Samuel B. Kachuck

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I am seeking post-doctoral and faculty positions researching the uncertainties in geophysical models related of local sea level changes.

Education

Cornell University Sep 2011 – May 2018 (expected)
Ph.D. in Geophysics

Cornell University Sep 2011 – Aug 2014
M.S. in Physics

Cambridge University, St. Edmund's College Oct 2010 – May 2011
M.A.St., in Applied Mathematics and Theoretical Physics
with Merit

Wesleyan University Sep 2006 – June 2010
B.A. in Physics and Mathematical Economics
with High Honors in Physics

Research Experience

Graduate Research Fellow May 2012 – Present
Cornell University
Advisor: Prof. Lawrence M. Cathles, III
Area: Glacial Isostatic Modeling and Analysis
- Computational study of the physics and errors in models of glacial isostatic adjustment.

Graduate Research Assistant Sep 2011 – May 2012
Cornell University
Advisor: Prof. Itai Cohen
Area: Insect Flight Stability and Control
- Experimental study of the fluid dynamics and control mechanisms employed by Drosophilae to stabilize their flight against perturbations.

Research Assistant Oct 2010 – May 2011
GK Batchelor Fluids Laboratory
Advisor: Dr. Stuart B. Dalziel
Area: Buoyancy in Permeable Media
- Experimental study of the various fluid dynamical regimes present when a buoyant plume flows past a permeable medium.

Undergraduate Research Assistant Aug 2008 – June 2010
Wesleyan University
Advisor: Prof. Greg A. Voth
Area: Granular Gas Dynamics
- Experimental and computational study of the dynamics of 2D granular gases in gravity, both in steady state (when energy is continuously added) and in decay (when it is not).

Publications

[1] **Kachuck, Samuel B.**, "Geometric perspective on fitting glacial isostatic adjustment," in prep.

[2] R. Riva, G. Spada, . .., **Kachuck, Samuel B.**, and . .., "Benchmarking the sea level equation," in prep.

[3] W. J. Durkin, **Kachuck, Samuel B.**, and M. E. Pritchard, "Sensitivity of southeast alaskan elastic uplift rates to uncertainty in earth structure and decadal ice thinning rates," in prep.

[4] **Kachuck, Samuel B.**, "Nondimensionalized relaxation method for efficient computation of time-domain viscoelastic love numbers," in prep.

[5] **Kachuck, Samuel B.** and L. M. Cathles, "Constraining the geometry and volume of the barents sea ice sheet," *Journal of Quaternary Science*, in review.

[6] **Kachuck, Samuel B.** and G. A. Voth, "Simulations of granular gravitational collapse," *Physical Review E*, vol. 88, no. 6, p. 062 202, Dec. 2013, ISSN: 1539-3755. DOI: 10.1103/PhysRevE.88.062202. [Online]. Available: http://link.aps.org/doi/10.1103/PhysRevE.88.062202.

[7] J. A. Perez, **Kachuck, Samuel B.**, and G. A. Voth, "Visualization of collisional substructure in granular shock waves," *Physical Review E*, vol. 78, no. 4, pp. 1–6, Oct. 2008, ISSN: 1539-3755. DOI: 10.1103/PhysRevE.78.041309. [Online]. Available: http://link.aps.org/doi/10.1103/PhysRevE.78.041309.

Teaching Experience

- Private Tutor (PHYS 2207, 2208, 1112, 2213, 2216; MAE 3780; CEE 3310), S2012 – present
- Analytical Mechanics (CU PHYS 3318), GTA S2017
- Physics II: Electromagnetism (CU PHYS 2213), GTA F2011, S2012, Su2012
- Physics I: Mechanics and Heat (CU PHYS 1112), GTA F2012
- Quantum Mechanics I (W PHYS 214), UTA S2010
- Mathematical Economics (W ECON 380), UTA F2009
- General Physics II (W PHYS 116), UTA S2009
- General Physics I (W PHYS 113), UTA F2008

Skills

Languages: Python, C/C++, FORTRAN, APL, LaTeX, Matlab

Honors & Awards

- Douglas A Fitchen Scholar 2017
- AGU Outstanding Student Paper Award 2016
- NSF GRFP Honorable Mention 2012
- Phi Beta Kappa 2010
- Graham Prize 2010
- Karl van Dyke Prize 2010
- Plukas Teaching Apprentice Award 2010
- White Prize 2010
- Dean's List, Wesleyan University 2006 – 2010
- Squire Fund Fellow 2007
- Chadbourne Prize 2007

Service

- Letters to a Pre-Scientist 2016-
- Local Geology Walk 2016-
- Graduate Teaching Assistant Review 2013
- Graduate Teaching Assistant Training 2012, 2013
- Alumni Day Physics Demonstrations 2012
- Retrospective Degree Day Fluids Demonstrations 2011

All Publications

Google Scholar ID: nuMklOMAAAAJ

Journal Articles

[J1] **Kachuck, Samuel B.**, "Geometric perspective on fitting glacial isostatic adjustment," in prep.

[J2] R. Riva, G. Spada, . .., **Kachuck, Samuel B.**, and . .., "Benchmarking the sea level equation," in prep.

[J3] W. J. Durkin, **Kachuck, Samuel B.**, and M. E. Pritchard, "Sensitivity of southeast alaskan elastic uplift rates to uncertainty in earth structure and decadal ice thinning rates," in prep.

[J4] **Kachuck, Samuel B.**, "Nondimensionalized relaxation method for efficient computation of time-domain viscoelastic love numbers," in prep.

[J5] **Kachuck, Samuel B.** and L. M. Cathles, "Constraining the geometry and volume of the barents sea ice sheet," *Journal of Quaternary Science*, in review.

[J6] **Kachuck, Samuel B.** and G. A. Voth, "Simulations of granular gravitational collapse," *Physical Review E*, vol. 88, no. 6, p. 062 202, Dec. 2013, ISSN: 1539-3755. DOI: 10.1103/PhysRevE.88.062202. [Online]. Available: http://link.aps.org/doi/10.1103/PhysRevE.88.062202.

[J7] J. A. Perez, **Kachuck, Samuel B.**, and G. A. Voth, "Visualization of collisional substructure in granular shock waves," *Physical Review E*, vol. 78, no. 4, pp. 1–6, Oct. 2008, ISSN: 1539-3755. DOI: 10.1103/PhysRevE.78.041309. [Online]. Available: http://link.aps.org/doi/10.1103/PhysRevE.78.041309.

Oral Presentations

[O1] **Kachuck, Samuel B.** and L. M. Cathles, "Nondimensionalized relaxation method for efficient computation of elastic love numbers," in *Workshop on Glacial Isostatic Adjustment and Elastic Deformation*, 2017.

[O2] **Kachuck, Samuel B.**, L. M. Cathles, A. Amantov, A. Hormes, and W. Fjeldskaar, "Emergence constraints on late weichselian barents sea ice sheet history," in *EGU*, 2014.

[O3] **Kachuck, Samuel B.**, "Velocity dependent energy loss in granular gravitational collapse," in *New York Condensed Matter Workshop*, 2011.

Posters

[P1] **Kachuck, Samuel B.** and L. M. Cathles, "Using geometry to improve model fitting and experiment design for glacial isostasy *(invited)*," in *American Geosciences Union*, 2017.

[P2] ——, "Sloppy inversion and optimal experiment design for last glacial maximum barents sea ice sheet configuration," in *American Geosciences Union*, 2016.

[P3] ——, "Gia response suggests thick lithosphere under the appalachians," in *Institute for the Study of the Continents*, 2014.

[P4] **Kachuck, Samuel B.**, L. M. Cathles, A. Amantov, and W. Fjeldskaar, "North american peripheral bulge constraints on mantle rheology," in *European Geosciences Union*, 2014.

[P5] L. M. Cathles, A. Amantov, **Kachuck, Samuel B.**, and W. Fjeldskaar, "The seamod methodology of gia interpretation," in *European Geosciences Union*, 2014.

[P6] **Kachuck, Samuel B.** and L. M. Cathles, "Lithosphere, ice history, local emergence," in *European Geosciences Union*, 2013.

[P7] **Kachuck, Samuel B.**, "Granular gravitational collapse in realistically simulated granular gases," in *5th Annual Thesis Celebration*, 2010.