http://github.com/kwschultz

Kasey W. Schultz

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Education →

University of California, Davis 2012 → 2016
M.S. in Physics — Dec 2013
Ph.D in Physics — June 2016

University of Miami, Coral Gables, FL 2008 → 2012
B.S. in Physics, Applied Mathematics. *Cum Laude*

Computing → Python (proficient), C++ (interm.), Bash (interm.), Git (proficient), Reg. Expr. (basic), SQL (basic)

Skills → Simulations, Time Series Analysis, Principal Component Analysis, Unix/Linux, Data Analysis, Statistics, Visualizations, Geospatial Analysis, Proposal Writing, Research, HDF5, LaTeX, Matplotlib, Scipy

Research & Work Experience →

Department of Physics, **University of California, Davis**
Graduate Student Researcher June 2013 → Present
Advisor: Prof. John Rundle

- Lead programmer on the NASA-funded Virtual Quake project, a high performance earthquake simulator used for seismic hazard assessment github.com/geodynamics/vq
- Developed tools for generating observable changes from earthquakes (e.g. deformation, gravity) as well as earthquake and tsunami scenario modeling
- Developed open source tools for simulation data analysis and visualization using Python: PyVQ. Intro to Virtual Quake Webinar: youtube.com/watch?v=tfLcxVqjrzM&feature=youtu.be
- Added over 18,000 lines to the Virtual Quake source code: github.com/geodynamics/vq/graphs
- Creative problem solving example: Restructuring and re-indexing geospatial data using Python schultz.physics.ucdavis.edu/research/fixing_faults.html

Research Done, www.researchdone.com,
Independent Contractor/Software Development Consultant Jan. 2016 → Present
Principal: Dr. Zack Kertcher, Fieldat LLC

- Assisting in text data mining from the U.S. Securities and Exchange Commission
- Modifying text processing scripts to enhance data quality and to reduce data volume.

Department of Astronomy, **California Institute of Technology**, Pasadena, CA
Summer Undergraduate Research Fellow Summer 2011
Advisor: Dr. Brendan Crill, NASA JPL

- Updated and expanded the data analysis pipeline for the Planck collaboration
- Identified correlations between detector model parameters using the D.O.E.'s supercomputing center NERSC (data visualization with Python)

Department of Physics, **University of Miami**
Research Assistant 2009 → 2012
Advisor: Prof. Kevin Huffenberger

- Reconstructed the optical properties of a Cosmic Microwave Background telescope (WMAP) from observational data (using Python); identified a selection bias in the WMAP point source catalog

Hobbies → **Surfing.** Stats from my RipCurl GPS surf watch: searchgps.ripcurl.com/#/profile/56b6a0f95101c0590a271d79

Published Research →

K. W. Schultz, M. R. Yoder, J. M. Wilson, E. M. Heien, M. K. Sachs, J. B. Rundle, and D. L. Turcotte. **Parametrizing Physics-Based Earthquake Simulations**, Pure and Applied Geophysics, *under review* 2016

A. Khodaverdian, H. Zafarani, K. W. Schultz, M. Rahimian. **Recurrence Time Distributions of Large Earthquakes in Eastern Iran**, Seismological Research Letters, *under review* 2016

J. M. Wilson, M. R. Yoder, J. B. Rundle, D. L. Turcotte, and K. W. Schultz, **Spatial Evaluation and Verification of Earthquake Simulators**, Pure and Applied Geophysics, *accepted* 2016

K. W. Schultz, M. K. Sachs, E. M. Heien, M. R. Yoder, J. B. Rundle, D. L. Turcotte, and A. Donnellan, **Virtual Quake: Statistics, Co-Seismic Deformations and Gravity Changes for Driven Earthquake Fault Systems**, International Association of Geodesy Symposia, *in press* 2016, DOI: 10.1007/1345_2015_134

K. W. Schultz, E. M. Heien, M. K. Sachs, J. M. Wilson, M. R. Yoder, J. B. Rundle, and D. L. Turcotte. **Virtual Quake User Manual, Version 2.1.2**. Computational Infrastructure for Geodynamics, Davis, California, USA. https://geodynamics.org/cig/software/vq/vq_manual_2.1.2.pdf, 2016

M. R. Yoder, K. W. Schultz, E. M. Heien, J. B. Rundle, D. L. Turcotte, J. W. Parker and A. Donnellan. **The Virtual Quake earthquake simulator: A simulation based forecast of the El Mayor-Cucapah region and evidence of earthquake predictability**, Geophysical Journal International 203 (3): 1587-1604, DOI: 10.1093/gji/ggv320 , 2015

M. R. Yoder, K. W. Schultz, E. M. Heien, J. B. Rundle, D. L. Turcotte, J. W. Parker and A. Donnellan. **Forecasting earthquakes with the Virtual Quake simulator: Regional and fault-partitioned catalogs**, International Association of Geodesy Symposia, *under review* 2015

K. W. Schultz, M. K. Sachs, E. M. Heien, J. B. Rundle, D. L. Turcotte, A. Donnellan **Simulating Gravity Changes in Topologically Realistic Driven Earthquake Fault Systems**, Pure and Applied Geophysics, 173(3), 827-838, DOI: 10.1007/s00024-014-0926-4, 2014

K. W. Schultz and K. M. Huffenberger, **Stacking catalogue sources in WMAP data**. Monthly Notices of the Royal Astronomical Society, 424 (4), 3028-3036. DOI: 10.1111/j.1365-2966.2012.21451.x, 2012

Awards →

UC Davis Graduate Student Travel Award ($1000) 2015

Winner of an Outstanding Student Paper Award in Natural Hazards: http://ospa.agu.org 2014
Awarded to top 3% of presenters in each section at the American Geophysical Union 2014 meeting

Member, Omicron Delta Kappa 2011
One of the highest collegiate honors along with Phi Kappa Phi and Phi Beta Kappa

Isaac Bashevis Singer Scholarship 2008 → 2012
Full academic scholarship to the University of Miami (UM), 30 annually.

Foote Fellow 2008 → 2012
Highest academic honor at UM, fellows freely design their curriculum, 50 annually

NSF CSMS Scholarship 2010
NSF Computer Science and Mathematics for Scientists, 5 annually at UM

Beyond the Book Scholarship 2010
Supported summer research, UM College of Arts and Sciences, 12 annually

National Ocean Scholarship 2008 → 2010
Awarded by the Consortium for Ocean Leadership, 4 in the U.S. annually

Selected Conferences →

K. W. Schultz, M. K. Sachs, E. M. Heien, M.R. Yoder, J. B. Rundle, D. L. Turcotte, A. Donnellan. **talk**: *Scenario Earthquake and Tsunami Simulations for a Pacific Rim GNSS Tsunami Early Warning System: First Results*
9th Meeting of the APEC Cooperation for Earthquake Simulation, **Chengdu, China**. 2015

K. W. Schultz, M. K. Sachs, E. M. Heien, J. B. Rundle, J. Fernandez, D. L. Turcotte, A. Donnellan. **talk**: *Virtual Quake: Earthquake Statistics, Surface Deformation Patterns, Surface Gravity Changes and In-SAR Interferograms for Arbitrary Fault Geometries* **(won an Outstanding Student Presentation Award)**, American Geophysical Union (AGU) Fall Meeting 2014, San Francisco, CA, 2014

K. W. Schultz, J. B. Rundle, M. K. Sachs, K. F. Tiampo, T. J. Hayes, J. Fernandez, D. L. Turcotte, A. Donnellan. **talk**: *Monitoring Major Fault Systems from Space: Modeling Implications for Dedicated Gravity Missions.* GENAH Conference. **Matsushima, Japan**. 2014

Multi-Hazards Summer School: 1 week workshop on disaster prediction, preparedness, and response hosted by IRIDeS at Tohoku University and by the Association of Pacific Rim Universities (APRU). **Sendai, Japan**. 2014

Teaching →

Teaching Assistant, Department of Physics, **University of California, Davis** 2012 → 2013

Physics & Math tutor, at both **Barry University** and the **University of Miami** 2011 → 2012