

CURRICULUM VITAE

Toan T. Nguyen
Prager Assistant Professor

Division of Applied Mathematics
Brown University
182 George Street
Providence, RI 02912

office: 328 (182G)
telephone: (401) 863-2114
e-mail: Toan_Nguyen@Brown.edu
<http://www.dam.brown.edu/people/tnguyen>

Employment

- **Brown University**, Division of Applied Mathematics
Prager Assistant Professor, 2010 – present.
- **Université Pierre et Marie Curie - Paris VI**, Institut de mathématiques de Jussieu
Research Postdoctoral Fellow of Fondation Sciences Mathématiques de Paris, 2009 – 2010.
- **Indiana University**, Department of Mathematics
Associate Instructor and Research Assistant, Aug. 2006 – Jun. 2009.

Education

- **Indiana University**, Aug. 2006 – Jun. 2009
Ph.D. in Mathematics. Adviser: Kevin Zumbrun
- **University of Texas at San Antonio**, Aug. 2004 – Jun. 2006
M.Sc. in Mathematics. Adviser: Dung Le
- **Vietnam National University**, Hochiminh city, Sep. 1998 – Jun. 2002
B.Sc. in Mathematics.

Research Interests: Partial differential equations, Fluid dynamics (e.g., Incompressible Navier-Stokes), Systems of conservation laws (Compressible Navier-Stokes and MHD; Radiative hyperbolic–elliptic systems), Kinetic theory (Vlasov - Maxwell; Boltzmann), Stability theory and Dynamical system, Traveling wave solutions, Viscous shock waves and Boundary layers.

Grants

- **NSF Grant DMS 1108821** (Principal Investigator), June 2011 - May 2014.
- **AMS-Simons Travel Grant**, 2011–2013 (declined).

Honors and Awards

- Postdoc/Early Career SIAM Travel Award, 2011
- Postdoctoral Fellowship Award, Fondation Sciences Mathématiques de Paris, 2009-2010.
- SIAM Student Travel Award, 2009

- William B. Wilcox Mathematics Award, Indiana University, 2008.
- Honorary Mention, James P. Williams Memorial Award, Indiana University, 2007.
- Graduate Research Assistantship, Indiana University, 2007-2009.
- Outstanding (Undergraduate) Student Award, Vietnam National University at Hochiminh City, 2002.

Submitted papers

1. *Stability Analysis of a Hot Plasma in a Solid Torus*, with W. A. Strauss
2. *Stability analysis of collisionless plasmas with specularly reflecting boundary*, with W. A. Strauss
3. *Boundary layers interactions in the plane parallel incompressible flows*, with Franck Sueur

Publications

1. *Toward nonlinear stability of sources via a modified Burgers equation* (with M. Beck, B. Sandstede, and K. Zumbrun)
Physica D, to appear.
2. *A note on the Prandtl boundary layers* (with Y. Guo)
Comm. Pure Appl. Math., to appear.
3. *Multi-dimensional stability of Lax shocks in hyperbolic-elliptic coupled systems*
Journal of Differential Equations, to appear.
4. *Remarks on the ill-posedness of the Prandtl equation* (with D. Gérard-Varet)
Asymptotic Analysis, to appear.
5. *Long-time stability of multi-dimensional noncharacteristic viscous boundary layers* (with K. Zumbrun)
Comm. Math. Phys., 299 (2010), no. 1, 144.
6. *On asymptotic stability of noncharacteristic viscous boundary layers.*
SIAM J. Math. Anal., 42 (2010), no. 3, 1156–1178
7. *Stability of radiative shock profiles for hyperbolic-elliptic coupled systems* (with R. Plaza and K. Zumbrun)
Phys. D 239 (2010), no. 8, 428–453.
8. *Stability of scalar radiative shock profiles* (with C. Lattanzio, C. Mascia, R. Plaza, and K. Zumbrun)
SIAM J. Math. Anal. 41 (2009/10), no. 6, 2165–2206.
9. *Stability of multi-dimensional viscous shocks for symmetric systems with variable multiplicities.*
Duke Math. J. 150 (2009), no. 3, 577–614.
10. *Long-time stability of large-amplitude noncharacteristic boundary layers of general hyperbolic-parabolic conservation laws* (with K. Zumbrun)
J. Math. Pures Appl. (9) 92 (2009), no. 6, 547–598.
11. *Spectral stability of noncharacteristic isentropic Navier–Stokes boundary layers* (with N. Costanzino, J. Humpherys, and K. Zumbrun)
Arch. Ration. Mech. Anal. 192 (2009), no. 3, 537–587.
12. *Regularity and coexistence problems for strongly coupled elliptic systems* (with D. Le and L. Nguyen)
Indiana Univ. Math. J., 56 (2007), no. 4, 1749–1791

13. *Global attractors and uniform persistence for cross diffusion parabolic systems* (with D. Le)
Dyn. Sys. and Apps. 16 (2007), no. 2, 361–377.
14. *Everywhere regularity for degenerate cross diffusion systems* (with D. Le)
Comm. in PDEs, 31 (2006), no. 1-3, 307–324.
15. *Persistence for a class of triangular cross diffusion parabolic systems* (with D. Le)
Adv. Non. Stud., 5 (2005), no. 4, 493–514.
16. *Global existence for a class of triangular parabolic systems on domains of arbitrary dimension* (with D. Le)
Proc. of AMS, 133(2005), 1985-1992.
17. *Shigesada-Kawasaki-Teramoto model on higher dimensional domains* (with D. Le and L. Nguyen)
Elec. J. Diff. Eqs., 2003, No. 72.

Proceeding Papers

1. T. Nguyen and K. Zumbrun, *Long-time stability of noncharacteristic viscous boundary layers*.
Séminaire 2009-2010: **Équations aux dérivées partielles (Polytechnique)**.

Theses

- Asymptotic stability of noncharacteristic viscous boundary layers
Ph.D. thesis, Indiana University, 2009.
- Cross diffusion systems
M.S. thesis, University of Texas at San Antonio, 2006.
- Semi-group theory and fractional power operators
B.S. thesis, Vietnam National University, HoChiMinh city, 2002.

Invited Visits: Paris 7, June 2012; Texas A & M, November 13-16, 2011; IIMAS–UNAM, Mexico, June 20-30, 2010;

Invited lectures at conferences/workshops:

- Workshop on Analysis and applications of evolutionary PDEs, the Institute for the Applications of Mathematics and Integrated Science (IAMIS), UC-Riverside, May 5-6, 2012 (**invited speaker**)
- Spring School on Kinetic Theory and Fluid Mechanics, Lyon, France. March 26th - 30th, 2012 (**invited speaker**).
- SIAM Conference on Dynamical Systems (DS11), Snowbird, Utah. May 2011 (minisymposium).
- SIAM Conference on Dynamical Systems (DS09), Snowbird, Utah. May 2009 (minisymposium).

Invited seminars/colloquia:

- Université Paris–Dauphine, Analyse et Probabilités, June 12, 2012.
- United States Naval Academy, Colloquium, April 26, 2012
- UNC - Chapel Hill, Analysis / PDE seminar, April 18, 2012

- Univ. Michigan, Differential equations seminar, February 2nd, 2012
- Univ Illinois at Chicago, Mathematics Colloquium, Jan 23rd 2012
- Penn State, Mathematics Colloquium, Jan 2012
- Michigan State, Mathematics Colloquium, Jan 11th, 2012
- Univ. Wisconsin at Madison, Mathematics Colloquium, December 7th, 2011
- Georgia Tech, PDE seminar, November 22nd, 2011.
- Penn State, Computational and Applied Mathematics Colloquium, November 18th, 2011.
- Texas A & M, Applied Math Seminar, November 14th, 2011.
- UT Austin, Analysis seminar, November 2nd, 2011.
- University of Maryland (College Park), PDE/Applied Math seminar, Sep. 30th, 2010.
- Brown University, Brown/Boston PDE seminar, Sep. 15th, 2010.
- Brown University, Math department, PDE seminar, Sep. 10th, 2010.
- IIMAS–UNAM, Mexico, Applied Math Colloquium, June 2010.
- IRMAR, Rennes I, PDE seminar, March 2010.
- Brown/Paris 6 video–conference seminar, Laboratoire J–L. Lions, Paris, March 2010.
- l’Institut Fourier (Grenoble I), Séminaire de Physique Mathématique, March 2010.
- Ecole polytechnique, Séminaire X-EDP, November 2009.
- Institut Math. de Jussieu (Paris VI-VII), Analyse non-linéaire et EDP seminar, October 2009.
- Columbia University, Applied Mathematics Colloquium, January 2009.
- Univ. Illinois at Urbana-Champaign, Harmonic Analysis and Math. Phys. seminar, November 2008.
- Indiana University, IU PDE seminar, September 2008.

Conference Participation (contributed talks / posters are indicated, if given):

- December 16-22th, 2012 (invited participant) Dynamics of Patterns, Oberwolfach, Germany
- March 26th - 30th, 2012 Spring School on Kinetic Theory and Fluid Mechanics, Lyon, France.
- May 2011 SIAM Conference on Applications of Dynamical Systems (DS11), Snowbird, Utah.
- June 7-11, 2010, Journées EDP 2010, Port d’Albret, France.
- February 12-26, 2010, (contributed talk) Intensive Research Month on Hyperbolic Conservation Laws and Fluid Dynamics, Parma, Italy.
- January 06-08, 2010, Workshop on Navier-Stokes and nonlinear wave equations, Bayonne, France
- July 13–25, 2009, (poster) Summer program on Nonlinear Conservation Laws and Applications, IMA.
- May 2009, SIAM Conference on Applications of Dynamical Systems (DS09), Snowbird, Utah.
- March 2009, (contributed talk) the sixth IMACS International Conference, the University of Georgia.

- June 9-13, 2008, (poster) HYP2008 International conference at University of Maryland.
- May 18-21, 2008, (contributed talk) AIMS 2008 International conference at UT Arlington, Texas.
- May 8-11, 2008, Nonlinear Waves conference at Brown University.
- April 11-13, 2008, Eleventh Riviere-Fabes Symposium at University of Minnesota.

Teaching Experience

- **Brown University**
Spring 2012, APMA 0360, Methods of Applied Mathematics II (Advanced)
Fall 2011, APMA2210: Topics course: Boltzmann Equations and Hydrodynamics Limits (Graduate)
Spring 2011, APMA 0340, Methods of Applied Mathematics II
Fall 2010, APMA2210: Topics course: Boundary Layers in Gas Dynamics (Graduate)
- **Indiana University**
Fall 2008, Teaching Assistant for Calculus I
- **University of Texas at San Antonio**
Fall 2004 - Spring 2006, Teaching Assistant for Calculus I
Fall 2004 - Spring 2006, Tutor in the Math Tutoring Lab

Minisymposia organized at conferences

- Co-organized with F. Sueur a minisymposium on “Fluid-structure interactions” at the 7th ICIAM 2011, Vancouver, Canada, July 2011.
- Co-organized with M. Beck a minisymposium on “Nonlinear waves: from spectral study to nonlinear dynamics” at the SIAM conference on Dynamical systems, Snowbird, Utah, May 2011.

Professional Services

- **Organized the Lefschetz Center for Dynamical Systems seminar**, Brown University, 2011-2012.
- **Organized the Brown–Paris 6 joint video seminar**, Spring 2011.
- **Referee for the journals:** Archive for Rational Mechanics and Analysis; Discrete and Continuous Dynamical Systems - Series A; Journal of Differential Equations; Physica D; Transactions of the American Mathematical Society.
- **Reviewer for NSF:** the International Research Fellowship Program
- **Reviewer for the AMS Mathematical Review** since 2009.

Professional Memberships: American Mathematical Society; Society for Industrial and Applied Mathematics.