

Gregory C. McLaskey

Assistant Professor

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Education:

University of California, Berkeley CA

Ph.D. Civil Engineering: Civil Systems: May 2011

Stress wave source characterization: impact, fracture, and sliding friction

M.S. Civil Engineering: Structural Engineering, Mechanics, and Materials Dec. 2006

Cornell University Ithaca, NY

B.S. Civil Engineering, *Magna cum Laude*, May 2005

Professional Experience:

Cornell University, Ithaca, NY 2014 - present

Assistant Professor, Civil and Environmental Engineering

United States Geological Survey, Menlo Park, CA 2011 - 2014

Research Civil Engineer

University of California, Berkeley, CA

Graduate Student Instructor and Graduate Research Assistant 2006 - 2011

Selected Awards

NSF CAREER – EAR-Geophysics 2019

Cornell Engineering Teaching Excellence Award 2018

Keiiti Aki Young Scientist Award, American Geophysical Union 2014

USGS Mendenhall Post-Doctoral Fellowship 2011

UC Berkeley Nanoscience Fellowship 2009

National Science Foundation Graduate Research Fellow 2006

Invited Talks

2020: University of Toronto, Department of Chemical and Physical Sciences (virtual)

2020: Gordon Research Conference on Rock Deformation, Lewiston, ME (cancelled)

2020: In Situ Studies of Rock Deformation Workshop – Cornell CHESS (virtual)

2019: Stanford University Geophysics Department

2019: UCSD - Applications of Mechanics to Geophysics Symposium

2019: USGS earthquake science center, Menlo Park, California

<https://earthquake.usgs.gov/contactus/menlo/seminars/1212>

2017: MIT – Earth, Atmospheric and Planetary Sciences

2017: Princeton Department of Geosciences

2017: Utrecht University Department of Earth Sciences, Netherlands

2016: Caltech Mechanical and Civil Engineering Department

2016: Penn State Geosciences Colloquium

2016: University of Toronto, Engineering Science Education Conference

2014: Cornell Department of Earth and Atmospheric Sciences
2014: USGS earthquake science center, Menlo Park, California
<http://earthquake.usgs.gov/regional/nca/seminars/2014-06-25/>
2014: NIED Tsukuba, Japan
2013: Stanford University Geophysics Department
2013: USGS earthquake science center, Menlo Park, California
<http://earthquake.usgs.gov/regional/nca/seminars/2013-06-19/>
2013: Caltech seismological laboratory
2012: Crustal dynamic modeling workshop, Golden Colorado
2012: USGS earthquake science center, Menlo Park, California
2011: UC Santa Cruz institute for geophysics and planetary physics
2010: UC Berkeley seismological laboratory
2010: Non-destructive testing workshop, Technical Univ. of Munich, Germany

Publications: (Student advisees underlined)

Peer Reviewed Journal Publications:

1. Cebry, S. B. L. and McLaskey, G. C. (2020) Seismic swarms produced by rapid fluid injection into a low permeability laboratory fault, *Earth and Planetary Sciences Letters* (in revision)
2. Brodsky, E. E., G. C. McLaskey, Ke, C.-Y. (2020) Groove Generation and Coalescence on a Large-Scale Laboratory Fault, *AGU Advances* (in press)
3. Ke, C.-Y., McLaskey, G. C., Kammer, D S. (2020) The Earthquake Arrest Zone, *Geophys. J. Int.* (in press) <https://doi.org/10.1093/gji/ggaa386>
4. Beeler, N. M., McLaskey, G. C., Lockner, D., and Kilgore, B. (2020). Near-Fault Velocity Spectra From Laboratory Failures and Their Relation to Natural Ground Motion. *Journal of Geophysical Research: Solid Earth*, 125, e2019JB017638.
5. McLaskey, G. C. (2019) Earthquake Initiation from Laboratory Observations and Implications for Foreshocks, *Journal of Geophysical Research* 124 <https://doi.org/10.1029/2019JB018363>
6. Wu, B. S and McLaskey, G.C., (2019) Contained Laboratory Earthquakes Ranging from Slow to Fast, *Journal of Geophysical Research* 124 doi:10.1029/2019JB017865
7. Kammer, D. S., and McLaskey, G. C. (2019) Fracture energy estimates from large-scale laboratory earthquakes, *Earth and Planetary Sciences Letters*, 511(1), 36-43.
8. Ke, C.-Y., McLaskey, G. C., Kammer, D. S. (2018) Rupture Termination in Laboratory-Generated Earthquakes. *Geophysical Research Letters* 45, 12,784–12,792.
9. McLaskey, G. C. and Lockner, D. A. (2018) Shear failure of a granite pin traversing a sawcut fault. *International Journal of Rock Mechanics and Mining Sciences* 110, 97-110
10. Wu, B. S and McLaskey, G. C (2018) Broadband calibration of acoustic emission and ultrasonic sensors utilizing generalized ray theory and finite element models. *Journal of Nondestructive Evaluation* 37:8, <https://doi.org/10.1007/s10921-018-0462-8>.
11. McLaskey, G. C., and Yamashita, F., (2017) Slow and fast ruptures on a laboratory fault controlled by loading characteristics, *Journal of Geophysical Research*, 122, 3719-3738.
12. McLaskey, G.C., and Lockner, D. A (2016) Calibrated Acoustic Emission System Records M –3.5 to M –8 Events Generated on a Saw-Cut Granite Sample *Rock Mechanics and Rock Engineering* 49, 4527-4536, DOI 10.1007/s00603-016-1082-1
13. McLaskey, G. C., Kilgore, B. D., and Beeler, N. M. (2015) Slip-pulse rupture behavior on a 2 meter granite fault *Geophysical Research Letters*, 42 (17), 7039-7045.
14. McLaskey, G. C., Lockner, D. A., Kilgore, B. D., and Beeler, N. M. (2015) A robust calibration technique for acoustic emission systems based on momentum transfer from a ball drop. *Bull. Seis. Soc. Am.* 105, 257-271 doi: 10.1785/0120140170.3jklj

15. McLaskey, G. C., and Lockner, D. A., (2014) Preslip and cascade processes initiating laboratory stick-slip *Journal of Geophysical Research*, 119, 6323-6336 doi: 10.1002/2014JB011220
16. McLaskey, G. C., Kilgore, B., D., Lockner, D. A., Beeler, N., M. (2014) Laboratory generated M -6 earthquakes. *Pure and Applied Geophysics* DOI 10.1007/s00024-013-0772-9
17. McLaskey, G. C., and Kilgore, B. D (2013) Foreshocks during the nucleation of stick-slip instability. *Journal of Geophysical Research* 118, 2982-2997.
18. McLaskey, G. C., Thomas, A. M., Glaser, S. D., and Nadeau, R. M. (2012) Fault healing promotes high frequency earthquakes in laboratory experiments and on natural faults. *Nature* 491, pp. 101–104.
19. McLaskey, G. C. and Glaser, S. D. (2012) Acoustic emission sensor calibration for absolute source measurements. *Journal of Nondestructive Evaluation* 31(2) pp. 157-168
20. McLaskey, G. C. and Glaser, S. D. (2011) Micromechanics of asperity rupture during laboratory stick slip experiments *Geophysical Research Letters*, 38, L12302.
21. McLaskey, G. C. and Glaser, S. D. (2010) Hertzian impact: experimental study of the force pulse and resulting stress waves, *Journal of the Acoustical Society of America* 128 (3) pp. 1087-1096.
22. McLaskey, G. C., Glaser, S. D., and Grosse, C. U., (2010) Beamforming array techniques for acoustic emission monitoring of large concrete structures, *Journal of Sound and Vibration*, 329 (12) pp. 2384-2394.
23. McLaskey, G. C., and Sansalone, M., (2006) Nondestructive Dynamic Evaluation of a Concrete Reaction Wall, *ASCE Journal of the Performance of Constructed Facilities*

Selected Conference Papers: (Student advisees underlined)

1. Cebry, S. B. L., and McLaskey, G. C. (2019) “Laboratory Stick-Slip Events Due to Direct Fluid Injection” American Rock Mechanics Association, New York, NY #ARMA 19-248
2. McLaskey, G. C., and Lockner, D. A. (2015) "Calibrated acoustic emission system records M -3-5 to M -8 events generated on a saw-cut granite sample" American Rock Mechanics Association, San Francisco, CA., #ARMA 15-204.
3. McLaskey, G., Glaser, S., (2009) “High-fidelity conical piezoelectric transducers and finite element models utilized to quantify elastic waves generated from ball collisions,” in: M. Tomizuka, C. Yun, V. Giurgiutiu (Eds.), *Proc. SPIE*, vol. 7292, 72920S-1 - 72920S-18.
4. McLaskey, G. C. and Glaser, S. D. (2007) “Temporal Evolution and 3D Locations of Acoustic Emissions Produced from the Drying Shrinkage of Concrete,” *Journal of Acoustic Emission* 25(1) pp. 52-57.
5. McLaskey, G., Glaser, S., Grosse, C., (2007) "Integrating Broad-Band High-Fidelity Acoustic Emission Sensors and Array Processing to Study Drying Shrinkage Cracking in Concrete" *Proc. of SPIE* Vol. 6529 65290C

Selected Conference Abstracts: (Student advisees underlined)

1. Cebry, S. B. L., Ke, C.-Y., Shreedharan, S., Marone, C., Kammer, D. S., and McLaskey, G. C. (2019) “Laboratory observations of frictional stability and fault zone evolution under heterogeneous friction, rheology, and stress conditions,” American Geophysical Union, Fall Meeting Dec 11, 2019, abstract # MR31A-05.
2. Ke, C.-Y., McLaskey, G. C. and Kammer, D. S (2019) “A Singularity-Free Crack Model Inferred from Contained Laboratory-Generated Earthquakes” American Geophysical Union, Fall Meeting Dec 13, 2019, abstract # S53F-0526.

3. Wu, B. S., and McLaskey, G. C. (2019) "Spectra and Mechanics of Slow to Fast Contained Laboratory Earthquakes" *Seismological Society of America (SSA) Annual Meeting*, Seattle, WA, USA. April 24-26, 2019
4. McLaskey, G. C. (2019) "The Initiation of Dynamic Rupture on a 3-m Laboratory Earthquake Experiment" *Seismological Society of America (SSA) Annual Meeting*, Seattle, WA, USA. April 24-26, 2019
5. Ke, C.-Y., McLaskey, G. C. and Kammer, D. S (2018) "Rupture Termination in Laboratory-Generated Earthquakes" American Geophysical Union, Fall Meeting Dec 17, 2018, abstract #T13B-06
6. Wu, B. S., and McLaskey, G. C (2018) "Source Parameter Study for Confined Lab Earthquakes on a 3 m Biaxial Apparatus" American Geophysical Union, Fall Meeting Dec 17, 2018, abstract #T11E-0192
7. McLaskey, G. C., and Wu, B. S. (2018) "Mechanical and Seismic Characteristics of Confined Dynamic Ruptures Generated on a 3-m Machine" American Geophysical Union, Fall Meeting Dec 17, 2018, abstract # S13A-03
8. Wu, B. S and McLaskey, G. C (2018) Source Parameters of M -2.5 Contained Laboratory Earthquakes: Comparison of Mechanically and Seismically Inferred Moment and Stress Drop *Gordon Research Conference: Rock Deformation* August 20, 2018, Andover, NH.
9. McLaskey, G. C. (2018) "Slow slip events and dynamic rupture nucleation on a 3-meter laboratory rock experiment" *Gordon Research Conference: Rock Deformation* August 20, 2018, Andover, NH.
10. Ke, C-Y, McLaskey, G. C. and Kammer, D. S. (2018) Rupture Termination in Laboratory-Generated Earthquakes *Gordon Research Conference: Rock Deformation* August 20, 2018, Andover, NH.
11. McLaskey, G. C. (2017) Slow Slip and Earthquake Nucleation in Meter-Scale Laboratory Experiments, American Geophysical Union, Fall Meeting 2017, abstract #MR42A-04
12. McLaskey, G. C. and Lockner, D. A. (2017) Microseismic Analysis of Fracture of an Intact Rock Asperity Traversing a Sawcut Fault, American Geophysical Union, Fall Meeting 2017, abstract #S23F-04
13. Wu, B. S and McLaskey, G. C (2017) Foreshocks and Aftershocks Detected from Stick-slip Events on a 3 m Biaxial Apparatus and their Relationship to Quasistatic Nucleation and Wear Processes, American Geophysical Union, Fall Meeting 2017, abstract #S21B-0714
14. Wu, B. S and McLaskey, G. C (2017) Estimating the Magnitude of Laboratory-generated Seismic Events using a Ball Drop Empirical Green's function (EGF) Method. *Seismological Society of America (SSA) Annual Meeting*, Denver, CO, USA. April 18-20, 2017
15. McLaskey, G. C. and Yamashita, F. (2017) Seismic coupling of fast and slow ruptures on a 760 mm laboratory fault. *Seismological Society of America (SSA) Annual Meeting*, Denver, CO, USA. April 18-20, 2017
16. McLaskey, G. C., Kammer, D. S., Kilgore, B. D., Beeler, N. M. (2016) Lowered Fracture Energy During Laboratory-Generated Earthquakes Promotes Rupture Fronts That Radiate High Frequency Seismic Waves *American Geophysical Union, Fall Meeting 2016*, San Francisco, CA.
17. Reid, A. J., Wu, B. S. and McLaskey, G. C (2016) Construction and Structural Analysis of Steel Load Frame and Hydraulic Loading System, *LSAMP undergraduate research colloquium*, Cornell University, August 12, 2016.
18. McLaskey, G. C. (2016) "M -2.5 to M -8 Laboratory-Generated Earthquakes Recorded From Calibrated Rock Deformation Experiments" *Gordon Research Conference: Rock Deformation 2016*, Andover, NH.

19. Wu, B. S. and McLaskey, G. C. (2016) "Calibration of Piezoelectric Sensors using Generalized Ray Theory and Finite Element Method" *Acoustic Emission Working Group (AEWG) Meeting 58*, May 22-25 in Philadelphia, PA, USA
20. McLaskey, G. C. and Yamashita, F. (2015) "Slow slip events on a 760 mm long granite sample," *American Geophysical Union, Fall Meeting 2015*, San Francisco, CA.
21. McLaskey, G. C., and Lockner, D. A. (2014) "Stick-slip instability in granite initiated as acoustic emission event" *Seismological Society of America annual meeting*, Anchorage, AK.
22. McLaskey, G. C., Kilgore, B. D., Lockner, D. A., Beeler, N. M. (2013) "Seismic waves radiated during dynamic rupture of granite laboratory samples" *American Geophysical Union, Fall Meeting 2013*, San Francisco, CA.
23. McLaskey, G. C., Kilgore, B. D., Beeler, N. M., and Lockner, D. A. (2013) "M -6 laboratory earthquakes driven by aseismic slip" *American Geophysical Union, Fall Meeting 2013*, San Francisco, CA.
24. McLaskey, G. C., Kilgore, B. D., Beeler, N. M., and Lockner, D. A. (2013) "M -6 laboratory earthquakes driven by aseismic slip" *SCEC Annual meeting 2013*, Palm Springs, CA
25. McLaskey, G. C., Kilgore, B. D., Lockner, D. A, Beeler, N. M. (2013) "Seismic source spectra of laboratory earthquakes" *Seismological Society of America annual meeting*, Salt Lake City. UT.
26. McLaskey, G. C., Kilgore, B. D., Beeler, N. M., and Lockner, D. A. (2012) "Repeating foreshock sequences and laboratory stick-slip" *American Geophysical Union, Fall Meeting 2012*, San Francisco, CA.
27. McLaskey, G. C., Kilgore, B. D., Beeler, N. M., and Lockner, D. A. (2012) "Earthquake nucleation: stressing rate affects foreshock occurrence and minimum earthquake size" *European Center for Geodynamics and Seismology workshop 2012: Earthquakes source physics on various scales*, Luxembourg.
28. McLaskey, G. C., Kilgore, B. D., and Beeler, N. M. (2012) "Earthquake source physics studied with elastodynamic modeling and laboratory seismology" *Seismological Society of America annual meeting*, San Diego, CA.
29. McLaskey, G. C., Glaser, S. D., Thomas, A., and Bürgmann, R. (2011) "Fault healing and earthquake spectra from stick-slip sequences in the laboratory and on active faults" *American Geophysical Union, Fall Meeting 2011*, abstract #T13A-2346
30. McLaskey, G. C. and Glaser, S. D. (2010), Micromechanics of friction studied nanoseismically on laboratory faults, *American Geophysical Union, Fall Meeting 2010*, abstract #S54A-05
31. McLaskey, G. C. and Glaser, S. D. (2010), Discrete rupture of asperities recorded on instrumented laboratory faults, *SCEC Annual Meeting*, Palm Springs, CA, September 11-15, 2010