.
35. 12th World Congress on Computational Mechanics (plenary), Seoul, Korea, July 2016.
36. University of Pavia Seminar, Pavia, Italy, May 2016.
37. Graduate School CE Seminar, Darmstadt, Germany, April 2016.
38. SIAM Parallel Processing 2016, Paris, France, April 2016.
39. Japan Society of Civil Engineers Seminar, Tokyo, Japan, April 2016.
40. University of Tokyo Seminar, Tokyo, Japan, April 2016.
41. Chuo University Seminar, Tokyo, Japan, April 2016.
42. Variational Multiscale and Stabilized Methods 2016, Magdeburg, Germany, March 2016.
43. University of Luxembourg Seminar, Luxembourg, February 2016.
44. University of Greifswald Seminar, Greifswald, Germany, December 2015.
45. Basque Center for Applied Mathematics Seminar, Bilbao, Spain, November 2015.
46. Intl Workshops on Advances in Computational Mechanics III, Tokyo, Japan, October 2015.
47. University of Texas at Austin Seminar, Austin, Texas, September 2015.
48. Old Dominion University Seminar, Norfolk, USA, July 2015.
49. 13th US Congress on Comp. Mechanics, San Diego, USA, July 2015.
50. 4th Intl Conference on Comp. & Math. Biomedical Eng., Cachan, France, June 2015.

51. 1st Pan-American Congress on Comp. Mechanics, Buenos Aires, Argentina, April 2015.
52. 3rd German-Japanese Workshop on Comp. Mechanics, Munich, Germany, March 2015.
53. Institute for Mathematical Sciences Workshop, Singapore, March 2015.
54. 11th World Congress on Computational Mechanics, Barcelona, Spain, July 2014.
55. 3rd Workshop on Parallel-in-Time Integration, Jülich, Germany, May 2014.
56. COMPSAFE 2014 (keynote), Sendai, Japan, April 2014.
57. SPP 1273 Colloquium, Karlsruhe, Germany, January 2014.
58. BBE SIPD Fall School, Milan, Italy, November 2013.
59. VMS 2013, Barcelona, Spain, November 2013.
60. Hokkaido University Seminar, Sapporo, Japan, September 2013.
61. Chuo University Seminars, Tokyo, Japan, September 2013 (3).
64. 12th US National Congress on Comp. Mechanics, Raleigh, USA, July 2013.
65. ECCOMAS Coupled Problems 2013 (keynote), Ibiza, Spain, June 2013.
66. NRW Academy of Sciences and Arts, Düsseldorf, Germany, April 2013.
67. Polish Academy of Sciences Seminar, Warsaw, Poland, March 2013.
68. Finite Elements in Flow Problems FEF13, San Diego, USA, February 2013.
69. IIT-Kanpur Institute Lecture, Kanpur, India, November 2012.
70. 6th ECCOMAS Congress, Vienna, Austria, September 2012.
71. 24th Parallel CFD (plenary), Atlanta, USA, May 2012.
72. Workshop on Large-Scale Computer Simulation, Oak Ridge, USA, April 2012.
73. 32nd Israel Symposium on Comp. Mechanics (keynote), Tel Aviv, Israel, March 2012.
74. Technion Biomechanics Seminar, Haifa, Israel, March 2012.
75. Schlumberger Seminar, Houston, USA, November 2011.
76. Rice University CAAM Seminar, Houston, USA, November 2011.
77. ESAO (keynote), Porto, Portugal, October 2011.
78. 4th GACM Colloquium on Comp. Mec. (plenary), Dresden, Germany, September 2011.
79. 11th US National Congress on Comp. Mechanics, Minneapolis, Minnesota, July 2011.
80. 25th German-Israeli Umbrella Symposium, Aachen, Germany, June 2011.
81. Finite Elements in Flow Problems FEF11 (plenary), Munich, Germany, March 2011.
82. CNRS Seminar, Toulouse, France, March 2011.
83. Texas Heart Institute Seminar, Houston, Texas, March 2011.
84. SIAM Computational Science and Engineering, Reno, Nevada, March 2011.
85. DLR Colloquium, Braunschweig, Germany, November 2010.
86. Calibration of Viscosity Models for Turbulent Flows, Göttingen, Germany, October 2010.
87. Fresenius Medical Care Seminar, Bad Homburg, Germany, August 2010.
88. 9th World Congress on Computational Mechanics, Sydney, Australia, July 2010.
89. 4th Intl Symposium on Modeling of Physiological Flows, Chia, Italy, June 2010.
90. CECAM Trends in Computational Hemodynamics, Lausanne, Switzerland, May 2010.
91. Intl Workshop on Advances in Computational Mechanics, Yokohama, Japan, March 2010.
92. German-Japanese Workshop on Computational Mechanics, Yokohama, Japan, March 2010.
93. Bridging the Gaps Workshop, QMUL, London, UK, March 2010.
94. 24th German-Israeli Umbrella Symposium, Jülich, Germany, January 2010.
95. TU Graz Seminar, Graz, Austria, November 2009.
96. Max Planck Institute for Iron Research, Düsseldorf, Germany, August 2009.
97. US National Congress on Computational Mechanics, Columbus, Ohio, July 2009.
98. Finite Elements in Flow Problems FEF09 (incl. keynote), Tokyo, Japan, April 2009 (2).

100. MIT AICES Spring School on Methods and Tools for CE, Aachen, Germany, March 2009.
101. Mesosoft, Jülich, Germany, March 2009.
102. SIAM Computational Science and Engineering, Miami, Florida, March 2009 (2).
104. Chuo University Seminars, Tokyo, Japan, September 2008 (3).
107. 8th World Congress on Computational Mechanics, Venice, Italy, July 2008.
108. SIAM Conference on Optimization, Boston, Massachusetts, April 2008.
109. INRIA Blood and Air Flow Modeling Workshop, Rocquencourt, France, March 2008.
110. NIC Symposium 2008, Jülich, Germany, January 2008.
111. Blood Modeling 2007 Workshop, Aachen, Germany, September 2007.
112. ENUMATH 2007, Graz, Austria, September 2007.
113. Parallel Computing 2007 Plenary, Jülich, Germany, September 2007.
114. U.S. National Congress on Computational Mechanics, San Francisco, California, July 2007.
115. Workshop on Two-phase Incompressible Flows, Aachen, Germany, June 2007.
116. International Conference on Computational Mechanics, Hiroshima, Japan, April 2007.
117. Chuo University Seminar, Tokyo, Japan, April 2007.
118. Finite Elements in Flow Problems, Santa Fe, New Mexico, March 2007.
119. SIAM Computational Science and Engineering, Costa Mesa, California, February 2007.
120. Workshop on VMS Methods and Stabilized FE, Lausanne, Switzerland, February 2007.
121. ECCOMAS Conference on CFD, Egmond aan Zee, The Netherlands, September 2006.
122. 7th World Congress on Computational Mechanics, Los Angeles, California, July 2006.
123. Intl Workshop on Multiscale Description of Complex Fluids, Prato, Italy, July 2006.
124. Sun HPC 2006 Workshop, Aachen, Germany, March 2006.
125. SIAM Parallel Processing for Sci. Computing, San Francisco, California, February 2006.
126. Gieserei Institut/ACCESS Seminar, Aachen, Germany, December 2005.
127. Workshop on VMS Methods and Stabilized FE, Heidelberg, Germany, December 2005.
128. University of Göttingen Seminar, Göttingen, Germany, November 2005.
129. RICAM Workshop “Control of Complex Fluids”, Linz, Austria, October 2005.
130. 8th U.S. National Congress on Computational Mechanics, Austin, Texas, July 2005 (2).
132. Institut für Regelungstechnik Seminar, Aachen, Germany, June 2005.
133. Institut für Gesteinshüttenkunde Seminar, Aachen, Germany, June 2005.
134. Third MIT Conference on Computational Fluid and Solid Mechanics (incl. keynote), Cambridge, Massachusetts, June 2005 (2).
136. XIVth Intl Workshop on Num. Meth. for Non-Newtonian Flows, Santa Fe, New Mexico, June 2005.
137. ECCOMAS Coupled Problems 2005, Santorini, Greece, May 2005.
138. 2nd NAFEMS CFD Seminar, Wiesbaden, Germany, April 2005.
139. Thirteenth Conference on Finite Elements for Flow Problems, Swansea, Wales, April 2005.
140. ASIM Workshop, Wuppertal, Germany, March 2005.
141. Workshop on Interface Problems in CFD, Oberwolfach, Germany, February 2005.
142. IGPM Seminar, Aachen, Germany, January 2005.
143. University of Magdeburg Seminar, Magdeburg, Germany, December 2004.
144. Tag der Informatik, Aachen, Germany, December 2004.
145. Chuo University Seminar, Tokyo, Japan, November 2004.
146. Intl Workshop on Advances in Computational Mechanics, Tokyo, Japan, November 2004.
147. Paralleles Kolloquium, Aachen, Germany, October 2004.
148. 6th World Congress on Computational Mechanics, Beijing, China, September 2004.
149. EPFL Seminar, Lausanne, Switzerland, August 2004.

150. ECCOMAS 2004, Jyväskylä, Finland, July 2004.
151. SIAM Parallel Processing for Sci. Computing, San Francisco, California, February 2004.
152. FE im Schnee 9, Söllerau, Kleinwalsertal, Austria, January 2004.
153. TUM Colloquium, München, Germany, November 2003.
154. Dräger Medical Seminar, Lübeck, Germany, November 2003.
155. 11th Annual Meeting of the Intl Society for Rotary Blood Pumps, Bad Oeynhausen, Germany, September 2003.
156. Sandia National Laboratories Seminar, Albuquerque, New Mexico, August 2003.
157. 7th U.S. Natl Congress on Comp. Mechanics (keynote), Albuquerque, New Mexico, July 2003.
158. RWTH Colloquium, Aachen, Germany, May 2003.
159. University of Stuttgart Colloquium, Stuttgart, Germany, May 2003.
160. University of Hawaii at Manoa Seminar, Honolulu, Hawaii, April 2003.
161. University of Vermont Seminar, Burlington, Vermont, April 2003.
162. Finite Elements in Fluids 2003 Keynote, Nagoya, Japan, April 2003.
163. Chuo University Seminar, Tokyo, Japan, March 2003.
164. SIAM Computational Science & Engrg CSE03, San Diego, California, February 2003 (2).
166. Rice University CITI Seminar, Houston, Texas, October 2002.
167. Max-Planck Institute Seminar, Greifswald, Germany, September 2002.
168. Systemics, Cybernetics and Informatics 2002, Orlando, Florida, July 2002.
169. 5th World Congress on Computational Mechanics, Vienna, Austria, July 2002.
170. Chuo University Seminar, Tokyo, Japan, May 2002.
171. Parallel CFD 2002, Nara, Japan, May 2002.
172. Sandia National Laboratories Seminar, Albuquerque, New Mexico, March 2002.
173. 6th U.S. Natl Congress on Computational Mechanics, Dearborn, Michigan, August 2001 (2).
175. Rice University Mechanics of Materials Group Meeting, Houston, Texas, June 2001.
176. Waterways Experiment Station Seminar, Vicksburg, Mississippi, August 2000.
177. Kyushu University Seminar, Fukuoka, Japan, June 2000.
178. University of Tokyo Seminar, Tokyo, Japan, June 2000.
179. 5th Japan National Congress on Computational Mechanics, Tokyo, Japan, May 2000.
180. Chuo University Seminars, Tokyo, Japan, May 2000 (3 seminars).
183. Stanford University Lecture, Stanford, California, April 2000.
184. 5th U.S.-Japan Symposium on Flow Simulation and Modeling, Houston, Texas, March 2000.
185. NASA Ames Research Center Seminar, Moffett Field, California, November 1999.
186. Rice University Seminar, Houston, Texas, April 1999.
187. Worcester Polytechnic Institute Seminar, Worcester, Massachusetts, February 1999.
188. University of Florida GERC Seminar, Shalimar, Florida, January 1999.
189. First HPC, Application and Training Workshop, Atlanta, Georgia, March 1998.
190. Workshop on Parallel Computing in Applied Fluid Mechanics, Pisa, Italy, September 1997.
191. AHPCRC 1997 Infrastructure Support Workshop, Vicksburg, Mississippi, February 1997.
192. Army Research Lab CFD6 CHSSI Meeting, Aberdeen, Maryland, August 1996.
193. AHPCRC Infrastructure Support Workshop, Aberdeen, Maryland, February 1996.
194. AHPCRC-ARL Joint Conference on CFD and CSM, Aberdeen, Maryland, December 1994.
195. Symposium on Parallel FE Computations, Minneapolis, Minnesota, October 1993.
196. 2nd U.S. National Congress on Computational Mechanics, Washington, D.C., August 1993.
197. U.S.-Japan Symp. on FEM in Large-Scale CFD, Minneapolis, Minnesota, October 1992.
198. 6th Intl Conference on Boundary and Interior Layers, Copper Mtn, Colorado, August 1992.

Contributed Presentations:

199. ECCOMAS Coupled Problems 2009, Ischia, Italy, June 2009.
200. ECCOMAS Coupled Problems 2007, Ibiza, Spain, May 2007.
201. 13th Conf. of the European Society of Biomechanics, Wrocław, Poland, September 2002.
202. 5th European Conference on Computational Mechanics, Krakow, Poland, June 2001.
203. Finite Element in Fluids 2000, Austin, Texas, May 2000.

**Teaching
Experience**

Undergraduate/Graduate

Simulation Methods in Engineering

www.cats.rwth-aachen.de/teaching/simtech

Finite Elements in Fluids

www.cats.rwth-aachen.de/teaching/fef

Engng Mechanics: Statics and Dynamics

www.cats.rwth-aachen.de/teaching/cm1

Graduate

Parallel Computing Methods in Comput. Mech.

www.cats.rwth-aachen.de/teaching/para

Numerical Methods in Engineering
(Rice University elective)

Shear Stress and Hemolysis in VADs
(compact course at Politecnico di Milano)

Service

Editorial Board:

Computers and Mathematics with Applications (Elsevier, since 2012)

Lecture Notes in Applied Mathematics and Mechanics (Springer, since 2012)

Advisory Board:

International Journal for Numerical Methods in Fluids (Wiley, since 2005)

President:

German Association for Computational Mechanics (2021–2024)

Executive Council Member:

International Association for Computational Mechanics (2020–2026)

Scientific Board:

Steering Committee ERCOFTAC SIG37 Biomedical Fluid Mechanics (since 2019)

Sano Centre for Computational Medicine, Krakow, Poland (since 2019)

Journal Referee:

Advances in Water Resources, Annals of Biomedical Engineering, Applied Mathematical Modelling, ASCE Journal of Engineering Mechanics, ASME Journal of Applied Mechanics, Central European Journal of Mathematics, Circulation, Communications in Numerical Methods in Engineering, Computational Mechanics, Computer Methods in Applied Mechanics and Engineering, Computers & Fluids, Computers and Mathematics with Applications, IEEE Computational Science & Engineering, International Journal for Numerical Methods in Engineering, International Journal for Numerical Methods in Fluids, International Journal of Applied Science and Computations, International Journal of Computational Fluid Dynamics, International Journal of Engineering Science, International Journal for Multiscale Computational Engineering, International Journal of Thermal Sciences, Journal of Biomechanics, Journal of Biomechanics and Modeling in Mechanobiology, Journal

of Computational Physics, Journal of Engineering Design, Journal of Heat Transfer, Journal of Visualization, Langmuir, Optimization and Engineering, Parallel Computing, Physics of Fluids, PLOS One, SIAM Journal on Scientific Computing

Chairman:

Board of Examinations (Prüfungsausschuss), Computational Engineering Science study program (Bachelor and Master), RWTH Aachen University (since 2007)

Board of Examinations, Master in Simulation Sciences non-consecutive study program, RWTH Aachen University and Forschungszentrum Jülich (since 2008)

Lichtenberg High Performance Computing Facility Advisory Board, Technical University of Darmstadt (2015–2021)

Proposal Referee:

European Research Council Starting, Consolidator, and Advanced Grant program; German Research Foundation; Alexander von Humboldt Foundation; German-Israeli Foundation for Scientific Research and Development; Volkswagen Stiftung; National Science Foundation; Japan Society for the Promotion of Science; US-Israel Binational Science Foundation; Petroleum Research Fund; Fonds Wetenschappelijk Onderzoek – Vlaanderen; French National Research Agency ANR; Polish National Centre for Research and Development NCBR; Hungarian National Research, Development, and Innovation Office NKFI; KAUST Competitive Research Grants

Professional Affiliations:

1995–present International Association of Computational Mechanics IACM

1995–present U.S. Association of Computational Mechanics USACM

2003–present German Association of Computational Mechanics GACM

2011–present Gesellschaft für Angewandte Mathematik und Mechanik GAMM

2000–2003 American Institute of Aeronautics and Astronautics

2001–2003 American Society of Engineering Education

Miscellaneous:

Accreditation coordinator for Simulation Sciences Master Study Program of RWTH Aachen University and Forschungszentrum Jülich (ASIIN accreditation issued in 2009 and reissued in 2015).

Speaker of the Profile Area *Modeling and Simulation Sciences* at RWTH Aachen.

Member of the Review Panel “DLR Institute on Applied Informatics in Dresden”, Helmholtz Association 2017 and 2019.

Member of the Selection Committee “REWIRE”, University of Vienna 2020.

Member of the Advisory Committee of the 7th International Conference on Computational and Mathematical Biomedical Engineering in Milan 2022.

Member of the Advisory Board the 15th World Congress on Computational Mechanics in Yokohama 2022.

**Doctoral
Advising**

Feby Abraham (Rice 2004), Dhruv Arora (Rice 2005), Mehdi Behbahani, Stefanie Elgeti, Marcus Hormes, Dimitrios Papadopoulos (2011), Mike Nicolai (2012), Gero Schieffer, Marcus Probst (2013), Bae-Hong Chen, Georg Wellmer (2014), Eva Schlauch (2015), Eric Borrmann, Lutz Pauli (2016), Norbert Hosters (2018), Manuel Brüderlin (2019), Lars Reimer (2020), Max von Danwitz, Violeta Karyofylli, Michel Make, Emre Öngüt, Loïc Wendling (2021), Patrick Antony, Tobias Bongartz, Nico Dirkes, Blanca Ferrer, Stefan Haßler, Anna Ranno, Max Schuster, Thomas Spenke, Veronika Travnikova, Stefan Wittschieber (current)

**Doctoral
Co-Advising**

Oscar Coronado (Rice 2008), Martin Krause (2010), Arianna Bosco, Kwok-Wah Chen, Tue Nguyen (2011), Safdar Abbas, Alaskar Alizada (2012), Henning Sauerland (2013), Malak Baydoun, Andreas Püttmann, Christian Windisch (2014), Sarah Frauholz (2015), Atanas Stavrev, Niko Weber (2016), Philipp Knechtges, Roland Siegbert (2018), Linda Gesenhues, Florian Zwicke (2020), Jan Helmig, Fabian Key, Ajay Rangarajan (2021), Markus Frings, Fabio Guglietta, Konstantin Key (2022), Sebastian Eusterholz, Felipe Gonzalez, Daniel Hilger, Sihyeong Lim, Jayghosh Rao, Eugen Salzmann, Daniel Wolff (current)