Walter Craig - CV 2017

Department of Mathematics and Statistics
McMaster University
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Date of Birth: November 28, 1953

Spouse: Deirdre Haskell, Professor of Mathematics, McMaster University,

Fields of Research:

nonlinear partial differential equations, Hamiltonian dynamical systems, fluid dynamics, quantum mechanics

Education:

A.B. in Mathematics, June 1977
University of California, Berkeley

M.S. in Mathematics, June 1979
Ph.D. in Mathematics, June 1981
Courant Institute of Mathematical Sciences, New York University

Employment:

07/2000 – present: Professor and Canada Research Chair of Mathematical Analysis and its Applications
McMaster University
Department of Mathematics & Statistics
Hamilton, Ontario L8S 4K1, Canada
Distinguished University Professor, June 2016 – present.

07/2013 – 06/2015: Director
The Fields Institute
222 College Street, Toronto, Ontario M5T 3J1, Canada

09/1988 – 06/2000: Brown University
Department of Mathematics
Providence, Rhode Island 02912
Associate Professor, Sept. 1988 – June 1991
Professor, July 1991 – June 2000
Lefschetz Center for Dynamical Systems, Sept. 1988 – June 1999
Department Chair, July 1997 – June 2000

09/1984 – 08/1988: Assistant Professor
Stanford University
Department of Mathematics
Stanford, California 94305

09/1981 – 08/1984: California Institute of Technology
Department of Mathematics
Pasadena, California 91125
Bantrell Fellow Sept. 1983 – Aug. 1984
Bateman Research Instructor Sept. 1981 – Aug. 1983

09/1978 – 06/1981: Courant Institute
New York University
New York 10012
Teaching Assistant
Research Assistant in numerical analysis

Honors:

1983: Bantrell Fellowship
1988: Alfred P. Sloan Fellowship
1988 – 1993: NSF Presidential Young Investigator
2005: Fellow, Fields Institute
2007: Fellow, Royal Society of Canada
2008: Fellow, American Association for the Advancement of Science
2009 – 2011: Killam Research Fellowship
2013: Fellow, American Mathematical Society

Professional service:

Editorial Boards (current):

Communications in Contemporary Mathematics; 2006 - present.
Complex Analysis and its Synergies; 2014 - present.
Electronic Research Announcements in Mathematical Sciences;
February 15 2007 - February 1 2019.
Fields Institute, Editorial Board; 2001 - present.
Journal of Dynamics and Differential Equations; 2006 - present.
Mathematical Reports of the Royal Society of Canada; 2008 - present.
Mathematical Surveys and Monographs, AMS; February 1 2018 - January 31 2022.
Nonlinear Differential Equations and Applications; 2008 - present.

Editorial Boards (past):

AMS, Graduate Studies in Mathematics; Feb. 2002 - Jan. 2008.
Canadian Mathematical Society, Journal and Bulletin; 2002 - 2007.
London Mathematical Society Monographs; 2004 - 2008.
Mathematical Physics Electronic Journal; 2002 - 2015.
Philosophical Transactions of the Royal Society - A: 2009 - 2014.
Proceedings of the AMS; Feb. 2005 - Jan. 2015.
Proceedings of the Royal Society - A; 2002 - 2008.
SIAM: Mathematical Analysis; 1998 - 2004.

American Mathematical Society:

Member, Editorial Boards Committee; 2013 - 2016.
Member of the Executive Committee; 2003 - 2006.
Member at Large of Council; 2000 - 2003.
Member of the Committee on the Profession; 2001 - 2004, (chair, 2003 - 2004).
Member of the Committee on Committees; 2003 - 2005.

American Association for the Advancement of Science:

Member 1985 - present
Member of the Steering Group, AAAS Section on Mathematics (A); 2004 - 2008.

Fields Institute, Toronto:

Scientific Advisory Panel; 2000 - 2005.
Nominations Committee; 2001 - 2005.
Board of Directors; 2009-2012, 2015-2016.

Centre de Recherches Mathématiques, Montréal:
Comité Consultatif; 2001 - 2005.

Pacific Institute for the Mathematical Sciences, Vancouver:
Scientific Review Panel; 2007 - 2013.

Origins Institute:
Steering Committee; 2004 - 2013.
Advisory Council; 2013 - present.

Mathematics of Planet Earth: Joint Initiative of North American Mathematics Institutes,
Scientific Committee member.

Canada Research Chairs Program: member, College of Reviewers.

EPSRC (Great Britain): member, Peer Review College, 2006-2012.

Visiting professorships:

07/00 - present: Fields Institute, visiting member
02/17 - 05/17: University of California - Berkeley, Visiting Scholar.
10/16 - 12/16: Courant Institute of Mathematical Sciences - New York, NY, Visiting Scholar.
05/16 - 06/16: Institut des Hautes Etudes Scientifiques – Bures sur Yvette, France
04/13: DMA – Ecole Normale Supérieure - Paris, France.
02/10: Ecole Normale Supérieure - Paris, France.
09/09 - 06/10: Université de Paris 7, France.
06/09: Université Cergy - Pontoise, France.
08/07: Jilin University, Changchun, China
05/07: Université Paul Sabatier - Toulouse, visiting professor
03/03 - 07/03: Université de Paris - Sud, Orsay, CNRS poste rouge
01/03 - 03/03: CEREMADE, Université de Paris - Dauphine, CNRS poste rouge
07/02 - 12/02: Mathematical Sciences Research Institute - Berkeley, member
12/99 – 01/00: Institute of Mathematical Sciences, Chennai, India
05/99 – 06/99: International Centre for Mathematical Sciences, Edinburgh Scotland
06/98 – 07/98: ETH - Forschungsinstitut für Mathematik, Zürich, Switzerland
01/96 – 07/96: Institut des Hautes Etudes Scientifiques – Bures sur Yvette, France
08/95 – 12/95: CMLA, Ecole Normale Supérieure – Cachan, France
06/93: Department of Mathematics, Imperial College, London
01/91 – 12/91: Mathematical Institute, Oxford University
06/90: Département de Mathématique, Université de Paris 6, France
06/89: Laboratoire d'Analyse Numerique, Université de Paris–Sud, Orsay, France
03/88 – 08/88: Sonderforschungsbereich 256, Universität Bonn, West Germany
12/85: Department of Physics, Technion - Israel Institute of Technology, Haifa, Israel
08/84 – 10/84: Ecole Normale Supérieure – rue d'Ulm, Paris, France
10/84 – 12/84: ETH - Forschungsinstitut für Mathematik, Zürich, Switzerland
08/1981: Universidad Technica F. Santa Maria, Valparaiso, Chile

General Activities and Interests:

musician (contrabassist); mountaineering; molecular biology

Publications:

[1] "A bifurcation theory for periodic solutions of nonlinear dissipative hyperbolic equations," *Annali della Scuola Norm. Sup.-Pisa serie IV, Vol X,1*, pp. 125-167 (1983).

[2] "Pure point spectrum for discrete almost periodic Schrödinger operators," *Commun. Math. Phys.* **88** pp. 113-131 (1983).

[3] "Subharmonicity of the Lyaponov index," (with Simon, B.) *Duke Math. J.* **50** pp. 551-560 (1983).

[4] "Log Hölder continuity of the integrated density of states for stochastic Jacobi matrices," (with Simon, B.) *Commun. Math. Phys.* **90** pp. 207-218 (1983).

[5] "Large coupling behavior of the Lyaponov exponent for tight binding one-dimensional random systems," (with Avron, J. and Simon, B.) *J. Phys. A: Gen 16* pp. L209-211 (1983).

[6] "On water waves in the Boussinesq and Korteweg-de Vries limits," MSRI Berkeley report 056-84-5 (1984).

[7] "On the Lyapounov index and the integrated density of states for stochastic Schrodinger operators," *Infinite dimensional analysis and stochastic processes*, S. Albeverio ed. Research notes in mathematics **124**, Pitman (1985).

[8] "An existence theory for water waves, and the Boussinesq and Korteweg-deVries scaling limits," *Commun. PDE* **10**, no 8, pp 787-1004 (1985).

[9] "The Lyapounov index, the density of states and their regularity for general stochastic potentials," L. Arnold and V. Wihstutz, eds., *Lyapounov Exponents; proceedings Bremen 1984*, Springer Lecture Notes in Mathematics Vol 1186, pp. 252–257, 1986.

[10] "An introduction to bifurcation theory," Proceedings of the Stanford summer workshop on mathematical modelling, (1985), lecture notes.

[11] "Nonstrictly hyperbolic nonlinear systems," *Math. Annalen*, **277**, pp. 213-232 (1987).

[12] "On water waves as Hamiltonian system," manuscript 1987.

[13] "Symmetry of solitary waves," (with Sternberg, P.), *Commun. P.D.E.*, **13**, pp. 603-633 (1988).

[14] "Floquet exponents for Jacobi fields", Univ. Bonn–SFB 256 preprint 37, 1988. *Ergodic Theory and Dynamical Systems* **11**, pp. 41-63, (1991).

[15] "Symmetry of free surface flows", (with P. Sternberg) Univ. Bonn–SFB 256 preprint 86, 1989. *Archives for Rational Mechanics and Analysis* **118**, pp. 1-36, (1992).

[16] "The trace formula for Schrödinger operators on the line", Univ. Bonn–SFB 256 preprint 57, 1988. *Commun. Math. Physics* **126**, no. 2 pp. 379-407 (1989).

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[20] "Infinite gain of regularity for dispersive evolution equations" (with T. Kappeler and W. Strauss), Microlocal Analysis and Nonlinear Waves, May 1989, M. Beals, R. Melrose and J. Rauch, ed's. IMA vol. 30, *Springer*, (1991).

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[23] "Periodic solutions to the nonlinear wave equation and localization theory", (with C.E. Wayne), *Mathematical Physics X, (Leipzig, 1991)*, pp. 256-261, *Springer* (1992).

[24] "Comparison principles for free surface flows with gravity" (with P. Sternberg) *Journal of Fluid Mechanics* **230**, pp. 231-243, (1991).

[25] "Infinite gain of regularity for equations of KdV type" (with T. Kappeler and W. Strauss), *Annales de l'IHP, ≪Analyse Nonlinéaire≫* **9**, vol. 2, pp. 147-186, (1992).

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[58] "Hamiltonian long wave expansions for water waves over a rough bottom", (with P. Guyenne, D. Nicholls and C. Sulem), *Proc. Royal Society A* **461** (2005), pp, 839 - 873.

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[62] "The mathematical analysis of thermal diffusion shocks", (with V. Gusev, R. LiVoti, S. Danworaphong and G. Diebold), *Phys. Rev E (3)* **72**, 041205 (2005).

[63] "KAM theory for PDE", *Oberwolfach Reports* **31** (2005), pp. 18-21.

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[65] "On the regularity of the Neumann problem for free surfaces with surface tension", (with A.-M. Matei), *Proc. AMS* **135** (2006), pp. 2497-2504.

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[67] "Surface water waves and tsunamis", *JDDE* **18** (2006), pp. 525-549.

[68] "Hamiltonian expansions for water waves over a random bottom", (with C. Sulem), *Oberwolfach Reports* **50** (2006).

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[71] "Stable three-dimensional waves of nearly permanent form on deep water", (with D. Henderson, M. Oscamou and H. Segur), *Mathematics and Computers in Simulation* **74**, March (2007), pp. 135-144 .

[72] "Mathematical aspects of surface water waves", (with C. E. Wayne), *Russian Math. Surveys* **62:3** pp. 453-473 (2007).

[73] "Hamiltonian formulation and long wave models for internal waves", (with P. Guyenne and H. Kalisch), *Proceedings of the 26th International Conference on Offshore Mechanics and Artic Engineering*, OMAE2007-29314 (2007).

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[81] "Global regular solutions to the Boltzmann equation in one space dimension" (with A. Biryuk and V. Panferov), manuscript for *Inventiones Math.* (2009).

[82] "Lagrangian invariant tori for infinite dimensional lattice Schrödinger equations" (with J. Geng), manuscript (second revision) for *Inventiones Math.* (2009).

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[84] "Asymptotics of surface water waves over random bathymetry"(with C. Sulem), *Quarterly of Applied Math.***68** no.1, (2010) pp. 91-112.

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