

# Tim Reid

North Carolina State University. Box 8205. Raleigh, NC. 27695  
ORCID: 0000-0003-0087-8481  
twreid@ncsu.edu

## Education

- Ph.D.**, Applied Mathematics, North Carolina State University, GPA 3.95/4.00      May 2022 (Expected)  
Advisor: Ilse C. F. Ipsen
- M.S.**, Applied Mathematics, North Carolina State University, GPA 3.91/4.00      May 2019
- B.S.**, Mathematics, George Mason University, Magna Cum Laude, GPA 3.74/4.00      May 2017

## Skills

**Research:** Scientific Computing, Probabilistic Numerics, Surrogate Modeling, Tensor Decompositions  
**Computational:** Python/Numpy/PyTorch, Julia, MATLAB, *Mathematica*, LaTeX, Git, Shell Scripting

## Professional Experience

**North Carolina State University**, Raleigh, NC      2018 – Present  
Graduate Student Researcher

- Investigates probabilistic numerical methods to better quantify computational errors
- Develops efficient implementations of probabilistic numerical methods

**Sandia National Laboratories**, Livermore, CA      2019  
Computer Science Research Institute Summer Intern

- Implemented physical dependence in functional tensor train with goal of creating a surrogate for Earth science models

**George Mason University**, Fairfax, VA      2015 – 2017  
Undergraduate Student Researcher

- Developed numerical solution to PDE model of contact lens motion in blinking eye
- Investigated group theory by computationally generating and analyzing large set of test problems

## Papers

1. J. COCKAYNE, I. C. F. IPSEN, C. J. OATES, AND T. W. REID, *Probabilistic iterative methods for linear systems*, (2020), <https://arxiv.org/abs/2012.12615>
2. T. W. REID, I. C. F. IPSEN, J. COCKAYNE, AND C. J. OATES, *A probabilistic numerical extension of the conjugate gradient method*, Submitted, (2020), <https://arxiv.org/abs/2008.03225>  
**Related software:** [https://github.com/treid5/ProbNumCG\\_Supp](https://github.com/treid5/ProbNumCG_Supp)
3. D. M. ANDERSON, M. CORSARO, J. HORTON, T. REID, AND P. SESHAIYER, *Tear film dynamics with blinking and contact lens motion*, Submitted, (2020)
4. T. REID, C. SAFTA, A. GORODETSKY, J. JAKEMAN, AND K. SARGSYAN, *Implementing physical dependence in the functional tensor train*, in Computer Science Research Institute Summer Proceedings 2019, M. Powell and M. J. Parks, eds., Technical Report SAND2020-9969R, Sandia National Laboratories, 2020, pp. 55–65, <http://www.cs.sandia.gov/summerproceedings/CCR2019.html>

## Presentations

### Talks

- SIAM Conference on Uncertainty Quantification, Munich, Germany March 2020  
*Prior Distributions and Test Statistics for the Bayesian Conjugate Gradient Method*  
Online due to pandemic: <http://probabilistic-numerics.org/meetings/SIAMUQ2020/>
- American Physical Society Division of Fluid Dynamics Meeting, Portland, OR November 2016  
*Contact Lens and Tear Film Dynamics During Blinking*

### Posters

- Sandia National Laboratories Posters on the Patio, Livermore, CA July 2019  
*Approximating Data With Stochastic and Physical Dependence Using Functional Tensor Train Models*
- SIAM Conference on Computational Science & Engineering, Spokane, WA February 2019  
*Computational Developments for the Bayesian Conjugate Gradient Method*
- National Conference on Undergraduate Research, Memphis, TN May 2017  
*Special Words in Free Groups*

## Awards

- SIAM Student Travel Award 2020
- George Mason University OSCAR Student Excellence Award 2017
- APS-DFD Travel Grant 2016
- Mason Excellence Scholarship 2014 – 2017

## Graduate Coursework

- Numerical Analysis
- Matrix Methods in Data Science
- Uncertainty Quantification
- Nonlinear Eqs. & Unconstrained Optimization
- Theory & Applications of Machine Learning
- Data Driven Modeling of Dynamical Systems

## Service

- Peer reviewer for *Statistics and Computing*
- NCSU Undergraduates Union Graduates mentor
- NCSU SIAM student chapter representative to SIAM Student Days 2019
- NCSU SIAM student chapter webmaster
- SIAM booth volunteer at USA Science and Engineering Festival 2018

## Professional Memberships

Society for Industrial and Applied Mathematics (SIAM), American Mathematical Society (AMS)