

ROBIN CARL YOUNG

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EDUCATION

Ph.D., Mathematics June 1991
University of California, Davis
Advisor: Professor J. Blake Temple

B.Sc. Honours, Mathematics April 1985
University of the Witwatersrand, Johannesburg, South Africa

B.Sc., Mathematics and Computer Science March 1984
University of the Witwatersrand, Johannesburg, South Africa

ACADEMIC EXPERIENCE

Associate Professor Mathematics and Statistics, University of Massachusetts,
Amherst, 2002–present.

Assistant Professor Mathematics and Statistics, University of Massachusetts,
Amherst, 1996–2002.

Visiting Professor Institut Mathématique de Rennes, Université de
Rennes I, France, April 1996.

Post-doctoral Associate Applied Mathematics and Statistics, University at
Stony Brook, 1994–1996.

Associate Research Scientist Courant Institute of Mathematical Sciences,
New York University, 1991–1994.

Lecturer and Teaching Assistant Mathematics, UC Davis, 1985–1991.

RESEARCH INTERESTS

Hyperbolic Conservation Laws and Continuum Mechanics.
Nonlinear Waves and their Interactions.
Numerical Methods for Nonlinear Partial Differential Equations.

GRANTS & AWARDS

“Fluid Dynamics With Large BV Data”, National Science Foundation, Applied Mathematics, 2005–2008. Awarded \$75,000.

“Wave Interactions in Continuum Mechanics”, National Science Foundation, Applied Mathematics, 2001–2005. Awarded \$85,000. Research Experiences for Undergraduates supplements of \$6,000 in Summer 2002 and \$10,000 in Summer 2004.

Faculty Research Travel Grant. University of Massachusetts, 1999. \$800.

Richard C. DiPrima Prize, Society for Industrial and Applied Mathematics, 1992.

Allen G. Marr Award for the best thesis in the Physical Sciences, Mathematics and Engineering, UC Davis, 1991.

Regent’s Fellowship, UC Davis, 1986–87. Reawarded 1987–88 and 1988–89.

University Scholarship, University of the Witwatersrand, 1985.

CSIR Bursary Scholarship, University of the Witwatersrand, 1984.

AEB Bursary Scholarship, University of the Witwatersrand, 1980–1983.

SELECTED PRESENTATIONS

Free Boundary Problems (FBP08), Stockholm, Sweden, 2008.

SIAM Conference on PDEs (PD06), Boston, 2006.

Shock Waves and Relativity, Conference in Honor of Joel Smoller, Stanford, 2006.

Nonlinear PDEs and Applications, Bangalore, India, 2005 (4 lectures).

Tenth International Conference on Hyperbolic Problems, Osaka, Japan, 2004.

Hyperbolic PDE and Multiphase Flow, Conference in Honor of James Glimm, Stony Brook, 2004.

Joint AMS-HKMS International Meeting, Hong Kong, 2000.

Eighth International Conference on Hyperbolic Problems, Magdeburg, Germany, 2000.

PROFESSIONAL SERVICE

Grant Panelist: NSF Division Math. Sci., CAREER panel, October 2007.

Ad Hoc Reviewer: Comm. PDE, Proc. AMS, J. Math. Anal. & Appl., SIAM J. Num. Anal., Trans. AMS, Methods & Appls. Anal., J. Comp. Phys., SIAM J. Math. Anal., Addison-Wesley-Longman, IIT Bombay IRCC Research Awards Committee.

Chair, Local Organizing Committee, Fifth International Workshop on the Physics of Compressible Turbulent Mixing, Stony Brook, July 1995.

Editorial Committee, Proceedings for the Fifth International Conference on Hyperbolic Problems, Stony Brook, July 1994.

SELECTED DEPARTMENTAL SERVICE

Chief Undergraduate Advisor, 2008–present.

Member, Undergraduate Education Council of Faculty Senate, 2004–2007.

Member, Department Personnel Committee, 2005–2007.

Undergraduate Program Director, 2003–2006.

Chair, Undergraduate Affairs Committee, 2003–2006.

Member, Faculty Search Committee, 1999–2001.

Chair, Undergraduate Major Review Committee (“Young Committee”), 1998–2000.

STUDENTS

Current, Geng Chen, Ph.D. student.

REU Supervision, W. Szeliga(2002), P. Dragon(2004), R. P. Chase(2004), S. Sarasin(2008).

Major Advisor, L. Puthanveetil, M.S. (2000), S. Iyer, B.S. (2001), R. P. Chase, B.S.(Hons) (2006).

Thesis Committee, Jie Xu (Ph.D., E.C.E.), I. Rodriguez, M. Gummalla (Ph.D., Chem.Eng.); Z.Chen, E. Ezster (Ph.D., Math); M. Ramanathpure (M.S., Mech.Eng.); S.Tael, B.Boston (Ph.D., Appl Math, Stony Brook).

PUBLICATIONS

- [1] R.C. Young. *An Extension of Glimm's Method to Third Order in Wave Interactions*. PhD thesis, U.C. Davis, 1991.
- [2] Robin Young. Sup-norm stability for Glimm's scheme. *Comm. Pure Appl. Math.*, 46:903–948, 1993.
- [3] Robin Young. On elementary interactions for hyperbolic conservation laws. Unpublished note, 29 pages, available at <http://www.math.umass.edu/~young/Research/misc/elem.pdf>, 1993.
- [4] B. Temple and R. Young. The large time stability of sound waves. *Comm. Math. Phys.*, 179:417–466, 1996.
- [5] B. Temple and R. Young. The large time existence of periodic solutions for the compressible Euler equations. *Matemática Contemporânea*, 11:171–190, 1996.
- [6] B. Temple and R. Young. Solutions to the Euler equations with large data. In *Hyperbolic Problems: Theory, Numerics, Applications*. World Scientific, 1996.
- [7] J. Glimm, J. Grove, X-L. Li, R. Young, Y. Zeng, and Q. Zhang. *Front Tracking: A Parallelized Approach for Internal Boundaries and Interfaces*, volume 1041 of *Lecture Notes in Computer Science*, pages 257–266. 1996.
- [8] Robin Young, James Glimm, and Brian Boston. *Proceedings of the Fifth International Workshop on the Physics of Compressible Turbulent Mixing*. World Scientific Press, 1996.
- [9] Robin Young. Exact solutions to degenerate conservation laws. *SIAM J. Math. Anal.*, 30:537–558, 1999.
- [10] Robin Young. Periodic solutions for conservation laws. *Contemp. Math.*, 255:239–256, 2000.
- [11] Robin Young. Sustained solutions for conservation laws. *Comm. PDE*, 26:1–32, 2001.
- [12] Robin Young. The p -system I: The Riemann problem. *Contemp. Math.*, 301:219–234, 2002.
- [13] Robin Young. The p -system II: The vacuum. In R. Picard, M. Reissig, and W. Zajackowski, editors, *Evolution Equations*, pages 237–252, Warsaw, 2001. Banach Center.

- [14] Robin Young. Wave interactions in nonlinear strings, I. In E.F. Toro, editor, *Godunov Methods, Theory and Applications*, pages 1065–1071. Kluwer Academic, 2001.
- [15] Robin Young. Wave interactions in nonlinear strings, II. In Heinrich Freistühler and Gerald Warneke, editors, *Eighth Int'l Conference on Hyperbolic Problems: Theory, Numerics, Applications*, pages 931–939. Birkhäuser, 2001.
- [16] Robin Young. Wave interactions in nonlinear elastic strings. *Arch. Rat. Mech. Anal.*, 161:65–92, 2002.
- [17] Robin Young. Nonstrictly hyperbolic waves in elasticity. *J. Diff. Eq.*, 188:80–109, 2003.
- [18] Robin Young. Isentropic gas dynamics with large data. In Thomas Hou and Eitan Tadmor, editors, *Hyperbolic Problems: Theory, Numerics, Applications*, pages 929–939. Springer, 2003.
- [19] Robin Young. Review of “Nonlinear hyperbolic waves in multi-dimensions”, by Phoolan Prasad. *SIAM Review*, 45:162–164, 2003.
- [20] Robin Young. Blowup of solutions and boundary instabilities in nonlinear hyperbolic equations. *Comm. Math. Sci.*, 2:269–292, 2003.
- [21] Robin Young. Blowup in hyperbolic conservation laws. *Contemp. Math.*, 327:379–387, 2003.
- [22] H.K. Jenssen and R.C. Young. Gradient driven and singular flux blowup of smooth solutions to hyperbolic systems of conservation laws. *J. Hyp. Diff. Eq.*, 1:627–641, 2004.
- [23] Robin Young and Walter Szeliga. Blowup with small BV data in hyperbolic conservation laws. *Arch. Rat. Mech. Anal.*, 179:31–54, 2006.
- [24] W. Domański and R. Young. Interactions of plane waves in nonlinear elasticity. Submitted, 27 pages, available at <http://www.math.umass.edu/~young/Research/misc/domanski.pdf>, 2005.
- [25] W. Domański and R. Young. Interaction coefficients for 3-D conservation laws. In preparation.
- [26] Robin Young. Global wave interactions in isentropic gas dynamics. Submitted, 47 pages, available at <http://www.math.ntnu.no/conservation/2008/032.html>, 2008.

- [27] Blake Temple and Robin Young. A paradigm for time-periodic sound wave propagation in the compressible Euler equations. Submitted, 26 pages, available at <http://www.math.ntnu.no/conservation/2008/033.html>, 2008.
- [28] Blake Temple and Robin Young. Time-periodic linearized solutions of the compressible Euler equations and a problem of small divisors. Submitted, 54 pages, available at <http://www.math.ntnu.no/conservation/2008/034.html>, 2008.
- [29] Blake Temple and Robin Young. A Liapunov-Schmidt reduction for time-periodic solutions of the compressible Euler equations. Submitted, 40 pages, available at <http://www.math.ntnu.no/conservation/2008/035.html>, 2008.
- [30] Robin Young. The vacuum in isentropic gas dynamics. In preparation, 2008.
- [31] Robin Young. Modified front tracking for isentropic gas dynamics. In preparation, 2008.