Hoang A. Tran

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Education

2008 – 2013   Ph.D., Mathematics, University of Pittsburgh, PA, USA.
Thesis advisor: Profs. Catalin Trenchea and William Layton.

2007 – 2008   M.S., Applied Mathematics, Université d'Orléans, Orléans, France.

2002 – 2006   B.S., Mathematics, Honor Program, University of Science, Ho Chi Minh City, Vietnam.

Professional Experiences

2013 – now   Postdoctoral Research Associate, CSMD, Oak Ridge National Laboratory.
Supervisor: Dr. Clayton Webster.

2008 – 2013   Teaching Assistant, Department of Mathematics, University of Pittsburgh.

2006 – 2008   Teaching Assistant, Department of Mathematics, University of Science, Vietnam.

Research Interests

- High-dimensional Approximation Theory
- Uncertainty Quantification
- Compressed Sensing
- Numerical Partial Differential Equations
- Turbulence Modeling, Coupling Free Flow and Porous Media Flow
- Computational Optimal Control of PDEs

Publications

Journal papers

12. A. Chkifa, N. Dexter, H. Tran, C. Webster. Polynomial Approximation via Compressed Sensing of High-dimensional Functions on Lower Sets, submitted, 2015.

11. H. Tran, C. Webster, G. Zhang. Analysis of Quasi-Optimal Polynomial Approximations for Parameterized PDEs with Deterministic and Stochastic Coefficients, submitted, 2015.

10. M. Bukac, W. Layton, C. Trenchea, M. Moraiti, H. Tran. Analysis of Partitioned Methods for Biot System, *Numer. Methods Partial Differential Equations*, 31: 1769–1813, 2015.

9. N. Jiang, H. Tran. Analysis of A Stabilized CNLF Method with Fast Slow Wave Splittings for Flow Problems, *Comput. Methods Appl. Math.*, 15(3), pp. 307–330, 2015.

8. N. Jiang, M. Kubacki, W. Layton, M. Moraiti and H. Tran. Unconditional Stability of A Crank-Nicolson Leap-Frog Stabilization and Applications, *J. Comput. Appl. Math.*, 281 (2015), 263-276.

7. W. Layton, H. Tran, C. Trenchea. Numerical Analysis of Two Partitioned Methods for Uncoupling Evolutionary MHD Flows, *Numer*. *Methods Partial Differential Equations*, 30(4), 1083-1102, 2014.

6. W. Layton, H. Tran, C. Trenchea. Analysis of Long Time Stability and Errors of Two Partitioned Methods for Uncoupling Evolutionary Groundwater - Surface Water Flows, *SIAM J. Numer. Anal.*, 51(1), 248-272, 2013.

5. W. Layton, H. Tran, X. Xiong. Long Time Stability of Four Methods for Splitting the Evolutionary Stokes-Darcy Problem into Stokes and Darcy Sub-problems, *J. Comput. Appl. Math.*, 236 (13) (2012), 3198-3217.

4. W. Layton, L. Roehe, H. Tran. Explicitly Uncoupled Variational Multiscale Stabilization of Fluid Flow, *Comput. Methods Appl. Mech. Engrg.* 200 (2011), No. 45-46, pp. 3183-3199.

Conference Papers

3. W. Layton, H. Tran, and C. Trenchea. Stability of partitioned methods for magnetohydrodynamics flows at small magnetic Reynolds number, *Contemp. Math.*, vol. 586, pp. 231-238, 2013.

2. T. Luciani, A. Maries, H. Tran, M. Nik, S.L. Yilmaz, G.E. Marai. A Novel Method for Tracking Tensor-based Regions of Interest in Large-Scale, Spatially-Dense Turbulent Combustion Data, *IEEE VisWeek 2012, Poster Abstracts with System Demonstration*, pp. 1-2, 2012.

Book Chapters

1. H. Tran, C. Webster, G. Zhang. A Sparse-Grid Method for Bayesian Uncertainty Quantification with Application to Large Eddy Simulation Turbulence Models, *Springer Lecture Notes on CS&E*, to appear in 2016.

Unrefereed Technical Reports

- H. Tran, C. Trenchea, C. Webster. A Convergence Analysis of Stochastic Collocation Method for Navier-Stokes Equations with Random Input Data, *ORNL Technical Report*, Oak Ridge National Laboratory, 2014.

- H. Tran. On the Estimates of Determining Modes for NS-alpha and NS-omega Models, *Technical Report*, Department of Mathematics, University of Pittsburgh, 2010.

Honors and Awards

- SIAM Travel Award to attend SIAM CSE, Feb 2013.

- AMS Travel Award to attend Joint Mathematics Meetings, Jan 2013.

- Summer Fellowship, Department of Mathematics, University of Pittsburgh, 2012.

- Andrew Mellon Predoctoral Fellow, University of Pittsburgh, 2011-2012.

- Graduated with rank 2nd among 250 students in Math, University of Science, Vietnam, 2006.

- Scholarship for Excellence students, University of Science, Vietnam, 2002-2006.

- Honorable mention, Vietnam National Mathematical Olympiad, 2002.

Research Visits

- Texas A&M University, College Station, TX, October 13 – 17, 2014.
  Host: Prof. Ronald DeVore.

- Oak Ridge National Laboratory, Oak Ridge, TN, August 13 – 24, 2012.
  Host: Dr. Clayton Webster.

- Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Nov 21 – Dec 16, 2011.
  Host: Prof. Volker John.

Selected Invited Talks

- AMS Fall Western Sectional Meeting, Denver, CO, October 2016.

- Workshop on Numerical Analysis and Predictability of Fluid Motion, Pittsburgh, PA, May 2016.

- SIAM Conference on Uncertainty Quantification, Lausanne, Switzerland, April 2016.

- SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, December 2015.

- International Congress on Industrial and Applied Mathematics, Beijing, China, August 2015.

- Computational Mathematics Seminar, University of Pittsburgh, PA, April 2015.

- SIAM SEAS 2015 Annual Meeting, Birmingham, AL, March 2015.

- Comp Math Seminar, Clemson University, March 2015.

- SIAM Conference on Uncertainty Quantification, Savannah, GA, April 2014.

- SIAM SEAS 2014 Annual Meeting, Melbourne, FL, March 2014.

- SIAM SEAS 2013 Annual Meeting, Knoxville, TN, March 2013.

- SIAM Conference on Computational Science and Engineering, Boston, MA, March 2013.

- CSMD Seminar Series, Oak Ridge National Laboratory, Oak Ridge, TN, August 2012.

- Workshop on Numerical methods for coupled problems, University of Pittsburgh, May 2012.

- 8th International Conference on Scientific Computing and Applications, University of Nevada, Las Vegas, April 2012.

- SIAM Student Conference, Virginia Tech, March 2012.

- Numerical Mathematics Seminar, WIAS, Berlin, December 2011.

- International Conference on Applied Mathematics, Modeling and Computational Science, Wilfrid Laurier University, Canada, July 2011.

- Computational Mathematics Seminar, University of Pittsburgh, October 2010.

- Analysis Seminar, University of Pittsburgh, April 2010.

- SIAM Student Conference, Virginia Tech, February 2010.

- ICAM Mini-Conference, Virginia Tech, February 2009.

Synergistic Activities

- (with Abdellah Chkifa, Clayton Webster, Guannan Zhang) Co-organizer of mini-symposium "Advances in Theoretical and Numerical Analysis of Parametrized PDEs in High Dimension", SIAM PDE 2015, Scottsdale, AZ, December 2015.

- Referee for: *SIAM Journal on Numerical Analysis, Computers and Mathematics with Applications, Journal of Computational and Applied Mathematics, Journal of Scientific Computing, SIAM/ASA Journal on Uncertainty Quantification.*

Computer Skills

- Programming: Matlab, FreeFem++, OpenFOAM.
- Visualization: gnuplot, Paraview.
- Other: LaTeX, Microsoft Office, HTML, Windows, MacOS.

References

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- **William Layton**
  Department of Mathematics, University of Pittsburgh
  412-624-8312
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- **Clayton Webster**
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