

# Victor P. DeCaria

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**CONTACT** Department of Mathematics vpd7@pitt.edu  
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615 Thackeray  
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**EDUCATION** *Bachelor of Science, Mathematics*  
Millersville University, Millersville, PA,  
May 2014  
Concentration: Applied Mathematics  
Minor: Physics

*Master of Arts, Mathematics*  
University of Pittsburgh, Pittsburgh, PA,  
May 2017

*Doctor of Philosophy, Mathematics*  
University of Pittsburgh, Pittsburgh, PA,  
Expected graduation, May 2019

**EXPERIENCE** *Andrew Mellon Predoctoral Fellow* Sept. 2018 - Present  
Mathematics Department, University of Pittsburgh

*Technical Intern* Summer 2017  
Bettis Atomic Power Laboratory,  
Computational Methods and Scientific Software Development Unit,  
West Mifflin, PA

- Performed sensitivity analysis using modeFrontier on scientific computing software.
- Leveraged High Performance Computing Clusters to manage parallel jobs.

*Teaching Assistant* Falls and Springs of Sept. 2014 - April 2018  
Mathematics Department, University of Pittsburgh  
Recitations led include Business Calculus, Calculus 1, 2 and 3.

*Technical Intern* Fall 2013  
Los Alamos National Laboratory, Plasma Physics Group (P-24), Los Alamos, NM

- Applied genetic algorithms to fit data from inertial confinement fusion experiments.
- Developed a graphical user interface in MATLAB to display data and interface with the genetic algorithm.

**PROFESSIONAL SOCIETIES** *President* Fall 2017-Present  
University of Pittsburgh Chapter of SIAM

**COMPUTING SKILLS** *Languages & Software:* Python, MATLAB, FEniCS, Freefem++, Bash.

*High Performance Computing: Linux, modeFrontier, Cluster Computing.*

**TALKS  
PRESENTED**

“A New Embedded Variable Stepsize, Variable Order Family” March 2018 *Finite Element Circus* at University of Tennessee, Knoxville.

“Achieving the Correct Energy Dissipation with grad-div Stabilization” 2017 *Finite Element Circus* at University of Maryland, Baltimore County.

“Achieving the Correct Energy Dissipation with the grad-div parameter” 2017 *Conference on Classical and Geophysical Fluid Dynamics: Modeling, Reduction and Simulation* at Virginia Tech.

“Achieving the Correct Energy Dissipation in Slightly Compressible Turbulent Flow” 2017 *VT Graduate Student Conference*

“A Pressure Correction Method for the Incompressible Navier-Stokes Equations,” 2016 *Computational Fluid Dynamics Mini-conference* at Clemson University.

**PUBLICATIONS**

“A New Embedded Variable Stepsize, Variable Order Family of Low Computational Complexity.”, V. DeCaria, A. Guzel, W. Layton, Y. Li. Submitted to *SINUM*. Preprint available at <https://arxiv.org/abs/1810.06670>.

“Analysis of a Low Complexity, Time-Accurate Discretization of the Navier-Stokes Equations”, V. DeCaria, W. Layton, H. Zhao. Submitted to *Math. of Comp.* Preprint available at <https://arxiv.org/abs/1810.06705>.

“An Analysis of the Robert-Asselin Time Filter for the Correction of Nonphysical Acoustics in an Artificial Compression Method”, V. DeCaria, W. Layton, M. McLaughlin. To appear in *Numerical Methods for Partial Differential Equations*.

“On the Determination of the Grad-Div Criterion”, V. DeCaria, W. Layton, A. Pakzad, Y. Rong, N. Sahin, H. Zhao. Nov. 2018, *Journal of Mathematical Analysis and Applications*.

“A Conservative, Second Order, Unconditionally Stable Artificial Compression Method”, V. DeCaria, W. Layton, M. McLaughlin, Oct. 2017, *Computer Methods in Applied Mechanics and Engineering*.