Alexey Stomakhin

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Education

- **University of California, Los Angeles** — Los Angeles, CA
  M.A. Mathematics (Mar 2011), Ph.D. Mathematics (Jun 2013) — *Aug 2009 – Jun 2013*

  – Area of Specialization: Applied and Computational Mathematics

- **Moscow Institute of Physics and Technology** — Moscow, Russia
  B.S. Applied Mathematics and Physics (Jun 2009) — *Sep 2005 – Jun 2009*

  – Graduated with Honors, 4.0 GPA

  – Minor: Computer Science and Electrical Engineering

Summary

- Solid background in applied and computational mathematics, including research and coursework in ODEs and PDEs, numerical analysis, scientific computing, numerical linear algebra, computational solid and fluid mechanics, multigrid methods and optimization.

- Fluent in C++, but also familiar with a wide range of other programming languages, packages, and paradigms; including C, Java, Pascal, Python, Shell, Perl, LaTeX, Matlab/Octave and Maple.

- Proficient in parallel and high performance computing.

- Experience with Houdini and Maya API.

- Strong debugging skills.

Experience

- **Walt Disney Animation Studios** — Burbank, CA
  Senior Software Engineer — *Jul 2013 – present*

  – Look/Effects/Dynamics

- **Walt Disney Animation Studios** — Burbank, CA
  Software Engineer — *Feb 2013 – May 2013*

  – Integration of a material point method (MPM) snow solver (a.k.a. Matterhorn) into production pipeline to be used for deep snow effects in Disney's movie Frozen (2013)

- **Walt Disney Animation Studios** — Burbank, CA
  Graduate Research Intern — *Jun 2012 – Sep 2012*

  – Optimization of a Maya plugin for physically based character skinning via efficient stencil computation and parallelization/vectorization on a CPU.

- **Walt Disney Animation Studios** — Burbank, CA
  Graduate Research Intern — *Jul 2011 – Sep 2011*

  – Implementation and performance comparison of multigrid solvers for physically based character skinning.

- **Intel Corporation** — Moscow, Russia
  Undergraduate Intern — *Apr 2008 – Jul 2009*

  – Development and implementation of automatic verification and graphical representation systems for a processor performance model.

Research

- **University of California, Los Angeles**   Los Angeles, CA
  Research Fellow   *Jun 2010 – Jun 2013*
  - Crime Modeling, Social Networks, Reconstruction of Missing Data (2010-2011)
  - Scientific Computing, Solid/Fluid Dynamics, Physically Based Animation, Computer Graphics (2011-present)

My research focuses on realistic simulation of fluids and elastic solids for special effects. My research interests include computational solid and fluid mechanics, solid/fluid coupling, multigrid methods and parallel computing.

Publications

- J. Garcia, S. Palmer, S. Drakeley, D. Hutchins, E. Ramos, R. Habel, A. Stomakhin. *Rigging the Oceans of Disney's "Moana".* SIGGRAPH Asia 2016 (Technical briefs).

- C. Jiang, C. Schroeder, J. Teran, A. Stomakhin, A. Selle. *The Material Point Method for Simulating Continuum Materials.* ACM SIGGRAPH 2016 (Courses).

- A. Milne, M. McLaughlin, R. Tamstorf, A. Stomakhin, N. Burkard, M. Counsell, J. Canal, D. Komorowski, E. Goldberg. *Flesh, Flab, and Fascia Simulation on Zootopia.* ACM SIGGRAPH 2016 (Talks).

- C. Jiang, C. Schroeder, A. Selle, J. Teran, A. Stomakhin. *The Affine Particle-In-Cell Method.* ACM SIGGRAPH 2015.

- D. Hutchins, O. Riley, J. Erickson, A. Stomakhin, R. Habel, M. Kaschalk. *"Big Hero 6": Into the Portal.* ACM SIGGRAPH 2015 (Talks).

- D. Ram, T. Gast, C. Jiang, C. Schroeder, A. Stomakhin, J. Teran, P. Kavehpour. *Material Point Method for Viscoelastic Fluids, Foams and Sponges.* Eurographics Symposium on Computer Animation (SCA) 2015.

- T. Gast, C. Schroeder, A. Stomakhin, C. Jiang, J. Teran. *Optimization Integrator for Large Time Steps.* IEEE TVCG 2015.

- A. Stomakhin, C. Schroeder, C. Jiang, L. Chai, J. Teran, A. Selle. *Augmented MPM for Phase-Change and Varied Materials.* ACM SIGGRAPH 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 2014.

- A. Stomakhin, C. Schroeder, L. Chai, J. Teran, A. Selle. *A Material Point Method for Snow Simulation.* ACM SIGGRAPH 2013.

- A. Stomakhin, R. Howes, C. Schroeder, J. Teran. *Energetically Consistent Invertible Elasticity.* Eurographics Symposium on Computer Animation (SCA) 2012.

- A. Stomakhin, M. Short, and A. Bertozzi. *Reconstruction of Missing Data in Social Networks Based on Temporal Patterns of Interactions.* Inverse Problems 2011.

Awards

"Best of Disney" technology award for developing fluid simulation system . . . . *Walt Disney Company, Sep 2016*

Horn-Moez prize for excellence in first year graduate studies . . . . *UCLA, May 2010*

Teaching

- **University of California, Los Angeles**   Los Angeles, CA
  Teaching Fellow   *Jan 2010 – Jun 2011*
  - Leading discussion sections to review lecture material, tutoring at the Student Math Center, preparing review sessions before exams, and holding office hours to provide students with additional help.

References

Available upon request