Brittany A. Erickson   October 10, 2020

Education

Ph.D., University of California, Santa Barbara, Mathematics, 2010
M.A., University of California, Santa Barbara, Applied Mathematics, 2006
B.S., University of California, Santa Barbara, Mathematical Science, 2004

Employment

Assistant Professor, Joint with Departments of Computer and Information Science and Earth Sciences, University of Oregon (UO), December 2018 - present.

Assistant Professor, Department of Mathematics and Statistics, Portland State University (PSU), September 2014 - December 2018.

Postdoctoral Scholar, Department of Geological Sciences, San Diego State University, January 2013 - September 2014.

National Science Foundation Postdoctoral Fellow, Department of Geophysics, Stanford University, September 2010 - January 2013.

Selected Refereed Publications

Kozdon, J. E., Erickson, B. A., and Wilcox, L. C. (2020), Hybridized summation-by-parts finite difference methods, in revision in the *Journal of Scientific Computing*, `https://arxiv.org/abs/2002.00116`.

Erickson, B. A., Jiang, J., Barall, M., Lapusta, N., Dunham, E. M., Harris, R., Abrahams, L. S., Allison, K. L., Ampuero, J. P., Barbot, S., Cattania, C., Elbanna, A., Fialko, Y., Idini, B., Kozdon, J. E., Lambert, V., Liu, Y., Luo, Y., Ma, X., Mckay, M. B., Segall, P., Shi, P., van den Ende, M., Wei, M. (2020), The community code verification exercise for simulating Sequences of Earthquakes and Aseismic Slip (SEAS), *Seismological Research Letters*, 91, p. 874–890, doi: 10.1785/0220190248.

Erickson, B. A., O'Reilly, O. and Nordström, J. (2019), Accuracy of stable, high-order finite difference methods for hyperbolic systems with non-smooth wave speeds, *Journal of Scientific Computing*, 81, p. 2356–2387, doi: 10.1007/s10915-019-01088-w.

Mckay, M. B., Erickson, B. A. and Kozdon, J. E. (2019), A computational method for earthquake cycles within anisotropic media, *Geophysical Journal International*, 219, p. 816–833, doi: 10.1093/gji/ggz320.

Erickson, B. A., Dunham, E. M. and Khosravifar, A. (2017), A finite difference method for off-fault plasticity throughout the earthquake cycle, *Journal of the Mechanics and Physics of Solids*, 109,

p. 50–77, doi: https://doi.org/10.1016/j.jmps.2017.08.002.

Erickson, B. A. and Day, S. M. (2016), Bimaterial effects in an earthquake cycle model using rate-and-state friction, *Journal of Geophysical Research, Solid Earth*, 121, p. 1–26, doi: 10.1002/2015JB012470.

Erickson, B. A. and Nordström, J. (2014), Stable, high order accurate adaptive schemes for long time, highly intermittent geophysics problems, *Journal of Computational and Applied Mathematics*, 271, p. 328–338, doi: https://doi.org/10.1016/j.cam.2014.04.019.

Erickson, B. A. and Dunham E. M. (2014), An efficient numerical method for earthquake cycles in heterogeneous media: Alternating sub-basin and surface-rupturing events on faults crossing a sedimentary basin, *Journal of Geophysical Research*, p. 1–26, doi:10.1002/2013JB010614.

Selected Presentations at Recent Professional Meetings

Erickson, B. A. (2019), "Convergence of High-order Accurate SBP-SAT methods for Hyperbolic Systems with Non-smooth Wave Speeds", presented in the Applied Mathematics and Computation Seminar at Oregon State University, Corvallis, OR.

Jiang, J., and B. A. Erickson (2018), "Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS)", invited (plenary) talk presented at the Southern California Earthquake Center annual meeting, Palm Springs, CA.

Erickson, B. A. (2018), "A Linearized Stability Analysis of Acoustic-Gravity Waves in a Volcanic Conduit with a Spatially Variable Background State", talk presented at the Society for Industrial and Applied Mathematics annual meeting, Portland OR.

Erickson, B. A. (2017), "Modeling the Earthquake Cycle with Heterogeneous Materials and Off-fault Plasticity", invited talk at the U.S. Geological Survey, Menlo Park, CA.

Best McKay, M. and Erickson, B. A. (2017), "Incorporating Anisotropic Material Properties into Simulations of the Earthquake Cycle", presented at the Southern California Earthquake Center Annual Meeting, Palm Springs, CA.

Honors, Grants and Fellowships

Award #20113 (Southern California Earthquake Center) "Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS)" Feb 2020 - Jan 2021.

Award #18099 (Southern California Earthquake Center) "Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS)" Feb 2019 - Jan 2020.

Award #18099 (Southern California Earthquake Center) "Advancing Simulations of Sequences of

Earthquakes and Aseismic Slip (SEAS)" Feb 2018 - Jan 2019.

Award #1547603 (National Science Foundation) "Collaborative Research: From Loading to Rupture - how do fault geometry and material heterogeneity affect the earthquake cycle?" Mar 2016 - Feb 2020.

Award #15116 (Southern California Earthquake Center) "The Effects of Plasticity and the Evolution of Damage Zones in Earthquake Cycle Simulations" Feb 2014 - Jan 2015.

Award #14083 (Southern California Earthquake Center) "The Influence of Fault Roughness and Damage Zones in 3D Earthquake Cycle Simulations" Feb 2013 - Jan 2014.

Award #0948304 (National Science Foundation Postdoctoral Fellowship) "Single Event and Long Term Dynamics of Nonplanar Fault Systems" Sep 2010 - Aug 2012.

Student Advising and Teaching Appointments

MS students advised and graduated from PSU: Craig Daniels, Nicholas Fusaro, Cody Rucker, Maricela Best Mckay, Urszula Krzywda.

Current PhD students at UO: Tobias Harvey, Genesee Lucia, Alexandre Chen, Cody Rucker.

Instructor at UO (2018-present):
Graduate Level: MPI for Scientific Computing, Computational Methods for Partial Differential Equations, Computational Science. Undergraduate Level: Introduction to Computer Science I.

Instructor at PSU (2014-2018):
Graduate Level: Numerical Calculus,Theory of Ordinary Differential Equations, Advanced Linear Algebra, Advanced Numerical Analysis, An Introduction to Finite Difference Methods for Partial Differential Equations, Continuum Mechanics and Mathematical Modeling. Undergraduate Level: Linear Algebra, Differential Equations.

Significant Leadership Activities

Co-leader for the SCEC working group for Advancing Simulations of Sequences of Earthquakes and Aseismic Slip (SEAS), with over 30 members from the scientific community
https://strike.scec.org/cvws/seas/.