

Dan Negrut
Vilas Associate Professor
Department of Mechanical Engineering
Department of Electrical and Computer Engineering
University of Wisconsin - Madison

FORMAL EDUCATION:

Ph.D 1998 Mechanical Engineering, University of Iowa
M.S. 1992 Aeronautics, Polytechnic Institute of Bucharest, Romania

POSITIONS HELD:

2012 Director, Wisconsin Applied Computing Center, University of Wisconsin-Madison
2012 Affiliated Associate Professor, Department of Electrical and Computer Engineering, UW-Madison
2011 Associate Professor, Department of Mechanical Engineering, University of Wisconsin-Madison
2005 Assistant Professor, Department of Mechanical Engineering, University of Wisconsin-Madison
2004 Adjunct Assistant Professor, Department of Mathematics, University of Michigan
2004 Visiting Scientist, Division of Math. & Com. Science, Argonne National Lab ('04 – '05, '06, '10)
1998 Senior Product Development Engineer MSC Software, Ann Arbor, MI
1997 Research Assistant, National Advanced Driving Simulator, University of Iowa
1995 Teaching Assistant, Department of Mathematics, University of Iowa
1995 Software Engineer Intern, Computer Aided Design and Simulation Inc. Coralville, IA
1993 Research Assistant, Iowa Driving Simulator (IDS), University of Iowa (through 1997)
1993 Research Engineer Simulation and Training Systems (SIMULTEC), Bucharest, Romania

HONORS AND AWARDS:

Vilas Research Fellow at the University of Wisconsin-Madison, 2014-2016
2012 College of Eng. Harvey Spangler Award for Technology-Enhanced Instruction, UW-Madison
NVIDIA CUDA Fellow (since 2010)
Best Paper Award, 5th Asian Conference on Multibody Dynamics (ACMD2010)
NSF Career Award: 2009-2014
National Science Foundation Young Investigator CAREER Award (2009)
Professor of the Year, Phi Tau Sigma Mechanical Engineering Honor Society (2007)
Professional Engineering Publishing Award, *Journal of Multi-body Dynamics* (2003)

PROFESSIONAL MEMBERSHIPS:

American Society of Mechanical Engineers
American Society of Engineering Education
Society of Automotive Engineers
 Technical Leader, SAE "Software Reliability Subcommittee" (2006-2008)
 Member, SAE "Ground Vehicle Reliability Committee," since 2006
Vice-Chair, ASME Technical Committee on Multibody Systems and Nonlinear Dynamics
Phi Kappa Phi, Executive Board Member, University of Wisconsin Chapter

CONSULTING ACTIVITIES:

US Army Tank Automotive Research, Development and Engineering Center (TARDEC), (2009-2010).
Member of the University Advisory Board, MSC.Software, Santa Ana, CA (2009).
"Dynamic Simulation Laboratory," University of Illinois at Chicago (2008).

PUBLICATIONS

JOURNAL PUBLICATIONS:

1. "Parallel Computing in Multibody System Dynamics: Why, When and How," D. Negrut, R. Serban, H. Mazhar, T. Heyn, ASME Journal of Computational and Nonlinear Dynamics, in press, 2014
2. "A Matrix-Free Newton-Krylov Parallel Implicit Implementation of the Absolute Nodal Coordinate Formulation," D. Melanz, N. Khude, P. Jayakumar, D. Negrut, ASME Journal of Computational and Nonlinear Dynamics, doi:10.1115/1.4025281, 2013
3. "Using Krylov Subspace and Spectral Methods for Solving Complementarity Problems in Many-Body Contact Dynamics Simulation," T. Heyn, A. Tasora, M. Anitescu, D. Negrut, International Journal for Numerical Methods in Engineering, vol. 95(7), 541–561, 2013
4. "Investigating Through Simulation the Mobility of Light Tracked Vehicles Operating on Discrete Granular Terrain," D. Negrut, D. Melanz, H. Mazhar, D. Lamb, P. Jayakumar, and M. Letherwood, SAE Int. J. Passeng. Cars – Mech. Syst. 6:369-381; doi:10.4271/2013-01-1191, May 2013
5. "Chrono: A Parallel Multi-Physics Library for Rigid-Body, Flexible-Body, and Fluid Dynamics," H. Mazhar, T. Heyn, A. Pazouki, D. Melanz, A. Seidl, A. Bartholomew, A. Tasora, and D. Negrut, Mechanical Sciences, 4(1):49-64., 2013
6. "On the Parallel Simulation of Large Flexible Body Systems with Multiple Contacts," N. Khude, D. Melanz, I. Stanciulescu, D. Negrut, ASME Journal of Computational and Nonlinear Dynamics, doi:10.1115/1.4023915, 2013
7. "A Compliant Visco-Plastic Particle Contact Model based on Differential Variational Inequalities," A. Tasora, M. Anitescu, S. Negri, D. Negrut, 53:2-12, International Journal of Nonlinear Mechanics, 2013
8. "A Physics-Based Vehicle/Terrain Interaction Model for Soft Soil Off-Road Vehicle Simulations," J. Madsen, D. Negrut, A. Reid, A. Seidl, P. Ayers, G. Bozdech, J. Freeman, J. O’Kins, SAE International Journal of Commercial Vehicles, doi:10.4271/2012-01-0767, 2012
9. "Parallel collision detection of ellipsoids with applications in large scale multibody dynamics," A. Pazouki, H. Mazhar, D. Negrut, *Mathematics and Computers in Simulation*, vol. 82, pp. 879-894, 2012.
10. "Parallel Contact Detection between Ellipsoids with Applications in Granular Dynamics," A. Pazouki, H. Mazhar, D. Negrut, *Mathematics and Computers* Volume 82, Issue 5, pp. 879–894, 2012.
11. "On the Parallel Simulation of Large Flexible Body Systems with Multiple Contacts," N. Khude, D. Melanz, I. Stanciulescu, D. Negrut, ASME Journal of Computational and Nonlinear Dynamics, submitted, 2012
12. "A Co-Simulation Environment for High-Fidelity Virtual Prototyping of Vehicle Systems," M. Datar, I. Stanciulescu, D. Negrut, International Journal of Vehicle Systems Modelling and Testing 2012 - Vol. 7, No.1 pp. 54 - 72
13. "An Expedient High Fidelity ABAQUS-Based Surrogate Tire Model for Full Vehicle Durability Analysis in ADAMS," H. Ardeh, M. Datar, K. Jagadeesan, D. Negrut, SAE International Journal of Materials and Manufacturing, DOI: 10.4271/2011-01-0187, 2011
14. "Reliability Prediction for the HMMWV Suspension System," D. Ghiocel, D. Negrut, D. Lamb, D. Gorsich, SAE International Journal of Materials and Manufacturing, DOI: 10.4271/2011-01-0726, 2011
15. "Instantaneous Center Manifolds: An Approach for Approximating the Dynamics of Nonlinear Systems," Hamid A. Ardeh, D. Negrut, submitted, ASME Journal of Computational and Nonlinear Dynamics, 2011
16. "Leveraging Parallel Computing in Multibody Dynamics," D. Negrut, A. Tasora, H. Mazhar, T. Heyn, P. Hahn, *Multibody System Dynamics*, DOI: 10.1007/s11044-011-9262-y, 2012.
17. "GPU-based Parallel Computing for the Simulation of Complex Multibody Systems with Unilateral and Bilateral Constraints: An Overview," A. Tasora, D. Negrut, and M. Anitescu, in *Multibody Dynamics: Computational Methods and Applications*, Blajer W., et al., Editors, Springer: Berlin, pp. 283-327, 2011.
18. "A Scalable Parallel Method for Large Scale Collision Detection Problems," H. Mazhar, T. Heyn, D. Negrut, *Multibody Systems Dynamics*, Volume: 26, Issue: 1, Pages: 37-55.
19. "Solving Large Multi-Body Dynamics Problems on the GPU," D. Negrut, A. Tasora, M. Anitescu, H. Mazhar, T. Heyn, and A. Pazouki, 2011, book chapter in *GPU Gems 4*, W. Hwu, Editor, Addison Wesley.
20. "Construction and Use of Surrogate Models for the Dynamic Analysis of Multibody Systems," H. Ansari, M. Tupy, M. Datar, D. Negrut, SAE International Journal of Passenger Cars-Mechanical Systems, 2010, Vol. 3(1), pp. 8-20
21. "A Quantitative Assessment of the Potential of Implicit Integration Methods for Molecular Dynamics Simulation," N. Schafer and D. Negrut, ASME Journal of Computational and Nonlinear Dynamics, 2010. 5(3): p. 031012.
22. "A framework for terrain-induced uncertainty quantification in vehicle dynamics simulation", M. Datar, D.

- Gorsich, D. Lamb, and D. Negrut, *International Journal of Vehicle Systems Modeling and Testing*. 2009, Vol. 4, pp. 234-255.
23. "A discussion of low order numerical integration formulas for rigid and flexible Multibody Dynamics", D. Negrut, L. O. Jay, N. Khude, *ASME Journal of Computational and Nonlinear Dynamics*, 2009. 4(2).
 24. "On the regularity of reduced models obtained by quasicontinuum-like approaches," M. Anitescu, D. Negrut, P. Zapol, A. El-Azab, *Mathematical Programming*, 2009, Vol. 118(2), pp. 207-236.
 25. "A Parallel Algorithm for Solving Complex Multibody Problems with Stream Processors," A. Tasora, D. Negrut, *International Journal for Computational Vision and Biomechanics*, 2009. 1(2): p. 131-143.
 26. "Efficient sampling of dynamical systems with spatial uncertainty," K. Schmitt, M. Anitescu, D. Negrut, *International Journal for Numerical Methods in Engineering*, 2009, Vol. 80, Issue 4, pp. 537-564
 27. "Large-scale parallel multi-body dynamics with frictional contact on the graphical processing unit," A. Tasora, D. Negrut, M. Anitescu, *Proc. IMechE, Part K: J. Multi-body Dynamics*, 2008, 222 (K4), 315-326
 28. "A second order extension of the generalized-alpha method for constrained systems in mechanics," L. O. Jay, D. Negrut, in Springer-Verlag's "Computational Methods in Applied Sciences" series, C. Bottasso editor, 2008, 143-158
 29. "Implicit and Explicit Integration in the Solution of the Absolute Nodal Coordinate Differential/Algebraic Equations", B. Hussein, D. Negrut, A. Shabana, *Nonlinear Dynamics*, 2008, 54: 283-296
 30. "Quasicontinuum-like reduction of DFT calculations of nanostructures", D. Negrut, M. Anitescu, A. El-Azab, P. Zapol, *Journal for Nanoscience and Nanotechnology*, 2008, Vol. 8(7), pp. 3729-3740(12).
 31. "Extensions of the HHT-method to differential-algebraic equations in mechanics", L. O. Jay, D. Negrut, *Electronic Transactions on Numerical Analysis*, Vol. 26, pp. 190-208, 2007.
 32. "On an Implementation of the HHT Method in the Context of Index 3 Differential Algebraic Equations of Multibody Dynamics," D. Negrut, R. Rampalli, G. Ottarsson, and A. Sajdak, *ASME Journal of Computational and Nonlinear Dynamics*, Vol. 2, No. 1, pp.73-85, 2007.
 33. "Exact Linearization of Multibody Systems Using User-defined Coordinates", J. Ortiz, Dan Negrut, *SAE 2006 Transactions Journal of Passenger Cars: Mechanical Systems 2006*, pp. 501-510
 34. "A Practical Approach for the Linearization of the Constrained Multibody Dynamics Equations," D. Negrut, and J. Ortiz, *ASME Journal of Computational and Nonlinear Dynamics*, Vol.1, Issue 3, 2006.
 35. "A Rosenbrock-Nystrom State Space Implicit Approach for the Dynamic Analysis of Mechanical Systems: I – Theoretical Formulation," A. Sandu, D. Negrut, E. Haug, F. Potra and C. Sandu, *Journal of Multi-body Dynamics*, Vol. 217, No. 4, pp. 263-271(9), 2003.
 36. "A Rosenbrock-Nystrom State Space Implicit Approach for the Dynamic Analysis of Mechanical Systems: II – The Method and Numerical Examples," D. Negrut, A. Sandu, E. Haug, F. Potra and C. Sandu, *Journal of Multi-body Dynamics*, Vol. 217, No. 4, pp. 273-281(9), 2003.
 37. "Linear algebra considerations for the multi-threaded simulation of mechanical systems," D. Negrut, *Multibody System Dynamics*, Vol. 10, No. 1, pp.61-80, 2003.
 38. "An Implicit Runge-Kutta Method for the Integration of Differential-Algebraic Equations of Multibody Dynamics," D. Negrut, E.J. Haug and H.C. German, *Multibody System Dynamics*, Vol. 9, No.2, pp.121-142, 2003.
 39. "Numerical Methods for High-Speed Vehicle Dynamic Simulation," E. J. Haug, D. Negrut, R. Serban and D. Solis, *Mechanics of Structures and Machines*, Vol. 27(4), 1999.
 40. "Implicit Runge-Kutta Integration of the Equations of Multibody Dynamics in Descriptor Form," E. Haug, D. Negrut and C. Engstler, *Mechanics of Structures and Machines*, Vol. 27(3), 1999.
 41. "A State-Space Based Implicit Integration Algorithm for Differential-Algebraic Equations of Multibody Dynamics," E. Haug, D. Negrut and M. Iancu, *Mechanics of Structures and Machines*, Vol. 25(3), 1997.
 42. "A Topology Based Approach for Exploiting Sparsity in Multibody Dynamics in Cartesian Formulation," R. Serban, D. Negrut, F.A. Potra, and E.J. Haug, *Mechanics of Structures and Machines*, Vol. 25(3), 1997.
 43. "A Topology Based Approach for Exploiting Sparsity in Multibody Dynamics. Joint Formulation," D. Negrut, R. Serban, and F.A. Potra, *Mechanics of Structures and Machines*, Vol. 25(2), 1997.

REVIEWED CONFERENCE PROCEEDINGS:

1. "Compaction-Based Deformable Terrain Model as an Interface for Real-Time Vehicle Dynamics Simulations 13M-0241," J. Madsen, A. Seidl, D. Negrut, 2013, SAE World Congress April 2013, Detroit, MI
2. "Chrono::Terrain - Off-Road Vehicle Dynamics Simulation with a Compaction Based Deformable Terrain Model," J. Madsen, A. Seidl, D. Negrut, ECCOMAS Thematic Conference on Multibody Dynamics, Croatia, July 1-4, 2013, Zagreb, Croatia
3. "A Differential Variational Inequality Approach for Modeling Frictional Contact-Impact between Flexible Bodies,"

- N. Khude, D. Negrut, ECCOMAS Thematic Conference on Multibody Dynamics, July 1-4, 2013, Zagreb, Croatia
4. "Chrono: A Parallel Multi-Physics Library for Rigid-Body, Flexible-Body, and Fluid Dynamics," T. Heyn, H. Mazhar, A. Pazouki, D. Melanz, A. Seidl, A. Bartholomew, L. Fang, A. Tasora, E. Sifakis, D. Negrut, ECCOMAS Thematic Conference on Multibody Dynamics, July 1-4, 2013, Zagreb, Croatia
 5. "A Lagrangian-Lagrangian framework for the simulation of fluid/rigid-body interaction," A. Pazouki, D. Negrut, ECCOMAS Thematic Conference on Multibody Dynamics, July 1-4, 2013, Zagreb, Croatia
 6. "Off-Road Vehicle Dynamics Mobility Simulation with a Compaction Based Deformable Terrain Model, DETC2013-13152," J. Madsen, D. Negrut, A. Seidl, 9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC) at the ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, 2013, Portland, OR
 7. "On Some Properties of the Mechanical Topology that Affect Parallel Solvers, DETC2013-13201," A. Tasora, D. Negrut, 9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC) at the ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, 2013, Portland, OR
 8. "Chrono: A Parallel Physics Library for Rigid-Body, Flexible-Body, and Fluid Dynamics, DETC2013-13239," T. Heyn, H. Mazhar, A. Pazouki, D. Melanz, A. Seidl, J. Madsen, A. Bartholomew, D. Lamb, A. Tasora, D. Negrut, 9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC) at the ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, 2013, Portland, OR
 9. "GPU-Based Algorithm for Fast Computation of Cartilage Contact Patterns During Simulations of Movement," K. W. Choi, D. Negrut, D. G. Thelen, ASME 2013 Summer Bioengineering Conference, June 26-29 2013, Sunriver, OR
 10. "On the Numerical Solution of Many-Body Contact Dynamics Problems Formulated as Complementarity Problems," T. Heyn, D. Negrut, M. Anitescu, A. Tasora, D. Lamb, ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 12-15 2012, Chicago, IL
 11. "Granular Dynamics Simulation on Multiple GPUs Using Domain Decomposition," H. Mazhar, A. Seidl, R. Shotwell, M. Quadrelli, A. Jain, D. Negrut, ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 12-15 2012, Chicago, IL
 12. "A GPU Parallelization of the Absolute Nodal Coordinate Formulation for Applications in Flexible Multibody Dynamics," D. Melanz, N. Khude, P. Jayakumar, M. Letherwood, D. Negrut, ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC), August 12-15 2012, Chicago, IL
 13. "A High-Performance Computing approach to the Simulation of Dense Particulate Flow Using Smoothed Particle Hydrodynamics and Discrete Element Method," A. Pazouki and D. Negrut, Proceedings of the 6th Asian Conference on Multibody Dynamics, August 2012, Shanghai, China.
 14. "Direct Simulation of Lateral Migration of Buoyant Particles in Channel Flow Using GPU Computing," A. Pazouki and D. Negrut, Proceedings of the 32nd Computers and Information in Engineering Conference, ASME-IDETC, August 2012, Chicago, Illinois.
 15. "Modeling and Simulation of Anchoring Processes for Small Body Exploration," M. Quadrelli, H. Mazhar, D. Negrut, AIAA SPACE 2012 Conference & Exposition, September 11 - 13 2012, Pasadena, CA
 16. "A Physics-Based Terrain Model for Off-Road Vehicle Simulations," J. Madsen, A. Seidl, P. Ayers, G. Bozdech, D. Negrut, A. Reid, J. O'Kins. ASME IDETC, Aug. 13-15 2012, Chicago, IL.
 17. "Investigating the Mobility of Light Autonomous Tracked Vehicles Using a High Performance Computing Simulation Capability," D. Negrut, H. Mazhar, D. Melanz, D. Lamb, P. Jayakumar, M. Letherwood, A. Jain, M. Quadrelli, Ground Vehicle Systems Engineering and Technology Symposium (GVSETS), August 14-16 2012, Troy, MI
 18. "Efficient Modeling of Frictional Contacts with Absolute Nodal Coordinate Formulation and the Parallel GPU Implementation for Simulation of Large Systems with Flexible Bodies," N. Khude, D. Melanz, J. Madsen, D. Negrut, Second Joint International Conference on Multibody System Dynamics, Stuttgart, Germany, May 2012
 19. "Enabling Computational Dynamics in Distributed Computing Environments Using a Heterogeneous Computing Template," H. Mazhar, T. Heyn, A. Seidl, S. O'Rourke, A. Tasora, D. Negrut, Second Joint International Conference on Multibody System Dynamics, Stuttgart, Germany, May 2012
 20. "A Compliant Contact Model Based on Differential Variational Inequalities," A. Tasora, D. Negrut, S. Negrini, Second Joint International Conference on Multibody System Dynamics, Stuttgart, Germany, May 2012
 21. "On the Numerical Solution of Many-Body Dynamics Problems Formulated as Complementarity Problems," T. Heyn, M. Anitescu, A. Tasora, D. Negrut, Second Joint International Conference on Multibody System Dynamics,

- Stuttgart, Germany, May 2012
22. "Using a Granular Dynamics Code to Investigate the Performance of a Helical Anchoring System Design," H. Mazhar, M. Quadrelli, T. Heyn, J. Madsen, D. Negrut, The 13th Biennial ASCE Aerospace Division International Conference - Engineering, Construction and Operations in Challenging Environments (EARTH & SPACE 2012), April 2012, Pasadena, CA
 23. "Enabling Computational Dynamics in Distributed Computing Environments Using a Heterogeneous Computing Template," D. Negrut, Heyn, T., A. Seidl, D. Melanz, D. Gorsich, D. Lamb. NDIA Ground Vehicle Systems Engineering and Technology Symposium, August 2011: Dearborn, MI.
 24. "On a Methodology to Handle Contact between Flexible Bodies and the Use of Parallel GPU Computing for the Simulation of Large Flexible Body Systems," N. Khude, D. Melanz, I. Stanciulescu, and D. Negrut. ASME 2011 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 2011: Washington, DC.
 25. "Enabling Computational Dynamics in Distributed Computing Environments using a Heterogeneous Computing Template," Heyn, T., A. Seidl, H. Mazhar, D. Lamb, A. Tasora, and D. Negrut. ASME 2011 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 2011: Washington, DC.
 26. "A Parallel GPU Implementation of the Absolute Nodal Coordinate Formulation with a Frictional/Contact Model for the Simulation of Large Flexible Body Systems," Khude, N., D. Melanz, I. Stanciulescu, and D. Negrut. ECCOMAS Multibody Dynamics Thematic Conference. July 2011: Brussels, Belgium.
 27. "Enabling Computational Dynamics in Distributed Computing Environments using a Heterogeneous Computing Template," Heyn, T., A. Seidl, H. Mazhar, M. Tupy, A. Tasora, and D. Negrut. ECCOMAS Multibody Dynamics Thematic Conference. July 2011: Brussels, Belgium.
 28. "Constructing an Expeditious High Fidelity ABAQUS-Based Surrogate Tire Model for Full Vehicle Durability Analysis in ADAMS Using the Instantaneous Center Manifold Theory," H. A. Ardeh, M. Datar, M. Kangayamjaga, D. Negrut. ECCOMAS Multibody Dynamics Thematic Conference. July 2011: Brussels, Belgium.
 29. "A high-performance computing framework for physics-based modeling and simulation of the mobility of military ground vehicles," D. Negrut, D. Lamb, D. Gorsich, Modeling and Simulation for Defense Systems and Applications, SPIE Conference, Orlando FL, 2011
 30. "Advanced Reliability Prediction for HMMWV Suspension System," Paper 11IDM-0093/2011-01-0726, D. Ghiocel, D. Negrut, D. Lamb, D. Gorsich, SAE 2011 World Congress and Exhibition Detroit, MI, 2011
 31. "An Expeditious High Fidelity ABAQUS-Based Surrogate Tire Model for Full Vehicle Durability Analysis in ADAMS," Paper 11M-0060/2011-01-0187, H. A. Ardeh, M. Datar, M. Kumar, Dan Negrut, SAE 2011 World Congress and Exhibition Detroit, MI, 2011
 32. "Large Scale Computational Dynamics on Next Generation Heterogeneous Clusters using DDEP," A. Seidl, H. Mazhar, T. Heyn, D. Negrut, SIAM Conference on Computational Science and Engineering, Reno, NV, 2011.
 33. "Million Body Simulations of Granular Dynamics on the GPU," H. Mazhar, T. Heyn, A. Tasora, M. Anitescu, D. Negrut, SIAM Conference on Computational Science and Engineering, Reno, NV, 2011.
 34. "A Scalable Parallel Method for Large Scale Collision Detection Problems," D. Negrut, H. Mazhar, T. Heyn, 14th SIAM Conference on Parallel Processing for Scientific Computing, Seattle, WA, 2010.
 35. "Enabling Heterogeneous High-Performance Computing for Addressing Modeling, Simulation and Visualization Needs in Large Scale Computational Dynamics," D. Negrut, D. Lamb, D. Gorsich, 27th Army Science Conference, Orlando, FL, 2010.
 36. "Application of an Integrated HPC Reliability Prediction Framework to HMMWV Suspension System," Lamb, D., D. Gorsich, D. Ghiocel, D. Negrut, in 27th Army Science Conference, Orlando, FL, 2010.
 37. "Simulation of Massive Multibody Systems using GPU Parallel Computation," A. Tasora, D. Negrut, M. Anitescu, H. Mazhar, T. Heyn, Proceedings of the 18th International Conf. in Central Europe on Computer Graphics, Visualization and Computer Vision, Plzen, Czech Republic, 2010.
 38. "Parallel Ellipsoid Collision Detection with Application in Contact Dynamics DETC2010-29073," A. Pazouki, H. Mazhar, D. Negrut, ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), Montreal, Canada, 2010.
 39. "On the Validation of a Differential Variational Inequality Approach for the Dynamics of Granular Material DETC2010-28804," D. Melanz, M. Tupy, B. Smith, K. Turner, D. Negrut, ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), Montreal, Canada, 2010.
 40. "Advances in High Performance Computing for Physical Simulations," A. Tasora, D. Negrut, 1st Joint International Conference on Multibody System Dynamics, Lappeenranta, Finland, 2010.
 41. "On the use of Smoothed Particle Hydrodynamics (SPH) in Acoustic simulations," P. Hahn, D. Negrut," 1st Joint

- International Conference on Multibody System Dynamics, Lappeenranta, Finland, 2010.
42. "Efficient Sampling Methods for Spatial Uncertainty in Multibody Dynamics Applications," K. Schmitt, M. Anitescu, D. Negrut, 1st Joint International Conference on Multibody System Dynamics, Lappeenranta, Finland, 2010.
 43. "A Scalable Parallel Method for Large Scale Collision Detection Problems," H. Mazhar, D. Negrut, A. Pazouki, A. Tasora, 5th Asian Conference on Multibody Dynamics (ACMD2010), Kyoto, Japan, 2010.
 44. "Tracked Vehicle Simulation on Granular Terrain Leveraging Parallel Computing on GPUs," T. Heyn, D. Negrut, and A. Tasora, 5th Asian Conference on Multibody Dynamics (ACMD2010), Kyoto, Japan, 2010. [BEST PAPER AWARD]
 45. "GPU-based High Performance Parallel Simulation of Tracked Vehicle Operating on Granular Terrain," J. Madsen, T. Heyn, D. Negrut, D. Lamb, SAE 2010 World Congress and Exhibition Detroit, MI, 2010.
 46. "A Stochastic Approach to Integrated Vehicle Reliability Prediction DETC2009-87487," J. Madsen, D. Ghiocel, D. Gorsich, D. Lamb, D. Negrut, ASME IDETC Conference, San Diego, CA, 2009.
 47. "A Parallel Algorithm for Solving Complex Multibody Problems with Stream Processors," T. Heyn, A. Tasora, M. Anitescu, H. Mazhar, D. Negrut, ASME IDETC Conference, San Diego, CA, 2009.
 48. "On the Construction and Use of Surrogate Models for the Dynamic Analysis of Multibody Systems," H. Ansari Ardeh, M. Tupy, D. Negrut, ASME International Mechanical Engineering Congress & Exposition, Orlando, FL, 2009.
 49. "On the Use of Meshless Methods in Acoustic Simulations," P. Hahn, D. Negrut, ASME International Mechanical Engineering Congress & Exposition IMECE2009, Orlando, FL, 2009.
 50. "A Framework For Quantifying Uncertainty In Nonlinear Multibody Dynamics," M. Datar, D. Gorsich, D. Lamb, D. Negrut, 7th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC), San Diego, CA, 2009.
 51. "A Parallel Algorithm for Solving Complex Multibody Problems with Stream Processors," T. Heyn, H. Mazhar, A. Tasora, M. Anitescu, D. Negrut, in ECCOMAS Multibody Dynamics Conference, J. Frączek, Editor, Warsaw, Poland, 2009.
 52. "Reduction of Electronic Structure Problems of Density Functional Theory," J. Murray, D. Negrut, M. Anitescu, A. El-Azab, 10th US National Congress on Computational Mechanics, Columbus, OH, 2009.
 53. "GPU-Based Parallel Collision Detection for Granular Flow Dynamics," H. Mazhar, T. Heyn, A. Tasora, D. Negrut, in ECCOMAS Multibody Dynamics Conference, J. Frączek, Editor, Warsaw, Poland, 2009.
 54. "A Stochastic Approach to Integrated Vehicle Reliability Prediction," J. Madsen, D. Ghiocel, D. Gorsich, D. Lamb, D. Negrut, ASME IDETC Conference, San Diego, CA, 2009.
 55. "A Framework For Quantifying Uncertainty In Nonlinear Multibody Dynamics," D. Negrut, D. Gorsich, D. Lamb, M. Datar, Army Science Conference, Orlando, FL, 2008.
 56. "A Gaussian Process Based Approach for Handling Uncertainty in Vehicle Dynamics Simulations – IMECE2008-66664," K. Schmitt, J. Madsen, M. Anitescu, D. Negrut, ASME International Mechanical Engineering Congress & Exposition, Boston, MA, 2008.
 57. "A GPU-Based Implementation of a Cone Convex Complementarity Approach for Simulating Rigid Body Dynamics with Frictional Contact IMECE2008-66766," A. Tasora, D. Negrut, M. Anitescu, Proceedings of IMECE2008 ASME International Mechanical Engineering Congress and Exposition, Boston, MA, 2008.
 58. "Building Gaussian Process Based Metamodels Using Variable-fidelity Experiments for Dynamic Analysis of Mechanical Systems," D. Negrut, Z. G. Qian, N. Khude, ASME International Mechanical Engineering Congress and Exposition, Seattle, WA, 2007.
 59. "Co-simulation Environment for Vehicle-Powertrain-Tire On/Off Road Analysis," I. Stanciulescu, M. Datar, D. Negrut, ISTVS Conference and Annual Meeting of Japanese Society for Terramechanics, Fairbanks, Alaska, 2007.
 60. "A Comparison of Low Order Numerical Integration Formulas for Time Domain Analysis of Mechanical Systems," D. Negrut, L. O. Jay, N. Khude, T. Heyn, ECCOMAS Conference, Milan, Italy, 2007.
 61. "A Co-simulation Environment for Virtual Prototyping of Ground Vehicles," A. Dyer, S. Pagerit, M. Datar, D. Mehr, D. Negrut, SAE Commercial Vehicle Engineering Congress & Exhibition, Rosemont, IL, 2007.
 62. "An Investigation on New Numerical Methods for Molecular Dynamics Simulation," N. Schafer, R. Serban, D. Negrut, ASME International Design Engineering Technical Conferences, Las Vegas, NV, 2007.
 63. "On the Dimensional Reduction of the Structure Problem of Nanoscale Materials," D. Negrut, S. Rokkam, M. Anitescu, P. Zapol, A. El-Azab, Materials Research Society Fall Meeting, Boston, MA, 2006.
 64. "Accurate Input/Output Equations of Linearized Multibody Systems," J. Ortiz, D. Negrut, 3rd Asian Conference on Multibody Dynamics, Tokyo, Japan, 2006.
 65. "A Real-Space Parallel Optimization Model Reduction Approach for Electronic Structure Computation in Large Nanostructures Using Orbital-Free Density Functional Theory," D. Negrut, M. Anitescu, A. El-Azab, S. Benson, P.

- Zapol, ASME International Mechanical Engineering Congress and Exposition (IMECE 2006), Chicago, IL, 2006.
66. "Improved Simulation of Models with Complex User-subroutines in MSC.ADAMS," D. Negrut, G. Ottarsson, M. Belczynski, C. Corcoran, SAE Technical Paper 2006-01-0158, SAE International Congress & Exposition, Detroit, MI, 2006.
 67. "Exact Linearization of Multibody Systems using User-defined Coordinates," J. Ortiz, D. Negrut, SAE Technical Paper 2006-01-0587, SAE International Congress & Exposition, Detroit, MI, 2006.

SELECTED INVITED PRESENTATIONS AND TALKS

ACADEMIA

1. "A parallel multi-physics library for rigid-body, flexible-body, and fluid dynamics," 2014 Rice Oil & Gas High Performance Computing Workshop, Rice University, Houston, TX, March 2014
2. "High Performance Computing in Multibody Dynamics," BIRS Workshop on Computational Contact Mechanics: Advances and Frontiers in Modeling Contact, Banff International Research Station, Canada, February 2013
3. "On Fast Computers and Their Use in Mechanical Engineering," Wisconsin Institute for Discovery - Doing Optimization at Wisconsin (WID-DOW) seminar series, University of Wisconsin-Madison, WI, January 27, 2014
4. "High Performance Computing in Multibody Dynamics Simulation," University of Iowa, Iowa City, December 5, 2013
5. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," Politecnico di Milano, Milano, Italy, November 18, 2013
6. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," Munich Technical University, Munich, Germany, November 14, 2013
7. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," Darmstadt University, Darmstadt, Germany, November 13, 2013
8. "On Fast Computers and Their Use in Mechanical Engineering," University of Wisconsin-Madison "Wednesday Nite @ the Lab" series and Wisconsin Public Television, October 9, 2013
9. "Applications of Computational Dynamics," Department of Mechanical Engineering, Lindbergh Series Seminar, w/ Francisco Mercado, University of Wisconsin-Madison, September 12, 2013
10. "GPU Computing Primer," Department of Economics, University of Wisconsin-Madison, w/ Andrew Seidl, September 13, 2013
11. "A Discussion of Numerical Methods for Fast Simulation of Many-Body Dynamics Problems with Frictional Contact," 2013 Workshop on Multibody System Dynamics, University of Illinois at Chicago, IL, August 10, 2013
12. "Using Advanced Computing in Applied Dynamics: from the Dynamics of Granular Material to the Motion of the Mars Rover," University of California at Santa Barbara, CA, August 27, 2013
13. "From the Dynamics of Sand to the Dynamics of Robots: Using Advanced Computing in Virtual Prototyping for Better Engineering Designs," Department of Mechanical Engineering, University of Michigan, April 16, 2013
14. "Using Advanced Computing in Applied Dynamics: From the Dynamics of Granular Material to the Motion of the Mars Rover," Department of Mathematics Colloquium, University of Wisconsin-Madison, March 8, 2013
15. "Using Advanced Computing in Applied Dynamics: From the Dynamics of Granular Material to the Motion of the Mars Rover," Department of Mechanical Engineering, Lindbergh Series Seminar, University of Wisconsin-Madison, February 28, 2013
16. "From the Dynamics of Sand to the Dynamics of Robots: Using Advanced Computing in Virtual Prototyping for Better Engineering Designs," Biomedical Engineering Seminar Series, University of Wisconsin-Madison, January 28, 2013
17. "From the Dynamics of Sand to the Dynamics of Tanks: Using High Performance Computing to Advance the Pace of Innovation and Improve Designs in Mechanical Engineering," Mechanical Engineering and Applied Mechanics Seminar Series Fall 2012, University of Pennsylvania, Philadelphia, October 16, 2012
18. "Using Parallel Computing in Multibody Dynamics Simulation," Department of Aeronautics, Politecnico di Milano, Italy, May 28, 2012
19. "From the Dynamics of Sand to the Dynamics of Tanks: Using High Performance Computing to Advance the Pace of Innovation and Improve Designs in Mechanical Engineering," Texas Tech University, April 2, 2012

20. "From the Dynamics of Sand to the Dynamics of Tanks: Using High Performance Computing to Advance the Pace of Innovation and Improve Designs in Mechanical Engineering," Lindbergh Series Seminar, University of Wisconsin-Madison, March 29, 2012
21. "From the Dynamics of Sand to the Dynamics of Tanks: Using High Performance Computing to Advance the Pace of Innovation and Improve Designs in Mechanical Engineering," Jiao Tong University, Shanghai, China, December 9, 2011
22. "High Performance Computational Dynamics at UW-Madison," talk in the Wisconsin Institute for Discovery - Doing Optimization at Wisconsin (WID-DOW) seminar series, University of Wisconsin-Madison, WI, October 2011
23. "HCT: A Heterogeneous Computing Template for dynamical system simulation in Engineering," workshop Integration of Mathematical and Biological Sciences – MathBio3: Modeling, University of Wisconsin-Madison, September 30 2011
24. "Enabling High Performance Computational Dynamics in a Heterogeneous Hardware Ecosystem," talk in at the Polytechnic University of Bucharest and University of Petrosani, Romania, June 2011
25. "Large Scale Frictional Contact Dynamics on the GPU," Institute for Mathematics and Its Applications, Workshop on "High Performance Computing and Emerging Architectures," Minneapolis, January 2011
26. "Overview of High Performance Computing Activities in the Simulation Based Engineering Lab and Possible Strategic Directions in Relation to the High Performance Computing Agenda at the University of Wisconsin-Madison." Talk given at the "Research Computing at UW-Madison – One-Day Brainstorm" event, January 2011
27. "Parallel Computational Multibody Dynamics," talk in the Department of Chemical and Biological Engineering, University of Wisconsin-Madison, December 2010
28. "On an Approach for the Parallel Solution of Large Frictional Contact Problems," talk in the Department of Electrical Engineering, Babes-Bolyai University, Cluj, Romania, July, 2010
29. "On an Approach for the Parallel Solution of Large Frictional Contact Problems," talk at the NIH Center of Biomedical Computation, Stanford University, May 2010
30. "Multibody Dynamics on the GPU," talk in the Department of Medical Physics, University of Wisconsin – Madison, February 2010
31. "Multibody Dynamics on the GPU," talk in the BME Department, University of Wisconsin – Madison, March 2010
32. "Large Scale Granular Dynamics Simulation with Applications in Ground Vehicle Mobility," talk in the Department of Civil and Environmental Engineering, Rice University, Houston, TX, November 2009
33. "Large Scale Granular Dynamics Simulation with Applications in Ground Vehicle Mobility," talk in the Department of Aeronautics, Politecnico di Milano, Italy, November 2009
34. "An Overview of Research Projects in the Simulation-Based Engineering Lab at the University of Wisconsin-Madison," talk in the Department of Aeronautics, Politecnico di Milano, Italy, November 2009
35. "Large Scale Granular Dynamics Simulation with Applications in Ground Vehicle Mobility," talk in the Department of Industrial Engineering, University of Parma, Italy, November 2009
36. "GPU Computing in Multibody Dynamics Simulation," talk in the Dynamics Simulation Laboratory at the University of Illinois at Chicago, October 2009
37. "GPU Computing in Multibody Dynamics Simulation," seminar for UW-Madison Tau Sigma Pi Student Organization, April 2009
38. "Democratization of HPC: An Overview of GPU Computing," seminar hosted by "Hacker Within," a group of computer enthusiasts from the College of Engineering at University of Wisconsin-Madison, September 2009
39. "An Overview of the Research in the Simulation-Based Engineering Lab," talk in the Department of Electrical Engineering, Babes-Bolyai Technical University, Cluj, Romania, July 2008
40. "Multibody Dynamics Analysis for Improved Engineering Design through Virtual Prototyping," Graduate Student seminar, Dept. of Mechanical Engineering, University of Iowa, November 2007
41. "A Reconstruction Approach to Electronic Structure Computation," Department of Mechanical, Aerospace & Nuclear Engineering at the Rensselaer Polytechnic Institute, November 2006
42. "Computational Science in Engineering," seminar for University of Wisconsin-Madison Pi Tau Sigma Student Organization, April 2006

43. "A Reconstruction Approach to Electronic Structure Computation," City University of New York, November 2006
44. "Extensions of the HHT-Method to Differential-Algebraic Equations in Mechanics," University of Illinois at Chicago, August 2006
45. "A Reconstruction Approach to Electronic Structure Computation," Materials Science Program Lecture Series, University of Wisconsin-Madison, October 2006

NATIONAL RESEARCH LABS AND US ARMY RESEARCH LABS

1. "On the Use of Advanced Computing in Multibody Dynamics," U. S. Army Tank Automotive Research, Development, and Engineering Center, Warren, MI, January 2014
2. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," Fraunhofer Institute for Industrial Mathematics ITWM, Kaiserslautern, Germany, November 13, 2013
3. "Using Advanced Computing in Applied Dynamics: from the Dynamics of Granular Material to the Motion of the Mars Rover," US Naval Facilities Engineering Command, Port Hueneme, CA, August 26, 2013
4. "Using Advanced Computing in Multibody Dynamics," U. S. Army Tank Automotive Research, Development, and Engineering Center, Warren, MI, April, 2013
5. "Chrono: a Modeling, Simulation, and Visualization Environment for Applications in Mechanical Engineering," U. S. Army Tank Automotive Research, Development, and Engineering Center, Warren, MI, November 2012
6. "Using High Performance Computing in Computational Dynamics," U. S. Army Tank Automotive Research, Development, and Engineering Center, Warren, MI, January 2012
7. "A Heterogeneous Computing Template for Distributed Parallel Computing," Chinese Academy of Science, Beijing, December 13, 2011
8. "Using HPC for Granular Dynamics Simulation," Jet Propulsion Laboratory, Pasadena, CA, November 15, 2011
9. "A Heterogeneous Computing Template for Distributed Parallel Computing," Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, September 2010
10. "A Heterogeneous Computing Template for Distributed Parallel Computing," Jet Propulsion Laboratory, Pasadena, CA, September 2010
11. "Scalable Parallel Simulation of Granular Dynamics on the GPU," NASA-Glenn Research Center, Cleveland, OH, January 2010
12. "Scalable Parallel Simulation of Granular Dynamics on the GPU," Jet Propulsion Laboratory, Pasadena, CA, September 2009
13. "Tracked Vehicle Simulation on Deformable Terrain," U. S. Army Tank Automotive Research, Development, and Engineering Center, Warren, MI, December 2009
14. "Solving Large Scale Cone Complementarity Problems on the GPU," Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, August 2009
15. "An Overview of Several Computational Multi-Body Dynamics Related Projects at the Simulation-Based Engineering Lab," U. S. Army Material Systems Analysis Activity, Aberdeen, MD, March 2009
16. "An Overview of Computational Science Projects at the Simulation-Based Engineering Lab," U. S. Army Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, July 2008
17. "Computational Dynamics for Virtual Prototyping: Using Computers to Understand the Dynamics of Complex Systems," Army Research Laboratory, Aberdeen, MD, April 2008
18. "Fast Frictional Contact Dynamics Analysis on the GPU," Jet Propulsion Laboratory (JPL), Pasadena, CA, April 2008
19. "Computational Dynamics for Virtual Prototyping: Using Computers to Understand the Dynamics of Complex Systems," Tank Automotive Research and Development Engineering Center (TARDEC), Warren, MI, April 2008
20. "A Class of Numerical Integrators for the Time-Domain Analysis of Mechanical Systems," Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, February 2007
21. "On the Use of the Parallel Optimization Solver TAO in Electronic Structure Computation," Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, IL, August 2006

INDUSTRY

1. "Recent Progress in the Use of High Performance Computing in Computational Dynamics," Caterpillar, Moline, IL, March 2014
2. "Advanced Computing in Computational Dynamics," MSC.Software, Ann Arbor, Michigan, January 6, 2014
3. "Overview of Computational Dynamics Research at the Simulation-Based Engineering Lab," Trek Bicycle, Waterloo, Wisconsin, December 16, 2013
4. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," Dassault Systems, Paris, France, November 12, 2013
5. "On Fast Computers and Their Use in Mechanical Engineering: From the Dynamics of Granular Material to the Motion of the Mars Rover," IHC Merwede Group, Rotterdam, The Netherlands, November 11, 2013
6. "An Overview of Research Projects in the Simulation-Based Engineering Lab," MSC.Software, Ann Arbor, MI, June 5, 2013
7. "Using Physics-based Simulation in Mechanical Engineering: From Sand to Tank Dynamics," GPU Technical Conference, San Jose, CA, March 19, 2013
8. "SPIKE-type GPU Solver for Banded Linear Systems," GPU Technical Conference, San Jose, CA, March 19, 2013
9. "An Overview of Research Projects in the Simulation-Based Engineering Lab," FunctionBay, Seoul, S. Korea, January 14, 2013
10. "Chrono: An Advanced Computing Framework for Multi-Physics Modeling, Simulation, and Visualization," ThyssenKrupp Fördertechnik, Essen, Germany, December 6, 2012
11. "Chrono: An Advanced Computing Framework for Multi-Physics Modeling, Simulation, and Visualization," Rheinisch-Westfälisches Elektrizitätswerk AG (RWE), Dortmund, Germany, December 5, 2012
12. "Chrono: An Advanced Computing Framework for Multi-Physics Modeling, Simulation, and Visualization," Caterpillar, Dusseldorf, Germany, December 4, 2012
13. "Chrono: An Advanced Computing Framework for Multi-Physics Modeling, Simulation, and Visualization," Liebherr, Colmar, France, December 3, 2012
14. "Chrono: An Advanced Computing Framework for Multi-Physics Modeling, Simulation, and Visualization," MSC.Software, Ann Arbor, MI, November 13, 2012
15. "High Performance Computing in Many-Body Dynamics Simulation," GlaxoSmithKline, Philadelphia, Pa, October 15, 2012
16. "High Performance Computing for Virtual Prototyping" Caterpillar, Peoria, IL, April 27, 2012
17. "High Performance Computing for Virtual Prototyping" DreamWorks, Glendale, Ca, April 6, 2012
18. "Using Heterogeneous Computing in Computational Dynamics," Advanced Micro Devices (AMD), Austin, Texas, February 6, 2012
19. "From the Dynamics of Sand to the Dynamics of Tanks: Using Advanced Computing to Advance the Pace of Innovation and Improve Designs in Mechanical Engineering," NVIDIA Asia GPU Technical Conference, December 15, 2011
20. "A Heterogeneous Computing Template for Many-body Dynamics Simulation," John Deere, Moline, IL, November 30, 2011
21. "High Performance Computational Dynamics in a Heterogeneous Hardware Ecosystem," National Defense Industrial Association, Denver, CO, November 2011
22. "Using HPC for Granular Dynamics Simulation," MSC.Software, Santa Ana, CA, November 14, 2011
23. "High Performance Computational Dynamics at the University of Wisconsin-Madison," Caterpillar, Peoria, IL, October 14, 2011
24. "High Performance Computational Dynamics at the University of Wisconsin-Madison," Goodyear, Akron, OH, August 2011
25. "High Performance Computational Dynamics at the University of Wisconsin-Madison," Lexmark, Lexington, KY, August 2011
26. "High Performance Computational Dynamics at the University of Wisconsin-Madison," Procter&Gamble Corporation, Cincinnati, OH, August 2011

27. "From Multi-Body Dynamics to Many-Body Dynamics: Taking the Leap," The Congress on the Future of Engineering Software (COFES-2011), Scottsdale, AZ, April 2011
28. "Frictional Contact Dynamics of Large Multi-Body Systems," John Deere Corporation, Dubuque, IA, March 2011
29. "Frictional Contact Dynamics of Large Multi-Body Systems," United Technology Research Center, Hartford, CT, February 2011
30. An Overview of Research Projects in the Simulation-Based Engineering Lab at the University of Wisconsin-Madison," FunctionBay Incorporated, Seoul, S. Korea, October 2010
31. "A Heterogeneous Computing Template for Distributed Parallel Computing," Caterpillar, Moline, IL, September 2010
32. "A Heterogeneous Computing Template for Distributed Parallel Computing," FunctionBay User Conference, Seoul, S. Korea, October 2010
33. "A Heterogeneous Computing Template for Distributed Parallel Computing," British Aerospace Engineering (BAE) – Land Division, Santa Clara, CA, September 2010
34. "Solving Large Scale Cone Complementarity Problems on NVIDIA's GPU," NVIDIA Corporation, Santa Clara, CA, September 2009
35. "Using Multibody Dynamics Simulation for Virtual Prototyping in Engineering Design," P&H Mining, Milwaukee, WI, April 2009
36. Toward Million Body Granular Flow Dynamics on the GPU," Optima 2009 Workshop, University of Illinois at Urbana Champaign, March 2009
37. "Computational Dynamics for Virtual Prototyping: Using Computers to Understand the Dynamics of Complex Systems," General Motors, Warren, MI, April 2008
38. "Simulation-Based Engineering and its Impact on Virtual Prototyping," British Aerospace Engineering – Land Division, Santa Clara, CA, April 2008
39. "Multibody Dynamics on Commodity High Performance Computing: A Look Ahead," MSC.Software Vehicle Dynamics Symposium, Detroit, MI, April 2008
40. "Co-simulation Environment for Vehicle-Powertrain-Tire on/off-road Analysis," MSC.Software North America User Conference, Detroit, MI, October 2007
41. "Virtual Prototyping in the Simulation-Based Engineering Laboratory at University of Wisconsin," British Aerospace Systems – Land Division, Santa Clara, CA, January 2007

PROFESSIONAL SERVICE

INVITED WORKSHOPS

1. Department of Energy Workshop on "Cross-cutting Technologies for Computing at the Exascale," Washington, D.C., February 2010.
2. National Science Foundation Panel "New Frontiers in Dynamic Systems," Arlington, VA, March 2007. Educational Breakout leader, and the Nanotechnology Breakout scribe.

EDITORIAL SERVICE

1. Technical Editor, Mathematics and Computers in Simulation (an Elsevier Journal): since 2008.
2. Technical Editor, ASME Journal on Computational and Nonlinear Dynamics: since October 2011.
3. Technical Editor, Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics (a Professional Engineering Publishing journal): since 2009.
4. Guest Editor (2008-2010), ASME Journal on Computational and Nonlinear Dynamics: in charge of co-editing with Professor O. Bauchau a special edition of the journal with focus on "*Special Issue on Computational Multibody Dynamics.*"
5. Member, Editor Board (2011-), ASME Journal on Computational and Nonlinear Dynamics

CONFERENCE ORGANIZER

1. Conference Chair, 10th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC), Buffalo, NY, 2014
2. Program Chair, 9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC), Portland, OR, 2013
3. Member, Steering Committee for the International Multibody System Dynamics Conference, since 2012
4. Scientific Committee member and organizer of the “Software Development and Education” symposium, ECCOMAS Thematic Conference - Multibody Dynamics 2013 July 1 - July 4, 2013, University of Zagreb, Zagreb, Croatia.
5. Symposium organizer, “Computational Multibody System Dynamics”, at the 4th International Conference on Computational Dynamics and Earthquake Engineering (COMPDYN2013) June 12-14 2013, Kos Island, Greece
6. Symposium organizer, “Load Simulation and Vehicle Performance: Multi-body Dynamics” at the SAE International Congress, Detroit, April 16-18, 2013
7. Program Committee Member, 18th IEEE International Conference on Parallel and Distributed Systems (ICPADS 2012); “Multicore Computing and Parallel/Distributed Architecture” symposium organizer, Singapore, December 3-5, 2012
8. Co-organizer, “Computational DFD Methods and Tools,” 1st Biennial International Conference on Dynamics for Design, ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference in Chicago, IL, USA August 12 - 15, 2012
9. Co-organizer, “Computational DFD Methods and Tools,” 1st Biennial International Conference on Dynamics for Design, ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference in Chicago, IL, USA August 12 - 15, 2012
10. Co-organizer, “Algorithms, Integration Codes and Software,” Second Joint International Conference on Multibody System Dynamics, Stuttgart, Germany, May 29 - June 1, 2012
11. Program Committee Member, “Fourth Workshop on Emerging Parallel Architectures (WEPA)” held in conjunction with ICCS 2012, Omaha, Nebraska, June 4-6, 2012
12. Co-organizer, *Contact and Interface Phenomena Symposium*, 8th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Control, Washington, D.C., 2011.
13. Co-organizer, *GPU-based High Performance Computing Symposium*, 31st ASME International Conference on Computers and Information in Engineering, Washington, D.C., 2011.
14. Co-organizer, *Computational Methods in Multibody Dynamics Simulation Symposium*, 9th World Congress on Computational Mechanics, Sydney, Australia, 2010.
15. Co-organizer, *Advanced Modeling and Simulation through High Performance Computing Symposium*, ASME Computers and Information Engineering Conference, Montreal, Canada, 2010.
16. Co-organizer, *Experiments and Numerical Verifications Symposium*, First Joint International Conference on Multibody System Dynamics, Lappeenranta, Finland, 2010.
17. Co-organizer, *Algorithms and Integration Methods Symposium*, 7th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Control, San Diego, California, 2009.
18. Scientific Technical Committee member and Symposium Organizer, *Software Development, Validation, and Education Symposium*, ECCOMAS Multibody Dynamics Thematic Conference, Warsaw, Poland, 2009.
19. Co-organizer, *Computational Methods in Multibody Dynamics Simulation Symposium*, 8th World Congress on Computational Mechanics, Venice, Italy, 2008.
20. Co-organizer, *Algorithms and Integration Methods Symposium*, 6th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Control, Las Vegas, NV, 2007.
21. Scientific Technical Committee member and Symposium Organizer, *Software Development, Validation, and Education Symposium*, ECCOMAS Multibody Dynamics Thematic Conference, Milan, Italy, 2007.
22. Organizer, *Computational Methods in Multibody Dynamics Simulation Symposium*, 7th World Congress on Computational Mechanics, Los Angeles, CA, 2006.
23. Co-organizer, *Algorithms and Integration Methods Symposium*, 5th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Control, Long Beach California, CA, 2005.

WORKSHOPS ORGANIZED

1. 2013 W-FACE: Wisconsin Forum on Advanced Computing in Engineering, Madison, May 2 and 3, 2013. Brought together 18 organizations to discuss the role of computing in Engineering. Participant list: 3M, Altair, Boeing, Caterpillar, Cooper Industries, GlaxoSmithKline, Jenike and Johanson, John Deere, LMS International, MathWorks (MATLAB), MCS.Software, MCS.Software, Motionport, Nvidia, Oshkosh Corporation, Parc (Xerox), Proctor & Gamble, Progeneric, Simertis, US Army TARDEC.
2. 2011: "Introduction to GPU Computing," National Defense Industry Association Conference, Nov 14-17, 2011, Denver, Colorado.
3. 2011: "Toward High-Performance Computing Support for the Analysis, Simulation, and Planning of Robotic Contact Tasks," organized with Professors Jeff Trinkle (RPI) and Chris Carothers (RPI) in conjunction with the Robotics Science and Systems, June 27, 28 2011. Organized on the campus of University of Southern California. Funded by NSF Grant CRI: CP-I: 0855024.
4. 2011: "Introduction to GPU Computing," organized with Professors S. McMains (UC-Berkeley), S. Krishnan (UW-Madison). Held in conjunction with the ASME 2011 International Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE), Washington, D.C.
5. 2010: "Introduction to GPU Computing," organized with Professors S. McMains (UC-Berkeley), S. Krishnan (UW-Madison). Held in conjunction with the ASME 2010 International Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE), Montreal, Canada.
6. 2009: "Teraflop Parallel Computing on a Budget: Applications of GPU Computing in Mechanical Engineering," organized with Professors S. McMains (UC-Berkeley), S. Krishnan (UW-Madison), and R. D'Souza (UW-Milwaukee). Held in conjunction with the ASME International Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE), San Diego, CA.

TECHNICAL REVIEWER FOR PROFESSIONAL PUBLICATIONS:

AIAA Journal of Guidance, Control, and Dynamics, ASME Journal of Computational and Nonlinear Dynamics, ASME Journal of Manufacturing Science and Engineering, ASME Journal of Sound and Vibration, Computer Aided Design, Computer Methods in Applied Mechanics and Engineering, Engineering with Computers, European Journal of Mechanics – A/Solids, IEEE/ASME Transactions on Mechatronics, International Journal for Numerical Methods in Engineering, International Journal of Vehicle Autonomous Systems, International Journal of Vehicle Systems Modeling and Testing, Journal of Multi-Body Dynamics, Mathematics and Computers in Simulation, Mechanics Based Design of Structures & Machines, Mechanism and Machine Theory, Multibody System Dynamics, Nonlinear Dynamics, Polish Journal of Theoretical and Applied Mechanics, Structural and Multidisciplinary Optimization, Studies in Information and Control, Vehicle System Dynamics, Zeitschrift für Angewandte Mathematik und Mechanik (ZAMM),