

Education

- University of Colorado at Boulder, Boulder, CO
 - Ph.D. in Applied Mathematics, August 2017.
 - Masters in Applied Mathematics, May 2015.
- The University of Waikato, Waikato, NZ
 - Bachelor of Science (Hons) in Mathematics and Physics, December 2011.

Selected Research & Professional Experiences

- Senior Researcher, RNET Technologies, July 2017 - Present
 - An Extensible Verification and Validation Library with NEAMS Workbench Integration. DOE Phase I SBIR, Primary Investigator (DE-SC0018728) July 2018 - Present
 - VERA-Workbench: A unified Multi-physics toolkit for the VERA Suite of Tools. DOE Phase I SBIR, Primary Investigator (DE-SC0017701) October 2017 - May 2018
 - Cloud-based Scientific Workbench for Nuclear Reactor Simulation Life Cycle Management. DOE Phase II SBIR, Research Scientist (DE-SC0015748) October 2017 - Present
 - Automatic solver selection for Nuclear Engineering Simulation. DOE Phase II SBIR, Research Scientist (DE-SC0013869) July 2017 - Present
- Graduate Student, University of Colorado at Boulder, April 2014-August 2017
Mentor: Tom Manteuffel (CU Boulder), Jacob Schroder (Lawrence Livermore National Laboratory)
 - Studied Parallel-in-time solvers for parabolic partial differential equations
 - Implemented a fully adaptive parallel-in-time solver using the FENICS finite element package, C/C++, and MPI.
 - Designed and implemented a temporal load balancing algorithm for the opensource XBraid project with $O(\log(P))$ communication.
- Summer Internship, May-August , 2014-2016 Lawrence Livermore National Laboratory
Mentor: Jacob Schroder and Rob Falgout
 - Researched an embedded error estimate for the XBraid project.
 - Designed and implemented a cost efficient parallel-in-time solver based on MGRIT and Richardson Extrapolation.

Refereed Publications

- R. D. Falgout, T. A. Manteuffel, B. O'Neill, and J. B. Schroder, Multigrid reduction in time for nonlinear parabolic problems, Copper Mountain Special Section, SIAM J.Sci. Comput. (accepted), (2016). LLNL-JRNL-692258 .
- M.T. Wilson, P.A. Robinson, B. O'Neill., D.A. Steyn-Ross, Complementarity of Spike- and Rate-Based Dynamics of Neural Systems, PLOS Computational Biology, Vol 8 (2012).