Curriculum Vitae for

Peter B. Monk

Department of Mathematical Sciences
University of Delaware
Newark, DE 19716
E-mail: monk@math.udel.edu

Work Experience:

Sept. 2005 - Present Interim Chair and UNIDEL Professor, Department of Mathematical Sciences. *University of Delaware.*

Sept. 2000 - Aug. 2005 UNIDEL Professor, Department of Mathematical Sciences. *University of Delaware.*

Sabbatical leave: Aug. 2002 - Jan. 2003. Rutgers, Isaac Newton Institute and Brunel University (UK).

Sept. 1994 - Aug. 2000 Professor, Department of Mathematical Sciences. *University of Delaware.*

Sabbatical leave: Aug. 1996 - Jan. 1997. Research Visitor. *INRIA, Paris, France.*

Sept. 1988 - Aug. 1994 Associate Professor. *University of Delaware.*
(Joint appointment in the Mathematical Sciences and Computer Science Departments).

Sabbatical leave: Jan. 1992 - July 1992. Academic Visitor. *Computing Laboratory, Oxford University.*

On leave: April 1990 - June 1990. Senior Visitor. *Centre for Mathematical Biology, Oxford University.*

On leave: Sept. 1988 - June 1989. Visiting Associate Professor. *University of Utah.* (Department of Mathematics).

Sept. 1982 - August 1988 Assistant Professor. *University of Delaware.*
(Joint appointment in the Mathematical Sciences and Computer Science Departments).

On leave: Sept. 1985 - July 1986. Visiting Assistant Professor. *University of Maryland, Baltimore County* (Department of Mathematics and Statistics).

Education:

Rutgers University New Brunswick, N.J. (Department of Mathematics).

- Ph.D. in Mathematics (January 1983). Advisor: R.S. Falk.
- M.S. in Mathematics (January 1981).

Cambridge University, Sidney Sussex College, England.

- B.A. in Mathematics (June 1978).

Research:

- Numerical methods for partial differential equations, particularly finite element methods in acoustics and electromagnetism.
- Inverse scattering problems, particularly time-harmonic inverse acoustic and electromagnetic scattering at resonance frequencies.
- Supervised two PhD students: Joe Coyle (2000 - Monmouth University) and J. Sun (2005 - Delaware State), as well as co-supervised the PhD of Tomi Huttunen (Kuopio, Finland).

Editorial positions:

- Principal Editor for *Journal of Computational and Applied Mathematics* (retired Jan 1, 2007).
- Editorial board for *SIAM Journal on Numerical Analysis*
- Editorial board for *IMA Journal of Numerical Analysis*

Bibliography of Peter Monk.

Book

Finite Element Methods for Maxwell's Equations, Oxford University Press, 2003.

Edited volumes

Computational Electromagnetics, Volume 28 of "Lecture Notes in Computational Science and Engineering" Springer (2003) (with C. Carstensen, S. Funken, W. Hackbusch and R.W. Hoppe).

Research Papers in Refereed Journals

[1] A novel method for solving the inverse scattering problem for time-harmonic acoustic waves in the resonance region, *SIAM J. Appl. Math.* **45** (1985), pp. 1039-1053, (with D. Colton).

[2] A model for signal relay and adaptation in *Dictyostelium discoideum*. Part I. Biological processes and the model network, *Math. Biosci.* **77** (1985), pp. 35-78, (with P.E. Rapp and H.G. Othmer).

[3] A model for signal relay and adaptation in *Dictyostelium discoideum*. Part II. Analytical and numerical results, *Math. Biosci.* **77** (1985), pp. 79-139, (with H.G. Othmer and P.E. Rapp).

[4] A novel method for solving the inverse scattering problem for time-harmonic acoustic waves in the resonance region II, *SIAM J. Appl. Math.* **46** (1986), pp. 506-523, (with D. Colton).

[5] Logarithmic convexity for discrete harmonic functions and the approximation of the Cauchy problem for Poisson's equation, *Math. Comp.* **47** (1986), pp. 135-149, (with R.S. Falk).

[6] Error estimates for a numerical method for an ill-posed Cauchy problem for the heat equation, *SIAM J. Num. Anal.* **23** (1986), pp. 1155-1172

[7] The numerical solution of the three dimensional inverse scattering problem for time harmonic acoustic waves, *SIAM J. Sci. Stat. Comput.* **8** (1987), pp. 278-291, (with D. Colton).

[8] The inverse scattering problem for time harmonic acoustic waves in a penetrable medium, *Q. J. Mech. appl. Math.*, **40** (1987), pp 189-212, (with D. Colton).

[9] A mixed finite element method for the biharmonic equation, *SIAM J. Numer. Anal.*, **24** (1987), pp. 737-749.

[10] The inverse scattering problem for time harmonic acoustic waves in an inhomogeneous medium, *Q. J. Mech. appl. Math.*, **41** (1988), pp. 97-125, (with D. Colton).

[11] Two methods for solving the inverse acoustic scattering problem, *Inverse Problems*, **4** (1988), pp. 749-770, (with A. Kirsch R. Kress and A. Zinn).

[12] An iterative finite element method for approximating the biharmonic equation, *Math. Comp.*, **51** (1988), pp. 451-476.

[13] Pacemakers in aggregation fields of *Dictyostelium discoideum*: does a single cell suffice?, *J. Math. Biol.*, **26** (1988), pp. 487-517, (with G. DeYoung and H.G. Othmer).

[14] Cyclic AMP oscillations in suspensions of *Dictyostelium discoideum*, *Philosophical Transactions of The Royal Society of London*, **323** (1989), pp. 185-224, (with H.G. Othmer).

[15] Continuous finite elements in space and time for the heat equation, *Mathematics of Computation*, **52** (1989), pp. 255-274, (with A.K. Aziz).

[16] The inverse scattering problem for time harmonic acoustic waves in an inhomogeneous medium: Numerical results, *IMA Journal of Applied Math.*, **42** (1989), pp. 77-95, (with D. Colton).

[17] A new method for solving the inverse scattering problem for acoustic waves in an inhomogeneous medium, *Inverse Problems*, **5** (1989), pp. 1013-1026, (with D. Colton).

[18] The scattering of electromagnetic waves by a perfectly conducting infinite cylinder, *Math. Methods Appl. Sci.*, **12** (1990), pp. 503-518, (with D. Colton).

[19] Wave propagation in aggregation fields of the cellular slime mold *Dictyostelium discoideum*, *Proceedings of the Royal Society of London. B. Biological Sciences,* **240** (1990), pp. 555-589, (with H.G. Othmer).

[20] Convergence analysis of a coupled finite element and spectral method in acoustic scattering, *IMA J. of Num. Anal.,* **9** (1990), pp. 425-447, (with A. Kirsch).

[21] A new method for solving the inverse scattering problem for acoustic waves in an inhomogeneous medium II, *Inverse Problems*, **6** (1990), pp. 935-947, (with D. Colton).

[22] A mixed method for approximating Maxwell's equations, *SIAM J. on Numerical Analysis*, **28** (1991), pp. 1610-1634.

[23] Analysis of a finite element method for Maxwell's equations, *SIAM J. on Numerical Analysis*, **29** (1992), pp. 714-729.

[24] A comparison of three mixed methods for the time dependent Maxwell equations, *SIAM J. Scientific and Statistical Computing*, **13** (1992), pp. 1097-1122.

[25] A comparison of two methods for solving the inverse scattering problem for acoustic waves in an inhomogeneous medium, *J. Comp. Appl. Math.*, **42** (1992), pp. 5-16 (with D. Colton).

[26] A finite element method for approximating the time–harmonic Maxwell equations, *Numerische Mathematik*, **63** (1992), pp. 243-261.

[27] The numerical solution of an inverse scattering problem for acoustic waves, *IMA Journal on Applied Mathematics*, **49** (1992), pp. 163-184 (with D. Colton).

[28] An analysis of Nédélec's method for the spatial discretization of Maxwell's equations, *J.*

Comp. Appl. Math., **47** (1993), pp. 101-121.

[29] On a class of integral equations of the first kind in inverse scattering theory, *SIAM J. Appl. Math.* **53**, (1993), pp. 847-860 (with D. Colton).

[30] An analysis of the coupling of finite element and Nyström methods in acoustic scattering, *IMA J. on Numerical Analysis*, **14**, (1994), pp. 523-544 (with A. Kirsch).

[31] On the p and hp extension of Nédélecs curl conforming elements, *J. Comp. Appl. Math.* **53** (1994), pp. 117-137.

[32] A dispersion analysis of finite element methods for Maxwell's equations, *SIAM J. on Scientific Computing* **15**, (1994) pp.916-937 (with A.K. Parrott).

[33] A convergence analysis of Yee's scheme on non-uniform grids, *SIAM J. on Numerical Analysis* **31**, (1994) pp. 393-412 (with E. Süli).

[34] Superconvergence of finite element approximations to Maxwell's equations, *Numerical Methods for Partial Differential Equations*, **10** (1994), pp. 793-812.

[35] A modified dual space method for solving the electromagnetic inverse scattering problem in an infinite cylinder, *Inverse Problems*, **10**, (1994), pp. 87-107, (with D. Colton).

[36] The detection and monitoring of leukemia using electromegnetic waves: Mathematical theory, *Inverse Problems*, **10** (1994), pp. 1235-1251, (with D. Colton).

[37] Time-Discrete Finite Element Schemes for Maxwell's Equations, *RAIRO* M^2AN, **29** (1995), pp. 171-197 (with Ch. G. Makridakis).

[38] Multigrid Computation of Vector Potentials, *J. Comp. Appl. Math.*, **62** (1995), pp. 301-320 (with S. Zhang).

[30] A finite element/spectral method for approximating the time harmonic Maxwell system in $\mathbf{R}^3$, *SIAM J. Applied. Math.*, **55** (1995) pp. 1324-1344 (with A. Kirsch) and corrigendum in *SIAM J. Appl. Math.*, **58** (1998) pp. 2024-2028.

[40] The near field to far field transformation, *COMPEL* **14** (1995), pp. 41-56.

[41] The detection and monitoring of leukemia using electromegnetic waves: Numerical analysis, *Inverse Problems* **11** (1995), pp. 329-342 (with D. Colton).

[42] Computing cavity models using the p-version of the finite element method, *IEEE Transactions on Magnetics*, **32** (1996), pp. 1934-1940 (with Y. Wang and B. Szabo)

[43] Sub-gridding FDTD schemes, *ACES Journal*, **11** (1996), pp. 37-46.

[44] A new algorithm in electromagnetic inverse scattering theory with an application to medical imaging, *Math. Methods Applied Science*, **20** (1997), pp. 385-401 (with D. Colton and R. Kress).

[45] Gauss point mass lumping schemes for Maxwell's equations, *Numerical Methods for Partial Differential Equations*, **14** (1998) pp. 63-88 (with G. Cohen).

[46] A Linear Sampling Method for the Detection of Leukemia Using Microwaves, *SIAM J. on Applied Math.*, **58** (1998), pp. 926-941 (with D. Colton).

[47] The Perfectly Matched Layer in Curvilinear Coordinates, *SIAM J. Sci. Computing*, **19** (1998), pp. 2061-2090 (with F. Collino).

[48] Inverse Scattering from an Orthotropic Medium, *J. Computational and Applied Math.* (1997), **81**, pp. 269-298 (with D. Colton and R. Kress).

[49] The adaptive computation of far field patterns by a posteriori error estimation of linear

functionals, *SIAM J. Numer. Anal.*, **36** (1998), pp. 251-174 (with E. Süli).

[50] Error estimates for a numerical scheme for ferromagnetic problems, *SIAM J. Numer. Anal.*, **36** (1999), pp. 696-718 (with O. Vacus).

[51] Optimizing the perfectly matched layer, *Computer Methods in Applied Mechanics and Engineering*, **164** (1998), pp. 157-171 (with F. Collino).

[52] Mur-Nédélec finite element schemes for Maxwell's equations, *Computer Methods in Applied Mechanics and Engineering*, **169** (1999), pp. 197-217 (with G. Cohen).

[53] A Least Squares Method for the Helmholtz Equation, *Computer Methods in Applied Mechanics and Engineering*, **175** (1999), pp. 121-136 (with D.Q. Wang).

[54] A posteriori error indicators for Maxwell's Equations, *Journal of Computational and Applied Mathematics*, **100** (1998), pp. 173-190.

[55] The Regularized Sampling Method, *SIAM J. Sci. Comp.*, **21** (2000), pp. 2316-2330 (with D.L. Colton and K. Giebermann).

[56] A linear sampling method for the detection of leukemia using microwaves II, *SIAM J. Appl. Math.*, **60** (2000), pp. 241-255 (with D.L. Colton).

[57] Scattering of time-harmonic electromagnetic waves by anisotropic inhomogeneous scatterers or impenetrable obstacles, *SIAM J. Numer. Anal.*, **37** (2000), pp. 1590-1617 (with J. Coyle).

[58] Recent Developments in Inverse Acoustic Scattering Theory, *SIAM Review*, **42** (2000), pp. 369-414 (with D.L. Colton and J. Coyle).

[59] de Rham diagram for *hp* finite element spaces, *Comput. Math. Appl.*, **39** (2000), pp. 29-38, (with L. Demkowicz and L. Vardepetyan).

[60] Maxwell eigenvalues and discrete compactness in two dimensions, *Comput. Math. Appl.*, **40** (2000), pp. 589-605, (with L. Demkowicz, C. Schwab and L. Vardepetyan).

[61] Discrete Compactness and the Approximation of Maxwell's Equations in $\mathbf{R}^3$, *Math. Comp.*, **70** (2001), pp. 507-523 (with L. Demkowicz).

[62] Accurate Discretisation of a Nonlinear Micromagnetic Problem, *Computer Methods in Applied Mechanics and Engineering*, **190** (2001) pp. 5243-5269, (with O. Vacus).

[63] Phase accuracy comparisons and improved farfield estimates for 3-D edge elements on tetrahedral meshes, *Journal of Computational Physics*, **170** (2001), pp. 614-641 (with K. Parrott).

[64] Mathematical and numerical methods in inverse acoustic scattering theory, *Z. Angew. Math. Mech.*, **81** (2001), pp. 723-731 (with D. Colton).

[65] The direct and inverse scattering problems for partially coated obstacle, *Inverse Problems*, **17** (2001), pp. 1997-2015, (with F. Cakoni and D. Colton).

[66] A finite element method for approximating electromagnetic scattering from a conducting object, *Numerische Mathematik*, **92** (2002), pp. 501-534, (with A. Kirsch).

[67] Error analysis of a finite element-integral equation scheme for approximating the time-harmonic Maxwell system, *SIAM J. Numer. Anal.*, **40** (2002), pp. 198-219 (with G. Hsiao and N. Nigam)

[68] The Linear Sampling Method for Solving the Electromagnetic Inverse Scattering Problem, *SIAM J. Sci. Comput.*, **24** (2003), pp. 719-731 (with D. Colton and H. Haddar).

[69] Stabilized interior penalty methods for the time-harmonic Maxwell equations, *Computer Methods in Applied Mechanics and Engineering*, **191** (2002), pp. 4675-4697 (with I. Peru-

gia and D. Schötzau).

[70] Computational Aspects of the Ultra Weak Variational Formulation, *J. Comput. Phys.*, **182** (2002), pp. 27-46, (with T. Huttunen and J.P. Kaipio).

[71] The Linear Sampling Method for Solving the Electromagnetic Inverse Medium problem, *Inverse Problems*, **18** (2002), pp. 891-906, (with H. Haddar).

[72] The electromagnetic inverse scattering problem for partially coated Lipschitz domains, *Proceedings of the Royal Society of Edinburgh*, **134A** (2004), pp. 661-682 (with D. Colton and F. Cakoni).

[73] The ultra-weak variational formulation for elastic wave problems, *SIAM J. Sci. Comp.*, **25** (2004), pp. 1717-1742, (with T. Huttunen, F. Collino and J.P. Kaipio).

[74] The perfectly matched layer for the ultra weak variational formulation of the 3D Helmholtz equation, *International Journal for Numerical Methods in Engineering*, **61** (2004), pp. 1072-1092. (with T. Huttunen and J.P. Kaipio).

[75] A discontinuous Galerkin method for linear symmetric hyperbolic systems in inhomogeneous media, *J. Sci. Comput.* **22** (2005), pp. 443-77, (with J. Richter).

[76] An eddy current and micromagnetism model with applications to disk write heads, *International Journal for Numerical Methods in Engineering*, **60** (2004), pp. 1673-1698, (with J. Sun, F. Collino and L. Wang).

[77] The Determination of the Surface Conductivity of a Partly Coated Dielectric, *SIAM J. Applied Math.*, **65** (2005), pp. 767-89, (with F. Cakoni and D. Colton).

[78] Existence, uniqueness and variational methods for scattering by unbounded rough surfaces, *SIAM J. Math. Anal.* **37** (2005), pp. 598-618 (with S.N. Chandler-Wilde).

[79] Dispersive and dissipative properties of discontinuous Galerkin finite element methods for the second order wave equation, *J. Sci. Comput.* **27** (2006), pp. 5-40 (with M. Ainsworth and W. Muniz).

[80] An ultra-weak method for fluid-structure interaction, submitted for publication (with T. Huttunen and J.P. Kaipio).

[81] The Inverse Source Problem for Maxwell's Equations, *Inverse Problems*, **22** (2006), pp. 1023-1035 (with R. Albanese).

[82] Target Identification of Coated Objects, *IEEE Trans. Antennas and Propagation*, **54** (2006), pp. 1232-1242 (with D. Colton).

[83] Coupling of the Ultra-Weak Variational Formulation and an Integral Representation using a Fast Multipole Method in Electromagnetism, *J. Comput. Appl. Math.* **204** (2007), pp. 400-407 (with E. Darrigrand).

[84] The Inverse Electromagnetic Scattering Problem for a Partially Coated Dielectric,*J. Comput. Appl. Math.*, **204** (2007) pp. 256-267 (with F. Cakoni and D. Colton).

[85] Solving Maxwell's Equations Using the Ultra Weak Variational Formulation, to appear in *J. Compu. Phys.* (with T. Huttunen and M. Malinen)

[86] An adaptive algebraic multigrid algorithm for micromagnetism, *IEEE Trans. Mag.*, **42** (2006), pp. 1643-1647 (with J. Sun).

[87] The mathematics of scattering by unbounded, rough, inhomogeneous layers, *J. Comput. Appl. Math.*, **204** (2007) pp. 249-559 (with S.N. Chandler-Wilde, M. Thomas).

[88] On the use of transmission eigenvalues to estimate the index of refraction from far field data,

Inverse Problems, **23** (2007), pp. 507-522 (with F. Cakoni and D. Colton).

[89] The use of plane waves to approximate wave propagation in anisotropic media, submitted (with T. Huttunen).

[90] Analysis of an eddy current and micromagnetic model, *Applicable Analysis* **85** (2006), pp. 1509-1526 (with J. Sun).

[91] A finite difference delay modeling approach to the discretization of the time domain integral equations of electromagnetics, submitted for publication, 2007 (with X. Wang, R.A. Wildman, and D.S. Weile) .

[92] Wave-Number-Explicit Bounds in Time-Harmonic Scattering, to appear in *SIAM J. Math. Anal.* (with S.N. Chandler-Wilde).

Conference Proceedings

[1] Simulation studies in aggregating *Dictyostelium discoideum*, *Modeling and Simulation*, Volume **12**, (1981), pp. 1087-1091, Vogt, W.G. and Mickle, M.H. Eds. Instrument Society of America, Proceedings of 12th Annual Pittsburgh conference, (with H.G. Othmer and P.E. Rapp).

[2] A numerical method for the Cauchy problem for Poisson's equation, *Advances in Computer Methods for Partial Differential Equations*, Volume **5**, (1984), pp. 350-352, Vichnevetsky, R. and Steplman, R.S. Eds, IMACS, (with R.S. Falk).

[3] The ensemble behavior of populations of coupled biophysical oscillators, *Modeling and Simulation*, Volume **15**, (1984), pp. 1157-1163, Vogt, W.G. and Mickle, M.H. Eds. Instrument Society of America, Proceedings of 15th Annual Pittsburgh Conference, (with A. Goldstein and P.E. Rapp).

[4] A singular perturbation problem on microcomputers, in *New Computing Environments: Microcomputers in Large-Scale Computing,* (1987) pp. 68-79, A. Wouk, Ed, SIAM, Philadelphia, (with G.C. Hsiao).

[5] Inverse problems in scattering theory, in *Oakland Conference on partial differential equations and applied mathematics,* (1987), pp. 39-73, Bragg, L.R. and Dettman, J.W. Eds, Longman Scientific and Technical, (with D. Colton and F. Santosa).

[6] Projection theorems for far field patterns and the inverse scattering problem, in *Inverse and Ill-Posed Problems,* (1987) pp. 261-277, Engel, H. W. and Groetsch, C. W. Eds, Academic Press, Boston, (with D. Colton).

[7] Concentration waves in aggregation fields of a cellular slime mold, *Biomathematics and Related Computational Problems*, L. Ricciardi, Ed., Kluwer Academic Publishers, Dordrecht, (1988) pp. 381-398, (with H.G. Othmer).

[8] Relay, oscillations and wave propagation in a model of *Dictyostelium discoideum*, *The Dynamics of Excitable Media*, H. G. Othmer, Ed., Lectures on Mathematics in the Life Sciences, Vol. 21, American Mathematical Society, Providence RI., (1989) pp. 87-122, (with H.G. Othmer).

[9] Continuous finite elements in space and time for the heat equation, *Numerical and Applied Mathematics*, C. Brezinski, Ed., IMACS Annals on Computing and Applied Mathematics, J.C. Baltezer AG, Red Bank NJ., (1989) pp. 733-735.

[10] The inverse scattering problem for acoustic waves in an inhomogeneous medium, *Inverse*

Problems in Partial Differential Equations, D. Colton, R. Ewing and W. Rundell, Eds., SIAM Publications, Philadelphia, (1990) pp. 73-84, (with D. Colton).

[11] Two dimensional wave propagation in a model of *Dictyostelium discoideum*, in *Nonlinear Wave Processes in Excitable Media*, A.V. Holden et al., Eds, Plenum Press, New York, (1991) pp. 245-258.

[12] The inverse scattering problem for time harmonic electromagnetic waves, in *Integral Equations and Inverse Problems*, V. Petkov and R. Lazarov, Eds., Longman Publishing, (1991) pp. 58-69, (with D. Colton).

[13] A comparison of finite element methods for the time dependent Maxwell equations, in *Mathematical and Numerical Aspects of Wave Propagation Phenomena*, G. Cohen et al., Eds, SIAM, Philadelphia, (1991) pp. 80-88.

[14] Nonlinear acoustic tomography, in *Nonlinear Processes in Physics*, A.S. Fokas et al., Eds, Springer-Verlag, Berlin, (1993) pp. 334-338.

[15] The monitoring of human or animal bone marrow by electromagnetic waves, in *Inverse Problems: Principles and Applications in Geophysics, Technology and Medicine*, G. Anger et al., Eds, Akademie Verlag, Berlin, (1993), pp. 100-110 (with D.Colton).

[16] Finite element time domain methods for Maxwell's equations, *Proceedings of the Second International Conference on Mathematical and Numerical Aspects of Wave Propagation*, R. Kleinman et al., Eds, SIAM, Philadelphia, (1993) pp. 380-389.

[17] A parallel electromagnetic scattering code, *COMPEL* **13, Supplement A** (1994), pp. 237-242 (with A.K. Parrott and P. Wesson).

[18] Gauss point mass lumping schemes in electromagnetism, *COMPEL* **13, Supplement A** (1994), pp. 293-298 (with G. Cohen).

[19] A dispersion analysis of finite element methods on triangular grids for Maxwell's equations, *The Mathematics of Finite Elements and Applications*, J.R. Whiteman, Ed., John Wiley and Sons Ltd (1994), pp. 315-321.

[20] Error estimates for Yee's method on non-unfirm grids, *IEEE Trans. on Magnetics*, **30** (1994), pp. 3200-3203 (with E. Süli).

[21] Condensation de masse par quadrature de Gauss pour les equations de Maxwell, in *Méthods numériques d'ordre élevé pour les ondes en régime transitoire*, edited by G. Cohen (1995), (with G. Cohen).

[22] The detection of leukemia using electromagnetic waves, *IEEE Comp. Science and Engineering*, **2** (1995), pp. 46-52 (with D. Colton).

[23] Mass lumping edge elements in three dimensions, *ICOSAHOM 95, Proceedings of the third international conference on spectral and higher order methods*, edited by V. Ilin and R. Scott. Published by the Houston Journal of Mathematics (1996), pp. 181-192.

[24] Mathematical problems in microwave medical imaging, in *Computational Radiology and Imaging: Therapy and Diagnostics*, edited by C. Börgers and F. Natterer. Volume 110 in the "IMA Volumes in Mathematics and its Applications" (1999) pages 137-156 (with D. Colton).

[25] Conditions et couches absorbantes pour les equations de Maxwell, in *Ecole des ondes INRIA: Aspects recents en methodes numeriques pour les equations de Maxwell*, Collection didactique INRIA, Chapter 4, Vol. 18, 1998 (with F. Collino).

[26] Parallelization of a 3-D electromagnetic scattering code, in *Approximations and Numerical*

Methods for the Solution of Maxwell's Equations. E. El Dabaghi et al., Eds. The Institute of Mathematics and its Applications Conference Series Number 65 (1998), pp. 329-340 (with A.K. Parrott, A. Le Hyaric, N. Jennings, J. Murphy and D. Rowse).

[27] The linear sampling method in inverse scattering theory, in *Surveys on Solution Methods for Inverse Problems*, D. Colton, H.W. Engl, A.K. Louis, J.R. McLaughlin and W. Rundell, Eds., Springer, New York. 2000. pp. 107-118 (with D. Colton and A. Kirsch).

[28] The Finite Element Approximation of Scattering in a Layered Medium, in *Analytical and Computational Methods in Scattering and Applied Mathematics*, F. Santosa and I. Stakgold, Eds., Chapman & Hall/CRC, London. Research Notes in Mathematics number 417 (2000). pp. 67-84 (joint with J. Coyle).

[29] The linear sampling method for three-dimensional inverse scattering problems, *ANZIAM J.*, **42** (2000) (E) pp. C434–C460 (joint with D. Colton and K. Giebermann).

[30] A Simple Proof of Convergence for an Edge Element Discretization of Maxwell's Equations, *Computational Electromagnetics* (2003), pp. 127–142, Lecture Notes in Computational Science and Engineering Volume 28, C. Carstensen et al., eds.

[31] Herglotz Wave Functions in Inverse Electromagnetic Scattering Theory, in *Topics in Computational Wave Propagation: Direct and Inverse Problems*, (2003). Lecture notes in computational science and engineering V 31 pages 367-394 (with D. Colton).

[32] Parallelized UWVF method for 3D Helmholtz problems, 4th ECCOMAS, Jyvaskyla, Finland, 24-28 July 2004 (with T. Huttunen and J.P. Kaipio).

[33] Acoustic modeling using the ultra weak variational formulation Baltic-Nordic Acoustics Meeting, Mariehamn, Finland, 8 - 10 June 2004, (with Tomi Huttunen and Jari P. Kaipio).

[34] The 3D inverse electromagnetic scattering problem for a coated dielectric, *Numerical Mathematics and Advanced Applications*, Proceedings of ENUMATH-2005, A. Bermuúdez, D. Gómez, P. Quintela and P. Salgado, eds, Springer-Verlag, Berlin-Heidelberg, 2006.