

# Colin R. Meyer

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## Education

- 2013-2017 PHD in Applied Mathematics  
Advised by Professor James R Rice  
School of Engineering and Applied Sciences  
Harvard University
- 2012-2013 MAST in Applied Mathematics  
Part III of the Mathematical Tripos  
University of Cambridge
- 2008-2012 BS in Civil and Environmental Engineering  
University of California, Berkeley  
*With High Honors*

## Research Interests

Cryospheric fluid dynamics, subglacial hydrology, asymptotic & perturbation methods, non-Newtonian fluid mechanics, stratified turbulence, particles & passive scalars in turbulence

## Professional Experience

- 2017-present **University of Oregon** *Postdoctoral scholar*  
Research on freezing of subglacial sediments and hydrology in the context of glacier sliding.  
Reference: Professor Alan Rempel, rempel@uoregon.edu
- 2016 **Woods Hole Oceanographic Institute** *Geophysical fluid dynamics fellowship*  
Lectures on swimming and biolocomotion. Research on meltwater flow in firn.  
Reference: Professor Ian Hewitt, hewitt@maths.ox.ac.uk
- 2014 **University of Alaska, Fairbanks** *McCarthy glaciology summer school*  
Field experience on Kennicott glacier. Research on lumped subglacial hydrology models.  
Reference: Professor Ed Bueler, elbueler@alaska.edu
- 2012-2013 **University of Cambridge** *Research Assistant*  
Lab experiments on the scaling of the transition to turbulence in stratified shear flow.  
Reference: Professor Paul Linden, p.f.linden@damtp.cam.ac.uk
- 2012 **Sea Engineering, Inc.** *Environmental Engineer (Intern)*  
Hydro-acoustic monitoring and sound attenuation modeling for fish protection  
Reference: Mr Ken Israel, kisrael@integral-corp.com
- 2011-2012 **McGill University** *Research Trainee*  
Wind tunnel turbulence data comparison to predictions for passive scalar statistics.  
Reference: Professor Laurent Mydlarski, laurent.mydlarski@mcgill.ca
- 2010-2012 **University of California, Berkeley** *Research Assistant*  
Turbulence tank construction and experiments to determine particle rotation using PIV.  
Reference: Professor Evan Variano, variano@ce.berkeley.edu

## Scholarships, Honors & Awards

2017	David Crighton Fellow to the University of Cambridge
2013-2015	Harvard Certificate of Distinction in Teaching
2013	National Science Foundation Graduate Research Fellowship
2012	Winston Churchill Scholarship to the University of Cambridge
2012	Clement T. Wiskocil Award, UC Berkeley Civil & Environmental Engineering Honor
2011	Chevron Environmental Engineering Scholarship
2011	Travel Grant, American Physical Society Division Fluid Dynamics
2009	APWA Civil Engineering Scholarship
2008	Robert C. Byrd Scholarship

## Graduate Coursework

2015	Computational Methods for Flow in Porous Media
2014	Computational Fluid Dynamics; Fracture Mechanics; Partial Differential Equations
2013	Solidification of Fluids; Fluid Dynamics of Climate; Solid Mechanics
2012	Slow Viscous Flow; Fluid Dynamics of the Environment; Perturbation and Stability Methods

## Teaching Experience

Spring 2016	Harvard ES 123 (TA, undergraduate fluid mechanics, Prof S Rubinstein)
Fall 2015	Harvard AM 104 (TA, undergraduate complex analysis, Dr N Upadhyaya)
Spring 2015	Harvard AM 105 (TA, undergraduate differential equations, Prof M P Brenner)
Fall 2014	Harvard ES 220 (TA, graduate fluid dynamics, Prof J R Rice)
Spring 2014	Harvard EPS 162 (TA, undergraduate hydrology, Prof J R Rice)
Fall 2013	Harvard ES 220 (TA, graduate fluid dynamics, Prof L Mahadevan)

## Professional Memberships

2017	International Glaciological Society
2017	American Geophysical Union
2017	American Physical Society
2010	Tau Beta Pi engineering honor society induction
2010	Chi Epsilon civil engineering honor society induction

## Academic Service

### Journal Reviewer

*Journal of Fluid Mechanics. Journal of Glaciology. Journal of Geophysical Research. Fluid Dynamics Research. International Journal of Solids and Structures. Water Resources Research*

### Conferences

*American Physical Society Division of Fluid Dynamics — Geophysical Fluid Dynamics: Cryosphere session organizer (2015, 2016, 2017)*

## Publications

### Journal articles

*In preparation*

**Colin R. Meyer**, L. Mydlarski, and L. Danaila. Statistics of incremental averages of passive scalar fluctuations. *to be submitted to Phys. Fluids (Fall 2017)*

**Colin R. Meyer** and Brent C. Minchew. Melting in the shear margins of the Antarctic Ice Sheet. *to be submitted to Geophys. Res. Lett. (Fall 2017)*

*Submitted*

- 2017 **Colin R. Meyer** and Ian Hewitt. Meltwater percolation and refreezing in compacting snow. *submitted to The Cryosphere*
- 2017 **Colin R. Meyer**, Alissar Yehya, Brent C. Minchew, and James R. Rice. Development of temperate ice and transitions in subglacial hydrology along ice stream shear margins. *submitted to J. Geophys. Res.*

*Published*

- 2017 8. **Colin R. Meyer** and Timothy T. Creyts. Formation of Ice Eddies in Mountain Valleys. *J. Geophys. Res.* doi: 10.1002/2017JF004329
- 2017 7. Navid Zolfaghari, **Colin R. Meyer**, and Andrew P. Bunger. Blade-shaped (PKN) Hydraulic Fracture Driven By A Turbulent Fluid In An Impermeable Rock *in press J. Eng. Mech.*
- 2017 6. **Colin R. Meyer**, John W. Hutchinson, and James R. Rice. The path-independent M integral implies the creep closure of englacial and subglacial channels. *J. Appl. Mech.* 84(1), 011006:1-9. doi: 10.1115/1.4034828
- 2016 5. **Colin R. Meyer**, Matheus C. Fernandes, Timothy T. Creyts, and James R. Rice. Effects of ice deformation on R othlisberger channels and implications for transitions in subglacial hydrology. *J. Glaciol.* 62(234):750–762. doi: 10.1017/jog.2016.65
- 2016 4. Douglas J. Brinkerhoff, **Colin R. Meyer**, Ed Bueler, Martin Truffer, and Timothy Bartholom us. Inversion of a glacier hydrology model. *Ann. Glaciol.* 57(72):1–12. doi: 10.1017/aog.2016.3
- 2014 3. **Colin R. Meyer** and Paul Linden. Stratified shear flow: experiments in an inclined square duct. *J. Fluid Mech.* 753, 242–253. doi:10.1017/jfm.2014.358
- 2013 2. **Colin R. Meyer**, Margaret L. Byron, and Evan A. Variano. Rotational diffusion of particles in turbulence. *Limnol. Oceanogr.: Fluids & Environ.* 3:89–102. doi:10.1215/21573689-2326592.
- 2012 1. Gabriele Bellani, Margaret L. Byron, Audric G. Collignon, **Colin R. Meyer** and Evan A. Variano. Shape effects on turbulent modulation by large nearly neutrally buoyant particles. *J. Fluid Mech.* 712:41–60. doi:10.1017/jfm.2012.393

**Conference presentations**

- 2017 **Colin R. Meyer**, Alissar Yehya, and James R. Rice. Interaction between englacial temperate ice and a subglacial hydrologic system. *Alpine Glaciology Meeting.* February 2017.
- 2016 **Colin R. Meyer** and Ian Hewitt. Meltwater percolation and refreezing in compacting snow. *American Physical Society Division of Fluid Dynamics conference.* November 2016.
- 2015 **Colin R. Meyer**, Timothy T. Creyts, and James R. Rice. Moffatt eddies at the base of ice sheets. *American Physical Society Division of Fluid Dynamics conference.* November 2015.
- 2015 **Colin R. Meyer**, Matheus C. Fernandes, and James R. Rice. R othlisberger Channels under Antiplane Shear *New England Glaciology Meeting.* April 2015.
- 2014 **Colin R. Meyer** and Paul Linden. Stratified shear flow in an inclined square duct. *American Physical Society Division of Fluid Dynamics conference.* November 2014.
- 2014 **Colin R. Meyer**, Matheus C. Fernandes, and James R. Rice. R othlisberger Channels under Antiplane Shear *LDEO subglacial hydrology conference.* October 2014.
- 2013 **Colin R. Meyer** and Paul Linden. Transition to turbulence in stratified shear flow through an inclined square duct. *14th European Turbulence Conference.* September 2013.
- 2013 L. Mydlarski, **Colin R. Meyer**, and L. Danaila. Statistics of incremental averages of passive scalar fluctuations. *14th European Turbulence Conference.* September 2013.
- 2011 **Colin R. Meyer** and L. Mydlarski. Statistics of incremental averages of passive scalar fluctuations. *American Physical Society Division of Fluid Dynamics conference.* November 2011.

2011 Evan A. Variano, **Colin R. Meyer**, and Margaret L. Byron. Rotational diffusion of particles in turbulence. *American Physical Society Division of Fluid Dynamics conference*. November 2011.

### Conference posters

2016 **Colin R. Meyer**, Bradley P. Lipovsky, and Matthew R. Siegfried. Inferring subglacial lake water pressure from a bending model of surface displacement observations. *AGU Fall Meeting*. December 2016.

2015 **Colin R. Meyer**, and James R. Rice. The path-independent  $M$  Integral around R othlisberger channels. *AGU Fall Meeting*. December 2015.

2015 **Colin R. Meyer**, Matheus C. Fernandes, and James R. Rice. Adding antiplane shear to R othlisberger channels. *IGS Cambridge*. August 2015.

2014 **Colin R. Meyer**, Timothy T. Creyts, and James R. Rice. Formation of Ice Eddies in Mountain Valleys of East Antarctica. *AGU Fall Meeting*. December 2014.

2014 Matheus C. Fernandes, **Colin R. Meyer**, and James R. Rice. R othlisberger Channel Model with Anti-Plane Shear Loading Superposed on In-Plane Compression *AGU Fall Meeting*. December 2014.

2013 **Colin R. Meyer**, Margaret L. Byron, and Evan A. Variano. Rotational diffusion of particles in turbulence. *Microenvironments conference*. Les Houches, France. March 2013.

2011 Margaret L. Byron, **Colin R. Meyer**, Gabriele Bellani, and Evan A. Variano. Coupled Dynamics of Turbulent Water Flow and Non-Spherical Particles Through Novel Measurement Method. *AGU Fall Meeting*. December 2011.

### Book reviews

2017 **Colin R. Meyer**, Review of “Multiphysics Modeling Using COMSOL 5 and MATLAB”, by Roger W. Pryor, Mercury Learning, 2016; *Pure Appl. Geophys.* 2017. doi: 10.1007/s00024-017-1594-y

2016 **Colin R. Meyer**, Review of “Flow, Deformation and Fracture”, by G. I. Barenblatt, Cambridge University Press, 2014; *Pure Appl. Geophys.* 2016. doi: 10.1007/s00024-016-1240-0

2016 **Colin R. Meyer**, Review of “Fluid Dynamics in Complex Fractured-Porous Systems”, edited by Boris Faybishenko, Sally M. Benson, and John E. Gale, John Wiley & Sons/American Geophysical Union, 2015; *Pure Appl. Geophys.* 2016. doi: 10.1007/s00024-016-1239-6.

2015 **Colin R. Meyer**, Review of “Flow in Porous Rocks”, by Andrew W. Woods, Cambridge University Press, 2015; *Pure Appl. Geophys.* 2015. doi: 10.1007/s00024-015-1138-2.

2015 **Colin R. Meyer**, Review of “Introduction to Geophysical Fluid Dynamics, Second Edition”, by Benoit Cushman-Roisin and Jean-Marie Beckers, Academic Press, 2011; *Pure Appl. Geophys.* 2015. doi: 10.1007/s00024-015-1091-0.

2015 **Colin R. Meyer**, Review of “Granular Media”, by Bruno Andeotti, Y el Forterre, and Olivier Pouliquen, Cambridge University Press, 2013; *Pure Appl. Geophys.* 2015. doi: 10.1007/s00024-015-1094-x.

2015 **Colin R. Meyer**, Review of “Double-Diffusive Convection”, by Timour Radko, Cambridge University Press, 2013; *Pure Appl. Geophys.* 2015. doi: 10.1007/s00024-015-1089-7.