

Nicholas J. Korevaar
Short Curriculum Vitae

Contact information

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Education and training

1992-present	Professor, University of Utah Mathematics Department Visiting Scholar, Stanford University (fall 1994, winter 1989)
1988-1992	Associate Professor, University of Utah Mathematics Dept.
1987-1988	Associate Professor, University of Kentucky Math Department
1981-1987	Assistant Professor, University of Kentucky Math Department Visiting Assistant Professor at Center for Mathematical Analysis, Australian National University (parts of 1985, 1986)
1981-1982	Visiting Assistant Professor, MRC at U.W. Madison Wisconsin
1981	Ph.D., Stanford University Mathematics Department
1976	A.B. cum laude, Harvard University; Phi Beta Kappa

Honors and Awards

2009	MAA Intermountain Section Teaching Award
2001	Undergraduate Teaching Award, University of Utah Math Department
1988-1996	NSF individual research grants
1992-1993	Member at Institute for Advanced Study, Princeton, New Jersey
1985-1987	NSF postdoctoral award at UCSD
1983-1985	NSF individual research grant

Current Research Interests: Research questions in geometric analysis and optimization, motivated by natural physical and geometric questions; variational problems such as harmonic mappings, surfaces of prescribed mean curvature, eigenvalue and measure density estimates, optimal tree structures.

Graduate Students

Shawna Haider (Masters Thesis 1999) *Air quality modeling in the greater Wasatch area for use in future growth scenarios.*

Uwe Mayer (Ph.D. 1995) *Gradient flows on nonpositively curved metric spaces*

Thomasz Serbinowski (Ph.D.1995) *Harmonic maps into metric spaces with curvature bounded above*

Todd Webb (Masters Thesis 1990) *New Algorithms for swept surfaces and lofted surfaces.*

Bobbie Hatfield (Ph.D. 1992) *Gradient bounds for the capillary problem.*
(Substantial thesis work with Korevaar, 1987-1989, but completed under direction of Ron Gariepy at Kentucky after Korevaar moved to Utah.)

Departmental Service includes

- 2012-2016 Associate Chair: Create Math course schedules; assign instructors; encourage effective teaching by working with course coordinators and by helping instructors via class observations and discussions; work to resolve student complaints; advise students and instructors in cases of alleged student cheating; monitor instructor course evaluation results; write teaching letters; coordinate office assignments and space issues; serve as proxy for Chair when requested to do so.
- 1993-2014 Course Coordinator: Math 2270-2280 (1998-2014), 2250, 3150, 3160 (1998-2013) Math 221-223, 325-327 (1993-1998), Math 3210-3220 (1998-1999)
- 1991-2016 Curriculum Committee/Undergraduate Committee
- 2008-2012 Director of Math Department Undergraduate Studies: Directed Departmental REU and Honors programs; helped formulate applied mathematics major proposal and shepherded it to University approval; worked towards improving course offerings, content, articulation for all math classes; worked to enhance mathematics major.
- 1997-2018 Engineering Math Committee: Chair 1998-1999, 2000-2004, 2005-2006, 2008-2011: Worked to Improve and articulate math service courses for engineering, in consultation with College of Engineering Math Committee, through 2012; reformulated Math 2250; worked with David Dobson 2011-2012 to outline a new 4-semester engineering math sequence, in consultation with Chair Peter Trapa; worked with Engineering Math Coordinator Will Nesse, 2012-2016.
- 1999-2012 **VIGRE** (a National Science Foundation program): Ad-hoc committee to write Departmental NSF VIGRE proposal, 1999-2000; Helped formulate and write proposal; surveyed current and former students. Ad-hoc committee to write new Departmental NSF VIGRE proposal, 2005-2006, responsibilities mainly related to the undergraduate program and outreach. VIGRE Steering Committee, 2001-2012; undergraduate exit interviews, 2000-2006; leader of Math Circles, 2002-2003; ACCESS, Math portion, 2001-2011; REU Presentation Seminar, 2004-2006; ACCESS, undergraduate, graduate, and postdoctoral mentor, 2001-2012; REU program director 2007-2012.

University and Professional Service includes

- 2000-2016 Mathematics Association of America (MAA): Intermountain Section webmaster 2008-2016, Chair of organizing committee for March 2007 annual Section meeting, Section Second Vice-Chair 2006-2007, Departmental liaison 2000-2006, 2011-2016.

Selected Publications:

- [1] *On the behavior of a capillary surface at a re-entrant corner*, Pacific Journal of Mathematics **88** #2 (1980) 379-385.
- [2] *Convex solutions to nonlinear elliptic and parabolic boundary value problems*, Indiana University Mathematics Journal **32** #4 (1983) 603-614.
- [3] (with John L. Lewis) *Convex solutions of certain elliptic equations have constant rank Hessians*, Archive for Rational Mechanics and Analysis, **97** #1 (1987) 19-32.
- [4] *A priori interior gradient bounds for solutions to elliptic Weingarten equations*, Annales de L'institut Henri Poincaré Analyse non linéaire **4** #5 (1987) 405-421.
- [5] (with Rob Kusner and Bruce Solomon) *The structure of complete embedded surfaces with constant mean curvature*, Journal of Differential Geometry **30** (1989) 465-503.
- [6] *Upper bounds for eigenvalues of conformal metrics*, Journal of Differential Geometry **37** (1993) 73-93.
- [7] (with Rob Kusner) *The global structure of constant mean curvature surfaces*, Inventiones Math. **114** (1993), 311-332.
- [8] (with Richard Schoen) *Sobolev spaces and harmonic maps for metric space targets*, Comm. Anal. Geom. **1** (1993), 561-659.
- [9] (with Rafe Mazzeo, Frank Pacard, Richard Schoen) *Refined asymptotics for constant scalar curvature metrics with isolated singularities* Inventiones Math. **135** (1999), 233-272.
- [10] (with Rob Kusner, Jesse Ratzkin) *On the nondegeneracy of constant mean curvature surfaces*, Geometric and Functional Analysis 16 (2006), 891-923.

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