

CONTACT
INFORMATION

Department of Mathematical Sciences
Carnegie Mellon University
Wean Hall 6113
Pittsburgh, PA 15213

Mobile: (541) 908-2911
Email: eobrien2@andrew.cmu.edu
Website: [/www.math.cmu.edu/~eobrien2/](http://www.math.cmu.edu/~eobrien2/)

RESEARCH
INTERESTS

Calculus of variations and PDEs, especially related to material science.

EDUCATION

Carnegie Mellon University, Pittsburgh, PA

Postdoctoral researcher, September 2017–present

Mentors: Dr. Irene Fonseca (fonseca@andrew.cmu.edu)

and Dr. Giovanni Leoni (giovanni@andrew.cmu.edu)

Courant Institute of Mathematical Sciences, New York, NY

PhD in Mathematics, May 2017.

Advisor: Dr. Robert V. Kohn (kohn@cims.nyu.edu)

GPA: 3.96/4.0

Rensselaer Polytechnic Institute, Troy, NY USA

B.S. in Mathematics, May 2011

GPA: 3.96/4.0 (Major GPA 4.0)

RESEARCH
ACTIVITIES**Publications:**

- *On the bending and twisting of rods with misfit* (J. Elas. 2018)
Character: energy minimization, dimension reduction via Γ -convergence
- *Wrinkling of a twisted ribbon* (J. Nonlin. Sci. 2018)
Character: Energy minimization, matching upper and lower bounds
- *Existence of solutions of the degenerate Cahn–Hilliard equation* (in preparation)
Character: Gradient flows, minimizing movements

Presentations:

- University of Freiburg (Aug 2018): On the Cahn–Hilliard equation with degenerate mobility.
- Banff International Research Station (May 2018): The wrinkling of a twisted ribbon.
- SIAM conference on material science (July 2018): two talks.
- University of Pittsburgh (Feb 2018): The bending and twisting of rods with misfit.
- Oxford Partial Differential Equations Seminar (May 2016): Wrinkling and creasing of a twisted ribbon (blackboard talk)
- SIAM conference on the analysis of partial differential equations (Dec 2015): The wrinkling of a twisted ribbon (slides with audio)
- Poster presentations: PIRE conferences in Leipzig 2015 and New York 2016.
- Internal seminars: Center for Nonlinear Analysis seminar (Carnegie Mellon University), Materials Working Group (Courant); Solid and Liquid Crystals (Oxford)

Other experience:

- PCMI Summer School: Mathematics and Materials (July 2014)

- I visited Oxford to interact with Prof. John Ball, Prof. John Ockendon, Prof. Dominic Vella and others (April-June 2016)

OTHER SKILLS

Teaching Experience:

- Multidimensional Calculus (Fall 2017)
- Partial Differential Equations (Spring 2018)
- Introduction to Real Analysis (Fall 2018)
- TA for four classes as a graduate student and three as an undergrad.

Programming Skills: C, C++, Matlab, L^AT_EX, Python