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Professional Preparation

Postdoctoral Institution: Courant Institute of Mathematical Sciences. (2005-2007)

Graduate Institution: Stanford University. Degree: Ph.D. 2005

Undergraduate Institution: University of California, Davis. Degree: B.S. 2000

Appointments

Professor: Department of Mathematics, UCLA (July 2014-present)

Associate Professor: Department of Mathematics, UCLA (July 2011-June 2014)

Assistant Professor: Department of Mathematics, UCLA (July 2007-June 2011)

Postdoctoral researcher: Courant Institute of Mathematical Sciences (September 2005-June 2007)

Awards

- Stanford University, Distinguished Alumni Scholar, Computer Science, 2012.
- Presidential Early Career Award for Scientists and Engineers (PECASE), 2011.
- Office of Naval Research, Young Investigator Award, 2010.
- Discover Magazine, Top 20 Scientists Under 40, 2008.
- National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship, 2005-2007.
- National Science Foundation Graduate Research Fellowship, 2000-2003.

Current Research Support

- National Science Foundation (CCF-1422795) RI: Small: Collaborative Research: An accelerated numerical solver framework for simulation of solid-fluid dynamics.
- Office of Naval Research (N00014-12-1-083) Computational Solids and Fluids in Real and Interactive Time.
- Office of Naval Research (N00014-11-1-0719): Sparse Numerical Methods for Compressible Flow Calculations Using Radial Basis Functions and l_1 Minimization.
- Intel Science and Technology Centers - Visual Computing Grant.

Prior Research Support

- Office of Naval Research (N00014-10-1-0730): Young Investigator Award, Manycore Accelerated Algorithms for Computational Solid and Fluid Mechanics.
- National Science Foundation (DMS-0914813), A Novel Framework for Fluid/Structure Interaction in Subject-Specific Surgical Simulations Involving Elastic Cardiac Geometries.
- National Science Foundation (CCF-0830554), Theoretical Foundations: An Optimization Framework for the Estimation of Material Properties of Deformable Materials from Volumetric Measurements.
- National Science Foundation (DMS-0652427), FRG: Collaborative Research: Dynamics of Elastic Biostructures in Complex Fluids.
- Office of Naval Research (N000140310071): Level Set Methods for Fracture and Failure of Materials.
- UC Laboratory Research Program: Multiscale Methods of Fracture and Multimaterial Debris Flow.
- Intel Larrabee Research Grant.

Collaborators and Other Affiliations

- *Graduate and Postdoctoral Advisors:* Ronald Fedkiw, Michael Shelley, Charles Peskin.
- *Ph.D. students:* Theodore Gast, Andre Pradhana, Gergeley Klar, Chuyuan Fu.
- *Postdoctoral researchers under my supervision:* Chenfanfu Jiang, Craig Schroeder.

- *Former students:* Daniel Ram, Ph.D. 2015, Chenfanfu Jiang, Ph.D. 2015, Yuting Wang, Ph.D. 2014, Russell Howes, Ph.D. 2013, Jan Hegemann, Ph.D. 2013, Alexey Stomakhin, Ph.D. 2013, Diego Assencio, Ph.D. 2012, Jeffrey Hellrung, Ph.D. 2012, Alejandro Cantarero, Ph.D. 2011, Aleka McAdams, Ph.D. 2011, Jacob Bedrossian, Ph.D. 2011, Yongning Zhu, Ph.D. 2010.

Publications

- G. Klar, T. Gast, A. Pradhana, C. Fu, C. Schroeder, C. Jiang, J. Teran, *Drucker-Prager Elastoplasticity for Sand Animation*, ACM Transactions on Graphics (SIGGRAPH 2015), 35(4), 2016.
- T. Gast, C. Schroeder, A. Stomakhin, C. Jiang, J. Teran, *Optimization Integrator for Large Time Steps*, IEEE Transactions on Visualization and Computer Graphics, 21(10) pp. 1103-1115, 2015.
- D. Ram, T. Gast, C. Jiang, C. Schroeder, A. Stomakhin, J. Teran, P. Kavehpour, *A Material Point Method for Viscoelastic Fluids, Foams and Sponges*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), pp. 157-163, 2015.
- C. Jiang, C. Schroeder, A. Selle, J. Teran, A. Stomakhin, *An Affine Particle-In-Cell Method*, ACM Transactions on Graphics (SIGGRAPH 2015), 34(4), pp. 51:1-51:10, 2015.
- Y. Wang, C. Jiang, C. Schroeder, J. Teran, *An Adaptive Virtual Node Algorithm with Robust Mesh Cutting*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), pp. 77-85, 2014.
- A. Stomakhin, C. Schroeder, C. Jiang, L. Chai, J. Teran, A. Selle, *Augmented MPM for phase-change and varied materials*, ACM Transactions on Graphics (SIGGRAPH 2014), 33(4), pp. 138:1-138:11, 2014.
- C. Schroeder, A. Stomakhin, R. Howes, J. Teran, *A Second Order Virtual Node Algorithm for Navier-Stokes Flow Problems with Interfacial Forces and Discontinuous Material Properties*, Journal of Computational Physics, 265, pp. 221-245, 2014.
- R. Howes, C. Schroeder, J. Teran, *A Virtual Node Algorithm for Hodge Decompositions of Inviscid Flow Problems with Irregular Domains*, Methods and Applications of Analysis, 20(4), pp. 439-455, 2013.
- J. Hegemann, C. Jiang, C. Schroeder, J. Teran, *A Level Set Method for Ductile Fracture*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), pp. 193-201, 2013.
- A. Stomakhin, C. Schroeder, L. Chai, J. Teran, A. Selle, *A Material Point Method for Snow Simulation*, ACM Transactions on Graphics (SIGGRAPH 2013), 32(4), pp. 102:1-102:10, 2013.
- D. Assencio, J. Teran, *A Second Order Virtual Node Algorithm for Stokes Flow Problems with Interfacial Forces, Discontinuous Material Parameters and Irregular Domains*, Journal of Computational Physics, 250(1), pp. 77-105, 2013.
- J. Hegemann, A. Cantarero, C. Richardson, J. Teran, *An Explicit Update Scheme for Inverse Parameter and Interface Estimation of Piecewise Constant Discontinuous Coefficients in Linear Elliptic PDEs*, SIAM Journal of Scientific Computing, 35(2), pp. A1098-A1119, 2013.
- A. Stomakhin, R. Howes, C. Schroeder, J. Teran, *Energetically Consistent Invertible Elasticity*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), pp. 25-32, 2012.
- Y. Zhu, Y. Wang, J. Hellrung, A. Cantarero, E. Sifakis, J. Teran, *A Second-Order Virtual Node Algorithm for Nearly Incompressible Linear Elasticity in Irregular Domains*, Journal of Computational Physics, 231(21), pp. 7092-7117, 2012.
- J. Hellrung, L. Wang, E. Sifakis, J. Teran, *A Second-Order Virtual Node Method for Elliptic Problems with Interfaces and Irregular Domains in Three Dimensions*, Journal of Computational Physics, 231(4), pp. 2015-2048, 2012.
- A. McAdams, A. Selle, R. Tamstorf, M. Embrey, J. Teran E. Sifakis, *Efficient Elasticity for Character Skinning with Contact and Collisions*, ACM Transactions on Graphics (SIGGRAPH 2011), 30(4), pp.1-12, 2011.
- C. Richardson, J. Hegemann, E. Sifakis, J. Hellrung, J. Teran, *Simulating Crack Propagation with XFEM and a Hybrid Mesh*, International Journal for Numerical Methods in Engineering, 88(10), pp. 1042-1065, 2011.
- A. McAdams, E. Sifakis, J. Teran, *A Parallel Multigrid Poisson Solver for Fluids Simulation on Large Grids*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) edited by M. Otaduy and Z. Popovic, pp.1-10, 2010.

- J. Teran, L. Fauci, M. Shelley, *Viscoelastic Fluid Response Can Increase the Speed and Efficiency of a Free Swimmer*, Physical Review Letters, 104(3), 038101, 2010.
- J. Bedrossian, J. Von Brecht, S. Zhu, E. Sifakis, J. Teran, *A Second Order Virtual Node Method for Poisson Interface Problems on Irregular Domains*, Journal of Computational Physics, 229, pp. 6405-6426, 2010.
- Y. Zhu, E., Sifakis, J. Teran, A. Brandt, *An Efficient Parallelizable Multigrid Framework for the Simulation of Elastic Solids*, ACM Transactions on Graphics (with presentation at SIGGRAPH 2010), 29(2), pp. 1-18, 2010.
- J. Hellrung, A. Selle, A. Shek, E. Sifakis, J. Teran, *Geometric Fracture Modeling in BOLT*, ACM SIGGRAPH 2009, Sketches and Applications.
- A. McAdams, K. Ward, E. Sifakis, A. Selle, J. Teran, *Detail Preserving Continuum Hair Simulation*, ACM Transactions on Graphics (SIGGRAPH 2009), 28(3), pp.385-392, 2009.
- J. Teran, C. Peskin, *Tether Force Constraints in Stokes Flow with the Immersed Boundary Method on a Periodic Domain*, SIAM Journal of Scientific Computing, 31(5), pp. 3404-3416, 2009.
- E. Sifakis, J. Hellrung, J. Teran, A. Oliker, C. Cutting. *Local Flaps: A Real-Time Finite Element Based Solution to the Plastic Surgery Defect Puzzle*, Studies in Health and Technology Informatics, 142, pp. 313-138, 2009.
- J. Teran, L. Fauci, M. Shelley, *Peristaltic Pumping and Irreversibility of a Stokesian Viscoelastic Fluid*, Physics of Fluids 20, 073101, 2008.
- E. Sifakis, S. Marino, J. Teran, *Globally Coupled Impulse-Based Collision Handling for Cloth Simulation*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) edited by M. Gross and D. James, pp. 147-152, 2008.
- Z. Bao, J.-M. Hong, J. Teran, R. Fedkiw, *Fracturing Rigid Materials*, IEEE Transactions on Visualization and Computer Graphics, 13, pp. 370-378, 2007.
- R. Weinstein, J. Teran, R., Fedkiw, *Dynamic Simulation of Articulated Rigid Bodies with Contact and Collision*, IEEE Transactions on Visualization and Computer Graphics, 12, pp. 365-374, 2006.
- G. Irving, J. Teran, R. Fedkiw, *Tetrahedral and Hexahedral Invertible Finite Elements*, Graphical Models 68, pp. 66-89, 2006.
- R. Weinstein, J. Teran, R. Fedkiw, *Pre-stabilization for Rigid Body Articulation with Contact and Collision*, ACM SIGGRAPH 2005, Sketches and Applications.
- R. Bridson, J. Teran, N. Molino, R. Fedkiw, *Adaptive Physics Based Tetrahedral Mesh Generation Using Level Sets*, Engineering with Computers, 21 pp. 2-18, 2005
- S. Blemker, J. Teran, E. Sifakis, R. Fedkiw and S. Delp, *Fast 3D Muscle Simulations Using a New Quasistatic Invertible Finite-Element Algorithm*, International Symposium on Computer Simulation in Biomechanics, 2005.
- J. Teran, E. Sifakis, G. Irving and R. Fedkiw, *Robust Quasistatic Finite Elements and Flesh Simulation*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) edited by K. Anjyo and P. Faloutsos, pp. 181-190, 2005.
- J. Teran, E. Sifakis, S. Blemker, V. Ng Thow Hing, C. Lau and R. Fedkiw, *Creating and simulating skeletal muscle from the Visible Human Data Set*, IEEE Transactions on Visualization and Computer Graphics, 11, pp. 317-328, 2005.
- G. Irving, J. Teran, R. Fedkiw, *Invertible Finite Elements for Robust Simulation of Large Deformation*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA), edited by R. Boulic and D. Pai, pp. 131-140, 2004.
- N. Molino, R. Bridson, J. Teran, R. Fedkiw, *A Crystalline Red/Green Strategy for Meshing Highly Deformable Objects with Tetrahedra*, 12th International Meshing Roundtable, pp. 103-114, 2003.
- J. Teran, S. Blemker, V. Ng Thow Hing, R. Fedkiw, *Finite Volume Methods for the Simulation Skeletal Muscle*, ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA) edited by D. Breen and M. Lin, pp. 68-74, 2003.