CATALIN CONSTANTIN TURC
ASSISTANT PROFESSOR
MATHEMATICS
UNC CHARLOTTE
CURRICULUM VITAE

Address

10010 Woodberry Trail Ln Apt 329 Office Phone (704) 687–2891
E-mail:turc@acm.caltech.edu
Charlotte, NC 28262 www.math.uncc.edu/∼ cturc

Research Interests

Numerical Analysis, Scientific Computing, Computational Electromagnetics, PDE, Harmonic Analysis

Education

2005-2007	Postdoctoral Scholar Department of Applied and Computational Mathematics Caltech
August 2005	University of Minnesota, Minneapolis Ph. D. in Mathematics Thesis title: "High-order, high-frequency solutions of three-dimensional scattering problems" Thesis advisor: Fernando Reitich
2000-2005	University of Minnesota, Minneapolis
1997-1999	Al.I.Cuza University, Iasi, Romania M.S. in Mathematics, 1999
1993-1997	Al.I.Cuza University, Iasi, Romania B.S. in Mathematics, 1997

Honors and Awards

2002	Department of Mathematics Teaching Assistant Award, University of Minnesota
1992	Third prize National High School Math Contest, Romania
1993,92,91,90	various prizes at National High School Math Contest, Romania

Publications

(1) **High-order Nyström methods for scattering problems from domains with edges**, with O. Bruno, Y. Han, 2007, in preparation.
(2) **High-order solutions of surface integral equations for penetrable scattering problems**, with O. Bruno, T. Elling, in preparation, 2007
(3) **Acoustic scattering from sound-hard surfaces in three dimensions: accelerated high-order solvers**, with O. Bruno and T. Elling, 2007, in preparation
(4) **Electromagnetic surface scattering in three dimensions: accelerated high-order solvers**, with O. Bruno and T. Elling, 2007, in preparation.
(5) **Well-conditioned high-order algorithms for the solution of three-dimensional surface acoustic scattering problems with Neumann boundary conditions**, with Oscar Bruno, Tim Elling and Randy Paffenroth, (2007), to be submitted to J. Comput. Phys., preprint available at http://www.math.uncc.edu/∼cturc/
(6) **Electromagnetic integral equations requiring small numbers of Krylov-subspace iterations**, with Oscar Bruno, Tim Elling and Randy Paffenroth, (2007), submitted to J. Comp.Phys, preprint available at http://www.math.uncc.edu/∼cturc/
(7) **High-order solutions of scattering problems from two dimensional surfaces with composite roughness**, with Fernando Reitich, (2007), submitted to *Waves in Random and Complex Media*, preprint available at http://www.math.uncc.edu/∼cturc/
(8) **High-order, high-frequency solutions of three-dimensional scattering problems**, PhD Thesis, University Of Minnesota, August 2005.
(9) **High-order-high-frequency solvers for rough-surface acoustic and electromagnetic scattering problems**, with Fernando Reitich, *Proceedings of Waves 2005*, Providence, RI, 2005.

(10) **High order solutions of three dimensional rough surface scattering problems at high-frequencies. II: The vector-electromagnetic case**, with Fernando Reitich, *Waves in Random and Complex Media*, (15) 2005, 323–337.

(11) **High-order solutions of three dimensional rough surface scattering problems at high-frequencies. I: The scalar case**, with Fernando Reitich, *Waves in Random and Complex Media*, (15) 2005, 1–16.

Conferences that I organized

American Mathematical Society Session on Wave Propagation, De Paul University, Chicago, Illinois, 5–6 October 2007

Seminars that I organize

Applied and Computational Math Seminar, UNC Charlotte, www.math.uncc.edu/∼ cturc/ACMSeminar.html

Invited Talks and Posters

Acoustic and Electromagnetic integral equations that require small numbers of Krylov subspace iterations, Plenary Lecture at ACOMEN, 26-28 May 2008, Liège Belgium

Well-conditioned Acoustic and Electromagnetic integral equations, Mathematical Physics Seminar, UNC Charlotte, 10 October 2007

Well-conditioned Acoustic and Electromagnetic integral equations, AMS Session, De Paul University, Illinois, 6 October 2007

Frequency domain integral equation in computational acoustics and electromagnetics, Plenary Invited Talk, High-Order Methods for Computational Wave Propagation and Scattering Workshop, American Institute of Mathematics, Palo Alto, California, 10 September 2007, talk available at http://www.aimath.org/WWN/wavescattering/

Electromagnetic integral equations that require small numbers of GMRES iterations, ACM Caltech, California, 14 May 2007

Regularized combined field equations: Iterative solvers in $\mathcal{O}(1)$ iterations, Poster, AFOSR Electromagnetic Workshop, San Antonio, Texas, 9-11 January 2007

High-order solutions of two-dimensional scattering problems from surfaces with composite roughness, Poster, Advances in Computational Scattering, BIRS, Canada, February 2006

High-order solutions of two-dimensional scattering problems from surfaces with composite roughness, SIAM Student Seminar, Caltech, California, 2 December 2005

High-order-high-frequency solvers for rough-surface acoustic and electromagnetic scattering problems, Waves 2005, Brown, Rhode Island, 21 June 2005

High-order solvers for three-dimensional rough surface scattering problems at high-frequencies, Departmental Math Seminar, University of North Carolina, Charlotte, North Carolina, 25 February 2005

High-order solutions of three-dimensional rough surface scattering problems at high-frequencies, ACM Seminar, Caltech, California, 18 February 2005

High-order solutions of three-dimensional rough surface scattering problems at high-frequencies, Departmental Math Seminar, University of Louisville, Kentucky, 14 February 2005

High-order solutions of three-dimensional rough surface scattering problems at high-frequencies, Applied Math Seminar, University of Minnesota, 22 January 2005

High-order solutions of three-dimensional rough surface scattering problems at high-frequencies, AMS-SIAM Special Session on Theoretical and Computational Aspects of Inverse Problems, Atlanta, Georgia, 6 January 2005

High-order solutions of rough surface scattering problems, Junior Colloquium, University of Minnesota, 26 October 2004

On Kakeya's problem, Junior Colloquium, University of Minnesota, 11 November 2003

An efficient integral equation method for the simulation of high-frequency scattering from rough surfaces, Conference on Partial Differential Equations and Applications, University of Notre Dame, Indiana, 16 August 2003

2005-2007	Postdoctoral Scholar, Caltech
2001-2004	Research Assistant, School of Mathematics, University of Minnesota Advisor: Professor Fernando Reitich

Reviewer Professional Journals

Journal Of Computational Physics
Radio Science
Journal of Applicable Analysis
Bulletin of the Belgian Mathematical Society

Membership Professional Associations

American Mathematical Society (AMS)
Society for Industrial and Applied Mathematics (SIAM)
Institute of Electrical and Electronics Engineers (IEEE)

Teaching Experience

2007	Calculus for Engineering Technology, UNC Charlotte
2004	Lecturer for Precalculus II, Calculus II at University Of Minnesota;
2000-2003	Taught discussion sessions at University of Minnesota in various subjects: College Algebra, Short Calculus, IT Ordinary Differential Equations and Linear Algebra, Sequences, Series and Foundations;
1999-2000	Taught discussion sessions at UT Gh. Asachi, Iasi, Romania for Ordinary Differential Equations;
1997-2000	High-school teacher at Liceul V. Alecsandri, Iasi, Romania

Computer languages

C++, C, Fortran, Matlab

References

(1) Professor Oscar Bruno, Applied and Computational Mathematics, Caltech, *bruno@acm.caltech.edu*
(2) Professor Fernando Reitich, Department of Mathematics, University of Minnesota, *reitich@math.umn.edu*
(3) Professor David Colton, Department of Mathematics, University of Delaware, *colton@math.udel.edu*
(4) Professor David Frank, Department of Mathematics, University of Minnesota, *frank@math.umn.edu*(teaching)