

Instituto de Matemáticas
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Education

Ph.D. in Mathematics, University of Giessen, Germany, *magna cum laude*; title of dissertation: *Localization of Low Energy Solutions of a Singularly Perturbed Elliptic Neumann Problem via the Geometry of the Domain Boundary*; dissertation directed by Professor Thomas Bartsch July 1999

Diplom in Mathematics, University of Karlsruhe, Germany, *summa cum laude*; title of thesis: *The Number of Positive Solutions of Semi-linear Elliptic Neumann Problems*; thesis directed by Professor Thomas Bartsch February 1996

Vordiplom in Physics, University of Karlsruhe August 1990

Professional Positions

Postgraduate position at the University of Giessen, Germany 1996–2001

Research Fellow, University of Giessen 2001–2004

Research Fellow, University of Sydney, Australia 2005–2006

Assistant Professor, Mathematics Institute, UNAM, Mexico City 2006–2011

Associate Professor, Mathematics Institute, UNAM, Mexico City since 2011

Research Interests

- Nonlinear Partial Differential Equations of Elliptic and Parabolic Type
- Topological and Variational Methods in Nonlinear Analysis

Honors

Diplom thesis placed in top six contributions among 55 at the German national *Mathematics Student's Conference*, Ulm 1995

Research Fellowship in Giessen, advisor: Thomas Bartsch, sponsor: DFG (German national research agency) 2001–2004

Research Fellowship in Sydney, advisor: Norman Dancer, sponsor: ARC (Australian Research Council) 2005–2006

Editorial Activities

Associate Editor, *International Journal of Mathematics and Mathematical Sciences* 2006–2010

Teaching Experience

Teaching assistant, University of Karlsruhe, Germany 1990–1994

Teaching assistant, University of Heidelberg, Germany 1995–1996

Senior teaching assistant, University of Giessen, Germany 1996–2001

Visiting Scholar, University of Wisconsin, Milwaukee, USA Summer 2003

Lecturer, Faculty of Science, UNAM, Mexico since 2006

Courses Given

Minimax methods in the calculus of variations July 2003

Functional Analysis with applications to Partial Differential Equations Fall 2006

The Mapping Degree and its Applications in Nonlinear Analysis Spring 2007

Functional Analysis with applications to Partial Differential Equations Fall 2007

The Mapping Degree and its Applications in Nonlinear Analysis Spring 2008

Functional Analysis with applications to Partial Differential Equations Fall 2008

The Mapping Degree and its Applications in Nonlinear Analysis Spring 2009

Spectral Theory Fall 2009

Abstract Evolution Equations and Semilinear Parabolic Problems Spring 2010

The Mapping Degree in Nonlinear Analysis Spring 2011

Analysis I Fall 2011

Conference and Workshop Organization

TCNPDE07, http://www.matem.unam.mx/tcnpde07/ , Mexico City	January 2007
VMNDE10, http://www.matem.unam.mx/oaxaca10/ , Oaxaca, Mexico	October 2010
Summer School on Differential Equations, http://www.matem.unam.mx/festin2011/ , Mexico City	June 2011

Refereeing and Reviewing

- Acta Applicandae Mathematicae
- Acta Mathematica Universitatis Comenianae
- Bulletin of the London Mathematical Society
- Communications in Partial Differential Equations
- Communications on Pure and Applied Analysis
- Complex Variables and Elliptic Equations
- Discrete and Continuous Dynamical Systems. Series A
- ESAIM Control, Optimisation and Calculus of Variations
- International Journal of Mathematics and Mathematical Sciences
- Journal of Differential Equations
- Journal of Functional Analysis
- Journal of Mathematical Analysis and Applications
- Journal of Mathematical Physics
- Manuscripta Mathematica
- Mathematical Reviews
- Memorias de la SMM
- Nonlinear Analysis
- Nonlinear Differential Equations and Applications NoDEA
- Proceedings of the Edinburgh Mathematical Society

- Proceedings of the Royal Society of Edinburgh. Section A
- SIAM Journal on Mathematical Analysis
- Transactions of the American Mathematical Society
- Zentralblatt Math

Invited Seminar Presentations

FU Berlin, Germany	June 2002
Comenius University, Bratislava, Slovak Republic	February 2003
University of Mainz, Germany	May 2003
University of Essen, Germany	May 2004
UAM, Mexico City	October 2004
UNAM (Escuela de Otoño), Mexico City	October 2004
University of Sydney, Australia	April 2006
UNSW, Sydney, Australia	April 2006
ITAM, Mexico City	November 2006
UAM, Mexico City	November 2006
University of Giessen, Germany	June 2007
IPN, Mexico City	May 2009
UAEM, Toluca, Mexico	November 2009
University of Rome I (La Sapienza), Italy	February 2010
UMICH, Morelia, Mexico	February 2011
IIMAS, UNAM, Mexico City	April 2011
University of Frankfurt, Germany	July 2011
University of Giessen, Germany	July 2011

Invited Talks at Conferences

<i>TVMNLA</i> , Cuernavaca, Mexico	February 1999
<i>EQUADIFF 10</i> , Prague, Czech Republic	August 2001

<i>Nonlinear Functional Analysis</i> , Taiyuan, PR of China	August 2002
<i>Variational Methods and the Nonlinear Schrödinger Equation</i> , Lausanne, Switzerland	February 2004
<i>World Congress of Nonlinear Analysts</i> , Orlando, USA	July 2004
<i>Topological and Variational Methods for Differential Equations</i> , Oberwolfach	June 2005
<i>TVMPDE</i> , Guanajuato, Mexico	December 2005
<i>TCNPDE</i> , Mexico City	January 2007
<i>VII Joint Meeting AMS&SMM</i> , Zacatecas, Mexico	May 2007
<i>8th International Conference on Operations Research</i> , Havana, Cuba	February 2008
<i>II Joint Meeting CMS&SMM</i> , Vancouver, Canada	August 2009
<i>VIII Joint Meeting AMS&SMM</i> , Berkeley, USA	June 2010
<i>Workshop on Variational Methods in Nonlinear Differential Equations</i> , Oaxaca, Mexico	October 2010
<i>Third Harmonic Analysis and Partial Differential Equations Work Shop</i> , Mexico City	October 2011
<i>Workshop on Nonlinear Differential Equations</i> , Pienza, Italia	Noviembre 2011

Workshops and Seminars Visited

DMV seminar on <i>Symplectic Geometry and Hamiltonian Dynamics</i> , Blaubeuren, Germany	June 1993
Workshop on <i>Nonlinear Eigenvalue Problems</i> , Oberwolfach, Germany	December 1996
Summer school on <i>Numerical Dynamical Systems</i> , TU Hamburg-Harburg, Germany	September 1999
DMV seminar on <i>Reaction-Diffusion Patterns: Theory and Applications</i> , Oberwolfach	November 1999

Memberships

- DMV, German Mathematician's Association
- SMM, Mexican Mathematical Society

- AMS, American Mathematical Society

Language Skills

- German (native speaker)
- fluent English
- fluent Spanish

Published or Accepted Articles

- [1] N. Ackermann, *Multiple single-peaked solutions of a class of semilinear Neumann problems via the category of the domain boundary*, Calc. Var. Partial Differential Equations **7** (1998), no. 3, pp. 263–292, DOI: 10.1007/s005260050109.
- [2] N. Ackermann, *On a periodic Schrödinger equation with nonlocal superlinear part*, Math. Z. **248** (2004), no. 2, pp. 423–443, DOI: 10.1007/s00209-004-0663-y.
- [3] N. Ackermann, *A Cauchy-Schwarz type inequality for bilinear integrals on positive measures*, Proc. Amer. Math. Soc. **133** (2005), no. 9, 2647–2656 (electronic), DOI: 10.1090/S0002-9939-05-08082-2.
- [4] N. Ackermann and T. Weth, *Multibump solutions of nonlinear periodic Schrödinger equations in a degenerate setting*, Commun. Contemp. Math. **7** (2005), no. 3, pp. 269–298, DOI: 10.1142/S0219199705001763.
- [5] N. Ackermann and T. Bartsch, *Superstable manifolds of semilinear parabolic problems*, J. Dynam. Differential Equations **17** (2005), no. 1, pp. 115–173, DOI: 10.1007/s10884-005-3144-z.
- [6] N. Ackermann, *A nonlinear superposition principle and multibump solutions of periodic Schrödinger equations*, J. Funct. Anal. **234** (2006), no. 2, pp. 277–320, DOI: 10.1016/j.jfa.2005.11.010.
- [7] N. Ackermann, T. Bartsch, and P. Kaplický, *An invariant set generated by the domain topology for parabolic semiflows with small diffusion*, Discrete Contin. Dyn. Syst. **18** (2007), no. 4, pp. 613–626, URL: <http://www.aims sciences.org/journals/displayArticles.jsp?paperID=2616>.
- [8] N. Ackermann et al., *A priori bounds, nodal equilibria and connecting orbits in indefinite superlinear parabolic problems*, Trans. Amer. Math. Soc. **360** (2008), no. 7, pp. 3493–3539, DOI: 10.1090/S0002-9947-08-04404-8.
- [9] N. Ackermann, *Solution set splitting at low energy levels in Schrödinger equations with periodic and symmetric potential*, J. Differential Equations **246** (2009), no. 4, pp. 1470–1499, DOI: 10.1016/j.jde.2008.10.016.

- [10] N. Ackermann, *Long-time dynamics in semilinear parabolic problems with autocatalysis*, in: Recent progress on reaction-diffusion systems and viscosity solutions, ed. by Y. Du, H. Ishii, and W.-Y. Lin, World Sci. Publ., Hackensack, NJ, 2009, pp. 1–30, URL: <http://www.worldscibooks.com/mathematics/7016.html>.
- [11] N. Ackermann, M. Clapp, and F. Pacella, *Self-focusing Multibump Standing Waves in Expanding Waveguides*, Milan Journal of Mathematics **79** (2011), pp. 221–232, DOI: 10.1007/s00032-011-0147-6.

Articles in Conference Proceedings

- [1] N. Ackermann, *On the multiplicity of sign changing solutions to nonlinear periodic Schrödinger equations*, in: Topological methods, variational methods and their applications (Taiyuan, 2002), River Edge, NJ: World Sci. Publishing, 2003, pp. 1–9, URL: <http://www.worldscibooks.com/mathematics/5187.html>.
- [2] N. Ackermann, *An abstract approach to multibump solutions of periodic Schrödinger equations and applications*, Nonlin. Anal. **63** (2005), e1031–e1037, DOI: 10.1016/j.na.2005.02.070.

Submitted Preprints

- [1] N. Ackermann, M. Clapp, and F. Pacella, *Alternating sign multibump solutions of nonlinear elliptic equations in expanding tubular domains*, 40 pages, Preprint, 2011.
- [2] N. Ackermann, *Uniform Continuity and Brézis-Lieb Type Splitting for Superposition Operators in Sobolev Space*, 10 pages, Preprint, 2011.