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CURRICULUM VITAE

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Associate Dean, College of Science
Professor of Mathematics
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Education and Prior Employment:

B.S., Stanford University, 1972 (with distinction, PBK)
Ph.D., Princeton University, 1976
Assistant Professor, Haverford College, 1976-7
Postdoctoral Fellow, University of Vienna and MIT, 1977-9
Assistant Professor, Johns Hopkins Univ., 1979-83
At Georgia Tech since 1983, Associate Dean since 2005
Past concurrent visiting appointments at institutions in Austria, France, India, and Japan

Selected Academic Distinctions:

Fellow of the American Association for the Advancement of Science, 2006
Geoffrey Eichholz Faculty Teaching Award, 2006
Georgia Institute of Technology Outstanding Service Award, 1996
Alfred P. Sloan Fellow, 1983
NSF National Needs Fellow, 1977

External Funding

Past support through numerous research grants from the National Science Foundation, Division of Mathematical Sciences; the Institute for Mathematics and its Applications; the French Centre National pour la Recherche Scientifique; and the Georgia Institute of Technology.

Selected Public and Professional Service

Executive Committee, Forum on Physics and Society (Division of American Physical Society, elected office), 1986-1988.

Graduate Fellowship Panel, National Science Foundation, 1990-1993, 2006.

Representative to sections A (Mathematics), B (Physics), and Q (Education) of the American Association for the Advancement of Science, various dates 1995-present.

Past Program Reviews for

US Department of Energy

State of Louisiana Board of Regents

Emory University

University of Kuwait

Science Foundation of Ireland

Selected Publications (of over 75):

Bender-Wu Formula and the Stark Effect in Hydrogen. *Phys. Rev. Lett.* **42**(1979)704-707. (with L. Benassi, V. Grecchi, and B. Simon).

The Mathematical Theory of Resonances whose Widths are Exponentially Small. *Duke Math. J.* **47**(1980)845-892 (with B. Simon).

Double Wells. *Commun. Math. Phys.* **75**(1980)239-261.

Perturbation Theory for Shape Resonance and Large Barrier Potentials. *Commun. Math. Phys.* **83**(1982)151-170 (with M. Ashbaugh).

Hamiltonian Operators with Maximal Eigenvalues, *J. Math. Phys.* **25**(1984)48-51.

1/R Expansion for H_2^+ : Analyticity, Summability, Asymptotics, and Calculation of Exponentially Small Terms, *Phys. Rev. Lett.* **52**(1984)1112-1115 (with R.J. Damburg, R. Kh. Propin, S. Graffi, V. Grecchi, J. Cížek, J. Paldus, and H.J. Silverstone).

Potentials Producing Maximally Sharp Resonances, *Trans. Amer. Math. Soc.* **293**(1986)723-736 (with R. Svirsky).

Conformally Flat Riemannian Metrics, Schrödinger Operators, and Semiclassical Approximation, *J. Diff. Eq.* **66**(2) (1987)165-188 (with E.B. Davies).

On Minimal and Maximal Eigenvalue Gaps and Their Causes, *Pac. J. Math.* **147**(1991)1-24 (with M.S. Ashbaugh and R. Svirsky).

On the Elimination of Chaos in an Intracavity Doubled Nd:YAG Laser, *Optics Letters*, 15(1990)1141-1143 (with G.E. James, C. Bracikowski, R. Roy, and K. Wiesenfeld).
Some Geometric Bounds on Eigenvalue Gaps, *Commun. in Partial Diff. Eqs.* **18**(1993)179-198.

On the Second Eigenvalue of the Laplace Operator Penalized by Curvature, *J. Differential Geom. Appl.* **6**(1996)397-400.

On Trace Identities and Universal Eigenvalue Estimates for Some Partial Differential Operators (with J. Stubbe), *Trans. Amer. Math. Soc.*, **349**(1997)1797-1809.

On the Laplace operator penalized by mean curvature (with M. Loss), *Commun. Math. Phys.*, **195**(1998)643-650.

On the placement of an obstacle or a well so as to optimize the fundamental eigenvalue (with P. Kröger and K. Kurata), *SIAM J. Math. Analysis* **33**(2001)240-259.

A direct proof of a theorem of Blaschke and Lebesgue, *J. Geom. Anal.* **12**(2002), 81-88.

A physical short-channel threshold voltage model for undoped symmetric double-gate MOSFET's, *IEEE Transactions on Electron Devices* **50**(2003)1631-1637 (with Q. Chen and J.D. Meindl), 2003.

Geometric lower bounds for the spectrum of elliptic PDSs with Dirichlet conditions in part, *J. Comput. Appl. Math.* 194(2006)26-35.

Commutators, eigenvalue gaps, and mean curvature in the theory of Schrödinger operators, *Commun. in Partial Diff. Eqs.* **32**(2007)401-413.

Inequalities for means of chords, with application to isoperimetric problems (with P. Exner and M. Loss), *Letters in Math. Phys.* **75**(2006)225-233. Addendum, *Ibid.*, 77(2006)219.

Perturbation theory and atomic resonances since Schrödinger's time, pp. 227-248 in: P. Deift, F. Gesztesy, P. Perry, and W. Schlag, eds., Spectral Theory and Mathematical Physics: A Festschrift in Honor of Barry Simon's 60th Birthday, *Proceedings of Symposia in Pure Mathematics* **76.1**. Providence: American Mathematical Society, 2007.

Differential inequalities for Riesz means and Weyl-type bounds for eigenvalues, preprint 2007, submitted to *J. Funct. Analysis*. (With L. Hermi)

Translations from German of four textbooks by W. Thirring, 3 editions, 1978-1997.

On-line texts in applied mathematics at mathphysics.com .