

# Ilona Ambartsumyan

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Visa status: F1(CPT/OPT eligible)

<b>EDUCATION</b>	<i>University of Pittsburgh</i> , PhD in Mathematics, 2013 - 2018(est) Overall GPA: 4.0/4.0, Advisor: Dr. Ivan Yotov  <i>Moscow Institute of Physics and Technology</i> , B.S. and M.S. in Applied Mathematics and Physics, 2007 - 2013, Overall GPA: 4.7/5.0
<b>RELEVANT COURSEWORK</b>	<ul style="list-style-type: none"><li>• Sequence in Computer Science (C++, Algorithms and Analysis) and Scientific Computing (Numerical Methods in Scientific Computing, Advanced Scientific Computing)</li><li>• Sequence in Probability (Probability, Random Variables, Statistics, Introduction into Statistical Learning)</li><li>• Mathematics of Finance</li></ul>
<b>FELLOWSHIPS</b>	<ul style="list-style-type: none"><li>• <i>Andrew Mellon Predoctoral Fellowship</i>, 2016-2017 (awarded to students of exceptional promise and ability when they have advanced to the dissertation stage)</li><li>• <i>Graduate Research Fellowship</i>, 2014-present (research grants funded by government and private agencies to provide the student with valuable research training and experience)</li><li>• <i>Arts &amp; Sciences Graduate Fellowship</i>, 2013-2014 (used to recruit doctoral students of exceptional promise and ability either when they first enroll in the PhD program or for later years)</li></ul>
<b>EXPERIENCE</b>	<div><div><i>Research Assistant</i></div><div>Summer 2014 - present</div><div>University of Pittsburgh, Mathematics Department, Pittsburgh, USA</div><ul style="list-style-type: none"><li>• Derivation of new methods for modeling interaction between fluid and poroelastic media, including new models/coupling strategies, efficient discretization techniques and design of new finite element spaces</li><li>• Analysis of the well-posedness of continuous models; stability and error analysis of discrete/semi-discrete models, as well as implementation of the proposed methods, using deal.II, FreeFEM++ (C++) and FEniCS (Python) scientific packages</li></ul></div> <div><div><i>Teaching Assistant</i></div><div>Summer 2014 - Fall 2015</div><div>University of Pittsburgh, Mathematics Department, Pittsburgh, USA</div><ul style="list-style-type: none"><li>• Analytic Geometry and Calculus 1&amp;2, recitations &amp; labs (Summer 2014, Summer 2015)</li><li>• Business Calculus, recitations (Fall 2014)</li><li>• Introduction to Theoretical Mathematics, recitations (Fall 2015)</li></ul></div> <div><div><i>Senior Analyst of Mass Market Marketing</i></div><div>April 2012 - July 2013</div><div>MegaFon, OJSC, Moscow, Russia</div><p>I was working on development of product strategy and analysis of the impact of new products on main business indicators. I launched three voice plans for B2C market and supervised the advertising campaigns in Moscow region.</p></div>
<b>COMPUTER SKILLS</b>	<i>Languages &amp; Packages</i> : C++, Matlab, deal.II, FEniCS, FreeFEM++ <i>Documentation</i> : L <sup>A</sup> T <sub>E</sub> X, Microsoft Office

## PUBLICATIONS

- I. Ambartsumyan, E. Khattatov, J. Lee, I. Yotov, "*Higher order multipoint flux mixed finite element methods*", submitted to Mathematics of Computation, AMS journal
- I. Ambartsumyan, E. Khattatov, I. Yotov, "*Coupled multipoint flux and multipoint stress mixed finite element method for the Biot poroelasticity model*", work in progress
- I. Ambartsumyan, E. Khattatov, I. Yotov, "*Mixed finite volume methods for linear elasticity*", to appear in "Finite Volumes for Complex Applications VIII", Springer
- I. Ambartsumyan, V.J. Ervin, T. Nguen, I. Yotov, "*A nonlinear Biot-Stokes model for the interaction of a non-Newtonian fluid with poroelastic media, parts I & II*", preprint
- I. Ambartsumyan, E. Khattatov, J. Nordbotten and I. Yotov, "*A multipoint stress mixed finite element method for elasticity, parts I & II*", preprint
- I. Ambartsumyan, E. Khattatov, I. Yotov and P. Zunino, "*A Lagrange multiplier method for a Stokes-Biot fluid-poroelastic structure interaction model*", submitted to Numerische Mathematik journal
- I. Ambartsumyan, E. Khattatov, I. Yotov and P. Zunino, "*Simulation of Flow in Fractured Poroelastic Media: A Comparison of Different Discretization Approaches*", FDM 2014: 3-14
- I. Ambartsumyan, E. Khattatov, C. Wang and I. Yotov, "*Stochastic multiscale flux basis for Stokes- Darcy flows*", preprint
- I. Ambartsumyan, C. He, E. Khattatov, S. Kim, L. Mrad, "*Mapping of temperatures from coarser to finer grid using temporal derivatives*", IMA MMI XIX workshop, technical report

## TALKS & POSTERS

- "*Numerical Study of Gas Mobility Control Techniques during CO<sub>2</sub> Sequestration in Cranfield*", 2017 DOE ASCR Applied Mathematics Principal Investigators Meeting, Rockville, MD, September 2017 (poster)
- "*Mathematical and numerical modeling for flow in fractured poroelastic media*", ICES Center for subsurface modeling seminar, University of Texas at Austin, August 2017 (talk)
- "*A nonlinear Biot-Stokes model for the interaction of a non-Newtonian fluid with poroelastic media*", SIAM Computational Science and Engineering, Atlanta GA, February 2017 (talk)
- "*A multipoint stress mixed finite element method for linear elasticity*", 8th International Conference on Porous Media, InterPORE, Cincinnati OH, May 2016 (poster)
- "*A Lagrange multiplier method for flow in fractured poroelastic media*", Numerical Analysis and Predictability of Fluid Motion, University of Pittsburgh, May 2016 (poster)
- "*A Lagrange multiplier method for flow in fractured poroelastic media*", Finite Element Circus, University of Maryland, April 2016 (talk)
- "*A multipoint stress mixed finite element method for linear elasticity*", GradEXPO, University of Pittsburgh, March 2016 (poster)
- "*A multipoint stress mixed finite element method for elasticity*", Computational Mathematics Seminar, University of Pittsburgh, December 1, 2015 (talk)