

Dr. Margaret Cheney

Yates Chair and Professor of Mathematics
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Appointments:

2012 - present Yates Chair and Professor of Mathematics, Colorado State University
2009 - present Visiting Research Professor, Naval Postgraduate School
1993 - 2012 Professor of Mathematics, Rensselaer Polytechnic Institute
1988 - '93 Associate Professor of Mathematics Rensselaer Polytechnic Institute
1984 - '88 Assistant Professor of Mathematics, Duke University
1982 - '84 Postdoc with J.B. Keller, Department of Mathematics, Stanford University

Education:

1982 Ph.D. in Mathematics, Indiana University; advisor: Roger G. Newton
1976 B.A. in Mathematics and Physics, Oberlin College, Oberlin, OH

Sabbaticals and Visiting Positions:

summer 2012 ASEE Summer Faculty Fellow, Naval Research Laboratory
Fall 2010 Program on Inverse Problems, Math. Sciences Research Institute
2007 - '08 9 months in Sensors Directorate, Air Force Research Lab (NRC Fellowship)
Fall 2005 Program on Imaging, Institute for Math. and Its Applications (IMA)
Fall 2003 Program on Inverse Problems, Institute for Pure and Applied Mathematics
Spring 2002 4 months at Naval Air Warfare Center Weapons Division, China Lake
2 months at Mathematics Department, Stanford University
Fall 2001 Program on Inverse Problems, Math. Sciences Research Institute
2000 Lise Meitner Visiting Prof., Electromagnetic Theory, Lund Univ., Sweden
October 1998 Center for Wave Phenomena, Colorado School of Mines
Spring 1997 Program on High-Performance Computing, IMA
1994 - '95 10 months at the Program on Waves and Scattering, IMA
1987 - '88 9 months at the NYU Courant Institute of Mathematical Sciences
June 1987 Division of Electromagnetic Theory, KTH, Stockholm
summers 1985-7 Visiting Scientist, Ames Laboratory, Iowa
summers 1976-'80 Graduate Research Assistant, Los Alamos National Laboratory

Honors and Awards:

2012 Honorary Doctor of Science, Oberlin College
2009 Fellow of Society for Industrial and Applied Mathematics (SIAM)
2007 National Research Council Research Associateship
2000 Lise Meitner Visiting Professor, Lund, Sweden
1999 Fellow of the Institute of Physics
1996 - 2004 Board of Trustees, SIAM (elected position)
1993 ComputerWorld Smithsonian award in medicine category
(given to Rensselaer for the work of our impedance imaging group)
1991 NSF Faculty Award for Women in Science and Engineering
1986 Office of Naval Research Young Investigator Award

Synergistic Activities:

- editorships: IEEE Transactions on Image Processing (2008 – present), Inverse Problems (1998 – present), SIAM Journal on Imaging Science (2007 – '09), Inverse Problems and Imaging (2006 – present), SIAM Journal on Applied Math. (1995 – '97)
- 2008 Organizer of SIAM Imaging Science Conference, San Diego
- 2008 Lecturer, Conference Board in Math. Sciences series (10 lectures + book)
- 2006 - '08 Program Director, SIAM Activity Group on Imaging Science (elected)
- 2005 Organizer of year on Imaging (2005-'6) at IMA
- 2005 Tutorial lecturer (10 lectures) on radar imaging at IMA
- 2001 Co-organizer of SIAM Annual Meeting, San Diego
- 1996 - '04 Member of SIAM Board of Trustees (elected)

PUBLICATIONS:

Book: *Fundamentals of Radar Imaging*, M. Cheney and B. Borden, SIAM, Philadelphia, 2009

Some Recent Journal Articles (from about 120):

- “Waveform design for synthetic-aperture radar imaging through dispersive media”, T. Varslot, J. H. Morales, and M. Cheney, *SIAM J. Appl. Math.*, Vol. 71, No. 5 (2011), pp.1780-1800.
- ”Synthetic-aperture imaging through a dispersive medium”, T. Varslot, H. Morales, M. Cheney, *Inverse Problems* 26 (2010) 025008.
- ”Imaging from sparse measurements”, Y. Fang, M. Cheney, S. Roecker, *Geophysical J. International*, Volume 180 Issue 3, 1289 - 1302, Published Online: 22 Jan 2010
- “Imaging Moving Targets from Scattered Waves”, M. Cheney and B. Borden, *Inverse Problems* 24 (2008) 035005.
- “Wideband pulse-echo imaging with distributed apertures in multi-path environments”, T. Varslot, B. Yazici, and M. Cheney, *Inverse Problems* 24 (2008) 045013.
- “Bistatic Synthetic Aperture Radar Imaging for Arbitrary Flight Trajectories”, C.E. Yarman, B. Yazici, and M. Cheney, *IEEE Trans. Image Processing*, 17 (2008) 84-93.
- “A variational approach to waveform design for synthetic aperture imaging”, T. Varslot, C.E. Yarman, M. Cheney, B. Yazici, *Inverse Problems and Imaging*, 1 (2007) 577-592.
- ”Enhanced angular resolution from multiply scattered waves”, C.J. Nolan, M. Cheney, T. Dowling, and R. Gaburro, *Inverse Problems* 22 (2006) 1817-1834.
- “Synthetic Aperture Inversion for an Arbitrary Flight Trajectory in the Presence of Noise and Clutter”, B. Yazici, M. Cheney, and C.E. Yarman, *Inverse Problems* 22 (2006) 1705-1729.
- “Synthetic-aperture imaging from high-Doppler-resolution measurements”, B. Borden and M. Cheney, *Inverse Problems* 21 (2005) 1-11.
- “Synthetic Aperture Inversion for Arbitrary Flight Paths and Non-Flat Topography”, C. Nolan and M. Cheney, *IEEE Transactions on Image Processing* 12 (2003) 1035-1043.
- “Microlocal structure of inverse synthetic aperture radar data”, M. Cheney and B. Borden, *Inverse Problems* 19 (2003) 173-194.
- “A mathematical tutorial on Synthetic Aperture Radar”, M. Cheney, *SIAM Review* 43 (2001) 301-312.
- ”Optimal Electromagnetic Measurements”, M. Cheney and G. Kristensson, *Journal of Electromagnetic Waves and Applications* 15 (2001) 1323-1336
- ”The linear sampling method and the MUSIC algorithm”, M. Cheney, *Inverse Problems* (2001) 591-595.