CURRICULUM VITAE
Chrysoula Tsogka

✉ Applied Mathematics
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Education

1996 - 1999 *Ph.D.* in Applied Mathematics, University Paris IX, France.
My Ph.D research was carried out in the team ONDES (current POEMS) of INRIA.
Dissertation: *Mathematical and numerical modeling of 3D elastic wave propagation in complex media with cracks.*

1995 - 1996 *M.S.* in Applied Mathematics, University Paris IX, France.

1990 - 1995 *B.Eng.* in Chemical Engineering, National Technical University of Athens, Greece.

Honors/Awards

2012 *SIGEST paper award* for our paper "Filtering Deterministic Layer Effects in Imaging", SIAM MMS (7) 2009, 1267–1301.

2009 European Research Council (ERC) starting grant for my project ADAPTIVES (2010-2015).

Professional Appointments

JULY 2019 - PRESENT **UC Merced**
Professor, Applied Mathematics

AUG 2017 - JUNE 2019 **UC Merced**
Project Scientist, Applied Mathematics

2016 - 2019 **Stanford University**
Visiting Professor, Department of Mathematics.

2014 - 2019 **University of Crete**
Professor, Department of Mathematics and Applied Mathematics.

2007 - 2014	**University of Crete** Associate Professor, Department of Applied Mathematics.
2004 - 2006	**University of Chicago** Assistant Professor, Department of Mathematics.
2003 - 2004	**Stanford University** Visiting Researcher.
2001 - 2003	**CNRS/FRANCE** Tenured researcher in the Laboratoire de Mecanique et d'Acoustique (LMA).
2000 - 2001	**Stanford University** Postdoctoral fellow.

Other affiliations

2017 - PRESENT	**AIM** Scientific research board of the American Institute of Mathematics
2010 - 2016	**ACMAC** Steering Committee member.
2008 - PRESENT	**FORTH** Associated faculty member with the Institute of Applied and Computational Mathematics.

Short term visits (one month or longer)

FALL 2017	Institute for Computational and Experimental Research in Mathematics, Brown University, Providence, RI, USA.
SUMMER 2015	Department of Mathematics, Stanford University, USA.
JULY 2012	Department of Mathematics, Stanford University, USA.
DEC 2011	École Normale Supérieure, Paris, France.
NOV 2010	Institut des Hautes Etudes Scientifiques, Bures sur Yvette, France.
AUG 2010	Mathematical Science Research Institute (MSRI), Berkeley, USA.
DEC 2009	Department of Mathematics, Stanford University, USA.
JULY 2008	Department of Mathematics, Stanford University, USA.
SUMMER 2006	Department of Mathematics, Stanford University, USA.
NOV 2006	Department of Mathematics, Stanford University, USA.

Oct 2005	Institute for Mathematics and its Applications (IMA), University of Minnesota, USA.
Summer 2005	Department of Mathematics, Stanford University, USA.
May 2005	POEMS, INRIA-Rocquencourt, France.
Fall 2003	Institute for Pure and Applied Mathematics (IPAM), UCLA, USA.
Aug 2002	Department of Mathematics, Stanford University, USA.

Research activities

I obtained my Ph.D. in Applied Mathematics from the University of Paris IX, France, in December 1999 with the highest level of distinction. My thesis is in the area of Numerical Analysis and in particular I worked on numerical methods for wave propagation problems. My main contributions concern the development of fictitious domain methodologies for modelling scattering from complex surfaces, as well as, that of absorbing boundary conditions and perfectly matched layers for modelling wave propagation in unbounded media.

Shortly after my Ph.D. the focus of my research activities has turned to inverse wave propagation problems. To be more precise, I have been working on the development, analysis and implementation of coherent and incoherent methodologies for imaging with waves. The challenge has been to design statistically stable methods for imaging in complex inhomogeneous media as they appear in applications. The uncertainty about the environment is modelled by considering the propagation medium as a realization of a random process. Moreover, the regimes considered are those in which multiple scattering of the waves by the medium inhomogeneities is important, which results to a major impediment for the imaging process. My contributions in this area concern the development of novel imaging methodologies, such as the coherent interferometry, as well as, the design of original filtering techniques for coherent signal enhancement. I have also been working on passive ambient noise correlation based imaging methods and imaging with intensity-only measurements. My most recent activities concern imaging sparse scenes with noisy data.

My research has found applications in several areas ranging from non-destructive evaluation of materials to optics, underwater acoustics and geophysics. More recently, I have been also working on synthetic aperture radar imaging and correlation based satellite imaging through the turbulent atmosphere.

Teaching and Training Activities

At UC Merced I have been teaching the undergraduate course “Numerical methods for scientists and engineers" and the graduate course “Numerical Analysis". As a professor at the University of Chicago I taught the undergraduate course “Mathematical Methods for the Physical Sciences". While at the University of Crete I taught undergraduate courses in numerical analysis and numerical

modeling as well as graduate courses on numerical methods for partial differential equations. I also taught a graduate course that I designed on mathematical methods for imaging. As an expert in imaging I have been invited at several occasions to give tutorials and introductory courses. Let me mention the CEMRACS Summer School on Imaging in Random media, the Oberwolfach Seminar on Mathematical and Computational Problems in Interferometric Imaging, and the introductory workshop of the MSRI program on Inverse Problems and Applications. While I was in CNRS, I co-directed the Ph.D thesis of Jean-Philippe Groby (now permanent researcher in CNRS). In the University of Crete I supervised four Ph.D students. While at UC Merced I have supervised two MSc students and advised as member of their dissertation committee two more MSc students and one Ph.D. student. I am currently supervising one graduate student and advising four more by being a member of their dissertation committee. More details are given in the graduated student section below.

Below follows a detailed list of my teaching and training activities.

Teaching

MATH20100	*Mathematical Methods for the Physical Sciences*, University of Chicago.
EM181	Introductory course on *Numerical Analysis*, University of Crete.
EM291	Undergraduate course on the *Numerical Solution of ODEs*, University of Crete.
EM292	Undergraduate course on the *Numerical Solution of PDEs*, University of Crete.
EM386	Advanced undergraduate course on *Numerical Modelling*, University of Crete.
IMAGING	Graduate course on the *Mathematical methods of Imaging*, University of Crete.
NPDEs	Graduate course on *Numerical Methods for PDEs*, University of Crete.
NumAnal	Graduate course on *Numerical Analysis*, University of Crete.
MATH232	Graduate course on *Numerical Analysis*, UC Merced.
MATH131	Undergraduate course *Numerical methods for scientists and engineers*, UC Merced.
MATH298	Weekly seminar of the Imaging and Sensing SMaRT team.

Tutorials and Summer Courses

August 2015	*Passive correlation based imaging*, Franco-German Summer School on Inverse Problems for Waves, Ecole Polytechnique, France, August 24-28, 2015. (2 lectures).
August 2010	*Imaging in random media*, Connections for Women: Inverse Problems and Applications, MSRI, Berkeley, CA, August 19-20, 2010. (2 lectures).

May 2008	*Computational issues in array imaging*, NSF-CBMS Conference on Imaging in Random Media, Houston, TX, United States, May 12-16, 2008. (2 lectures).
July 2006	*Imaging in random media*, CEMRACS Summer School, CIRM, Marseille, France, July 24-28, 2006. (2 lectures).
June 2006	*Mathematical and Computational Problems in Interferometric Imaging*, Oberwolfach Seminar, June 4-10, 2006, Oberwolfach, Germany. (5 lectures).
January 2003	*Inverse Problems: Time reversal*, École des Ondes: Direct and Inverse Scattering Problems, INRIA, France. (2 lectures).
November 2001	*Numerical methods: Mixed finite elements and fictitious domain method*, École des Ondes: Direct and Inverse Scattering Problems, INRIA, France. (2 lectures).

Graduate students (advisor)

- Elsie Cortes, current student (2nd year).
- Symeon Papadimitropoulos, Ph.D. (May 18, 2018) **Thesis topic**: Imaging extended reflectors in waveguides.
- Emmanouil Daskalakis, Ph.D. (July 5, 2016). **Thesis topic**: Velocity estimation using cross-correlations of ambient noise recordings. Currently assistant professor at the Department of Mathematics, Vancouver Community College.
- Michalis Apostolopoulos, Ph.D. (June 28, 2016). **Thesis topic**: Imaging multiple reflectors in strongly scattering media. Currently: Mathematics instructor.
- Eftychia Karasmani, Ph.D. (July 6, 2016). **Thesis topic**: Imaging in random waveguides. Currently research associate at IACM/FORTH.
- Jean-Philippe Groby, Ph.D. (Sep. 27, 2005) in Mechanics (option: Acoustics), Université de la Méditerranée-Aix Marseilles II. **Thesis topic**: *Modeling of the action of seismic waves in a city*. Currently CNRS researcher at Laboratoire d'Acoustique de l'Université du Maine (LAUM).

Postdocs

- Symeon Papadimitropoulos, current.
- Christos Panagiotopoulos, 2014 - 2015. Postdoc. Currently visiting assistant professor at the Department of Music Technology and Acoustics, Hellenic Mediterranean University.
- Dimitris Mitsoudis, 2008 - 2014. Research associate. Currently Associate Professor at the University of West Attica.

- Adrien Semin, 2010-2012. Topic: Passive imaging using ambient noise sources. Currently scientific computing engineer in Smart Tale Games.

Ph.D Thesis Committees

- Adar Kahana, *Solving Partial Differential Equations and Related Problems using Learning*, Tel-Aviv University, August 2021 (Examiner).
- Matan Leibovich, *Novel Algorithms for Motion Detection and Imaging in Complex Scenes*, Stanford University, April 2020.
- Omar DeGuchy, *Large-Scale Optimization and Deep Learning Techniques for Data-Driven Signal Processing*, UC Merced, April 2020.
- Etienne Gay, *Imagerie par interferométrie cohérente en dynamique de fluids*, Ecole Polytechnique, France, September 2019.
- Anastasios Tsourtis, *Mathematical and numerical modeling of complex molecular systems with multiple scales*, University of Crete, February 2017.
- Valentin Vinoles, *Problèmes d'interface en présence de métamatériaux : modélisation, analyse et simulations*, École doctorale Mathématiques Hadamard, Palaiseau, France, September 18, 2016. (Rapporteur de thèse).
- Lorenzo Audibert, *Qualitative methods for heterogeneous media*, École Polytechnique, September 17, 2015. (Rapporteur de thèse).
- Maxence Cassier, *Étude de deux problèmes de propagation d'ondes transitoires : 1) Focalisation spatio-temporelle en acoustique ; 2) Transmission entre un diélectrique et un métamatériau.* École Polytechnique, France, June 12, 2014.
- Georgios Arampatzis, *Parallelization and Uncertainty Quantification of Spatially Extended Kinetic Monte Carlo Methods*, University of Crete, January 2012.
- Marie Cray, *Signals reconstruction and objects identification by the TRAC method in time reversal.* Université Pierre et Marie Curie, France, July 2, 2012. (Rapporteur de thèse).
- Chokri Ben Amar, *Étude théorique et numérique de processus de retournement temporel.* École Polytechnique, France and École Nationale d'Ingénieurs de Tunis (ENIT), Tunis, June 23, 2007. (Rapporteur de thèse).

Professional Activities

Scientific coordination/research management

With my colleagues professors Athanasios Tzavaras, Markos Katsoulakis, George Makrakis and Charalambos Makridakis at the department of Applied Mathematics in the University of Crete we developed an ambitious project, the creation of the Archimedes Center for Modeling Analysis

and Computation (ACMAC). ACMAC was established as a research program in 2010 and since its creation, I have been a member of its steering committee which has been responsible for the implementation of the whole project.

The ACMAC project has been funded by the FP7 programme of the European Commission and has as main objectives to strengthen the research profile of the Applied Mathematics Department, to enable its members to enhance their contacts with major research centers in Europe and to reinforce the Department's research capability in areas where it has recognized expertise. The project encompasses a set of measures organized around a Center, named Archimedes Center for Modeling, Analysis and Computation (ACMAC), aiming to promote academic excellence in Applied Mathematics and fostering the interface of modeling, analysis and computation.

ACMAC activities included: mentoring of postdoctoral researchers, organization of thematic programs and workshops, as well as two-way visits for exchange of know-how and experience between members of ACMAC and members of major research centers in Europe. More information about ACMAC can be found in the center's web page http://www.acmac.uoc.gr/index.php.

While I was in Crete (2007-2015) I established a research group working on "Coherent and Incoherent Imaging methods with Waves". This group has been funded by the FP7 programme of the European Commission and the European Research Council. In this group, I have been working with three postdoctoral research associates, four Ph.D. students and three master students. Also, several undergraduate students from the Applied Mathematics department did their summer internship and three carried out their bachelor diploma thesis in our group. More information about my research group while in the University of Crete can be found at http://www.tem.uoc.gr/~tsogka/adaptives/index.html.

Imaging and Sensing SMaRT team

Since fall 2019 I am the coordinator of the Imaging and Sensing Research team at the Department of Applied Mathematics at UC Merced. This Small Mentoring and Research Training (SMaRT) team comprises 6 faculty members, 2 postdocs and 12 graduate students.

This is one of the four SMaRT teams that were formed at the Department of Applied Mathematics as part of the Data-Intensive Research And Computing (DIRAC) Research Training Group (RTG) focused on the theme of Computational and Data-Enabled Sciences. During the last decade, advances in sensor technology have contributed to the Big Data Era and have introduced new challenges to the mathematics of sensing and imaging. Interesting questions that need to be addressed, are for example the following: how can sensors be deployed optimally, or how can signal structure be leveraged to improve reconstruction accuracy from low-dimensional and noisy measurements ? Members of this SMaRT team will develop models, experimental designs, and algorithms for forward and inverse problems related to imaging and sensing applications.

Areas of Applied Mathematics involved are Partial differential equations, Numerical analysis, Linear and Non-Linear Wave propagation, Wave propagation in Complex and Random media, Optimization as well as Uncertainty Quantification

The members of this SMaRT team meet every week alternating between the Optimization and

the Waves seminar. During these meetings, members of the team present recent advances in their research. We also invite regularly faculty and graduate students from other departments at UC Merced and/or other universities to present their research.

Editorial Boards

- Inverse Problems, 2023 - present.
- Journal of Computational Physics, 2020 - present.
- Journal of Mathematical Imaging and Vision (JMIV, springer), 2014 - present.
- Bulletin of the Greek Mathematical Society, 2015 - present.
- SIAM Journal on Imaging Sciences (SIIMS), 2013 - 2021.

Prize Committees

- SIAM Kleinman Prize 2019
- SIAM Kleinman Prize 2017
- SIAG/Imaging Science Early Career Prize 2016
- SIAG/Imaging Science Best Paper Prize 2016

Refereeing journals The breadth of my research interests is reflected in the diversity of the journals for which I have refereed several papers such as the SIAM J. on Imaging Science, SIAM J. on Multiscale Modeling and Simulation, SIAM J. on Scientific Computing, SIAM J. on Applied Mathematics, SIAM J. on Numerical Analysis, IMA Journal of Numerical Analysis, Inverse Problems, Communications in Mathematical Sciences, Physical Review E, Nonlinearity, Wave Motion, J. Computational Acoustics, J. of Computational Physics, J. of the Acoustical Society of America, Optics Express, Biomedical Optics Express, Geophysics, Geophysical Journal International, Bulletin of the Seismological Society of America, IEEE Transactions on Antennas and Propagation, IEEE Transactions on Computational Imaging, IEEE Transactions on Geoscience and Remote Sensing and, IEE Proc. Radar, Sonar & Navigation, Computer-Aided Civil and Infrastructure Engineering.

Organization of conferences/workshops

- Co-organized with N. Petra the AWM workshop at the 2023 SIAM Conference on Optimization taking place in Seattle during May 31-June 3, 2023.
- Member of the AWM SIAM committee Jan 2021- Jan 2024. This committee is responsible for all AWM activities at the SIAM Annual Meeting.
- Co-organized with N. Petra and L. Borcea the workshop Women in Inverse Problems at Banff International Research Station, December 5-10, 2021.

- Co-organized with M. Cheney a minisymposium on Recent Developments on Radar Imaging at the SIAM Conference on Imaging Science, July 6-9, 2020.
- Co-organized with A.D. Kim a minisymposium on Recent Developments on Remote Sensing: Theory and Computation at the Applied Inverse Problems (AIP) Conference in Grenoble, France on July 8-12, 2019.
- Co-organized with A.D Kim a minisymposium on Wave propagation and imaging in complex media at the 14th International Conference on Mathematical and Numerical Aspects of Wave Propagation in Vienna, Austria on August 25-30, 2019.
- Member of the organizing committee of the ICERM workshop on *Waves and Imaging in Random Media*, September 25-29, 2017, Providence, RI, USA.
- Member of the organizing committee of the *International Conference on Applied Mathematics*, September 16-20, 2013, Heraklion, Crete.
- Member of the organizing committee of the *11th European Finite Element Fair*, May 31-June 1, 2013, Heraklion, Crete, Greece.
- Co-organized with G. Papanicolaou and L. Ryzhik the ACMAC workshop on *Waves and imaging in complex media* at Heraklion, Greece, June 11-15, 2012.
- Co-organized with G. Papanicolaou and P. Joly the ACMAC workshop on *Wave propagation in complex media and applications* at Heraklion, Greece, May 7-11, 2012.
- Co-organized with G. Karali the ACMAC workshop on *Women in Applied Mathematics* at Heraklion, Greece, May 2-5, 2011.
- Member of the organizing committee of the MSRI workshop *Connection for Women Workshop: Inverse Problems and Applications* at MSRI, Berkeley, CA, USA, August 19-20, 2010.
- Co-organized with L. Borcea and G. Papanicolaou the Oberwolfach Seminar *Mathematical and Computational Problems in Interferometric Imaging*, Oberwolfach, Germany, June 4-10, 2006.
- Co-organized with A. Wirgin the International conference *Acoustics, Mechanics and the Related Topics of Mathematical Analysis* (AMRTMA), Fréjus, June 2002.

Organizing committee of research clusters/programs

- ICERM Semester Program on *Mathematical and Computational Challenges in Radar and Seismic Reconstruction*, September 6 - December 8, 2017, Providence, RI, USA.
- ACMAC Thematic Program on *Wave Propagation in Complex Environments*, Heraklion, Crete, Greece, 2011-2012.
- Program on *Random Media*, Statistical and Applied Mathematical Sciences Institute (SAMSI), NC, USA, 2007-2008.

Scientific committee of International Conferences

- 15th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2022, ENSTA Paris, July 25-29, 2022.
- *SIAM Conference on Imaging Science* (IS20), July 6 - 9, 2020, Toronto, Ontario, Canada.
- 14th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2019, Vienna University of Technology (TU Wien), August 25-30, 2019.
- 13th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2017, University of Minnesota, Minneapolis, May 15-18, 2017.
- Modelling of high performance acoustic structure. Porous media and metamaterials, University Roma Tre, Rome, January 24-25 2017.
- 12th International Conference on Mathematical and Numerical Aspects of Waves Propagation, Kalsruhe Institute of Technology, Germany, July 20-24, 2015.
- 3rd International Conference "Modern Mathematical Methods in Science and Technology 2012 (M3ST '12)", August 26-28, 2012, Kalamata, Greece.
- 7th GRACM International Congress on Computatonal Mechanics, June 30-July 2, 2011, Athens, Greece.
- 9th International Conference on Mathematical and Numerical Aspects of Waves Propagation, June 15-19, 2009, Pau, France.

Software development

Developed a numerical code for computing the solution of the wave equation in elastic media in two and three spatial dimensions. The propagation medium can be heterogeneous and anisotropic containing internal cracks and/or topographies of complex geometry. The code was transferred to EDF/France and was further developed by the R&D team of EDF. It is now called Athena2D and Athena3D and has been widely used in industrial applications.

Developed prototype code for several imaging methodologies such as migration, coherent interferometry, MUSIC, correlation based imaging and ℓ_1 optimization.

Research Grants

I have participated in several research projects in Europe and the US. While in Greece, I have been successful as a PI in attracting funding in very competitive European grants such as the ERC. Below is a list of the European and US grants I have participated in.

- FA9550-21-0196, "Imaging in multiple scattering media" supported by the Air Force Office of Scientific Research. $284,539.00. PI. (6/1/2021-5/31/2024).

- W81EWF03172108, "GEOM2M:GEOmaterials' Microscopic to Macroscopic (electromagnetic response). This is STTR (Small Business Technology Transfer) phase I proposal (6months). UC Merced is a subcontractor of RESERVOIR LABS, INC who is the recipient of the award. $49,612.00. PI. (3/8/2021-9/8/2021).
- FA9550-18-1-0519, "Space surveillance with correlation-based radar" supported by the Air Force Office of Scientific Research. I participated in writing the proposal and I am member of the funded team. $ 86,314.00. (9/15/2018-9/30/2021).
- FA9550-17-1-0238, "Intensity-Only Synthetic Aperture Radar Imaging" supported by the Air Force Office of Scientific Research. I participated in writing the proposal and I am member of the funded team. $699,451.00 (6/1/2017-5/31/2020)
- ERC-ADAPTIVES: European Research Council starting grant ERC-StG, #239959. €690,000.00 PI.(2010-2015) http://www.tem.uoc.gr/~tsogka/adaptives/index.html
- IRG-CII-RMA: European FP7 Marie Curie International Reintegration Grant MIRG-CT-2007-203438. €100,000.00. PI. (2007-2011)
- Regpot-ACMAC: European grant under the FP7 regional potential program, #245749. €2,905,240.00. co-PI. (2010-2014) http://www.acmac.uoc.gr/
- DARPA-ONR Grant N00014-04-1-0224, Time reversal of Electromagnetic Waves, February 2004 - July 2008.
- Consortium on Time Reversal for Waves and its Applications, supported by Office of Navy Research (ONR) and Defence Advanced Research Projects Agency (DARPA). I participated in writing the proposal and I was member of the funded team.
- ONR grant on Time reversal, Imaging and Communications (2001-2004). I was a named collaborator in this grant which supported me as a visiting researcher at Stanford.
- GDR-2051 : Wave propagation in inhomogeneous media and applications in non-destructive testing. 2001-2003. Sponsored by CNRS, EDF and CEA. co-PI.
- ACI "Prevention of Natural Disasters": Site-city interaction and seismic risks in urban environment, 2000-2002. Sponsored by the French Ministry of Research. co-PI.

Oral Presentations

Invited Plenary and Workshop talks

[T1] IEEE International Conference on Antennas and Applications (2022 IEEE CAMA), 14-17 December 2022, Guangzhou, China.

[T2] Workshop on "Inverse Problem on Large Scales" within the Special Semester on Tomography Across the Scales, Johann Radon Institute (RICAM) Austrian Academy of Sciences, November 29 - December 3, 2022, Linz, Austria.

[T3] Workshop on "New Ideas in Computational Inverse Problems", Banff International Research Station for Mathematical Innovation and Discovery (BIRS), October 23 - 28, 2022, Banff, Canada.

[T4] 2022 Fall Western Sectional Meeting at the University of Utah, October 22 - 23, 2022, Salt Lake City, Utah.

[T5] IEEE Research and Applications of Photonics in Defense (RAPID) Conference, invited presentation in the special session " RF and Optical Target Imaging, Identification, and Pattern Recognition", 12-14 September 2022 in Miramar Beach, FL.

[T6] 3rd URSI Atlantic Radio Science Meeting, invited presentation (virtual) in the special session "Women Radio Science Contribution", May 30 - June 4, 2022, Canary Islands, Spain.

[T7] 3rd URSI Atlantic Radio Science Meeting, invited presentation (virtual) in the special session "Inverse scattering and imaging", May 30 - June 4, 2022, Canary Islands, Spain.

[T8] 2021 IEEE International Conference on Antennas and Applications (2021 IEEE CAMA), (online conference), November 15-17, 2021, Antibes Juan-les-Pins, France.

[T9] 1st International symposium Women+, (held online) October 2, 2021.

[T10] Oberwolfach Workshop Computational Inverse Problems for Partial Differential Equations, hybrid meeting (Oberwolfach and online), December 6-12, 2020.

[T11] Waves diffracted by Patrick Joly, in honour of his 60th birthday, Gif-sur-Yvette, France, August 28-30, 2017.

[T12] 4th U.S. National Congress on Computational Mechanics (USNCCM14), Montreal, Canada, July 17-20, 2017 (keynote lecture).

[T13] Women in PDE@Karlsruher, KIT, Karlsruher, Germany, April 27-28, 2017.

[T14] Workshop on Computational and Numerical Analysis of Transient Problems in Acoustics, Elasticity, and Electromagnetis, Banff International Research Station for Mathematical Innovation and Discovery, Banff, Canada, January 17-22, 2016. August 30-September 2, 2015.

[T15] 4th International Conference on Modern Mathematical Methods in Science and Technology, Kalamata, Greece,

[T16] Conference on Multi-Scale Waveform Modeling and Inversion, KAUST, March 22-24, 2015.

[T17] Workshop on "Theoretical and Applied Computational Inverse Problems", Erwin Schrödinger International Institute for Mathematical Physics (ESI), Vienna, May 5-16, 2014.

[T18] 11th International Conference on Mathematical and Numerical Aspects of Wave Propagation (WAVES'2013), Tunis, Tunisia, June 3-7, 2013.

[T19] Workshop on Imaging, wave propagation in complex media, and optimal control under uncertainties, École Normale Supérieure, Paris, December 19-21, 2011.

[T20] Workshop in honor of George Papanicolaou on the occasion of his awarding of the degree of Doctor Honoris Causa from the University Paris Diderot, "Laboratoire de Probabilités et Modèles Aléatoires" and the "Laboratoire Jacques-Louis Lions", Paris, December 1-2, 2011.

[T21] Workshop on Inverse Problems in Analysis and Geometry, Isaac Newton Institute for Mathematical Sciences, Cambridge, England, August 1-5, 2011.

[T22] Workshop on Multiscale and High Contrast PDE, Mathematical Institute, Oxford, United Kingdom, June 28-July 1, 2011.

[T23] International Conference "Frontiers in Applied and Computational Mathematics 2011", Newark, New Jersey, United States, June 9-11, 2011.

[T24] Workshop on Random Media: Homogenization and Beyond, IPAM, Los Angeles, CA, January 24-29, 2011.

[T25] 5th Workshop on Numerical Methods for Evolution Equations, Heraklion, Crete, September 24-25, 2010.

[T26] International Conference on Applied Mathematics, City University of Hong Kong, Hong Kong, June 7-11, 2010.

[T27] MMNS Workshop on Inverse Problems for Waves: Methods and Applications, Palaiseau, France, March 29-30, 2010.

[T28] 4th International Conference on Inverse Problems Control and Shape Optimization (PICOF'08), Marrakesh, Morroco, April 16-19, 2008.

[T29] 4th Workshop on Numerical Methods for Evolution Equations, Heraklion, Crete, September 26-27, 2008.

[T30] Workshop on Radiative transport and diffusion-approximation: From theory to applications, CIRM, Marseille, France, September 5-9, 2005.

[T31] Inverse Problems Reunion Conference I, UCLA (IPAM), Lake Arrowhead, CA, June 5-10, 2005.

[T32] Journé scientifique du GDR ONDES "Modélisation des phénomènes de diffraction et de propagation des ondes éléctromagnétiques et acoustiques", Institut Henri Poincaré (IHP), Paris, May 2005.

[T33] ARCC workshop in time reversal and communications, American Institute of Mathematics, Palo Alto, CA, October 18-22, 2004.

[T34] IMA hot topics workshop on adaptive sensing and multimode data inversion, IMA, University of Minnesota, Minneapolis, June 27-30, 2004.

[T35] Workshop on Time-Reversal method, University of California at Irvine, August 8-11, 2003.

[T36] Conference on Applied Inverse Problems: Theoretical and Computational Aspects, UCLA (IPAM), Lake Arrowhead, CA, May 18-23, 2003.

[T37] Journées scientifiques du GDR "Étude de la propagation ultrasonore en milieux non-homogènes en vue du contrôle non destructif", ESPCI, Paris, October 2002.

[T38] MGSS, Stanford, CA, August 2002.

[T39] 4me Colloque du PPF Problèmes Inverses de Champs, Marseille, March 8, 2001.

[T40] Workshop on Imaging in Noisy Environments, Crete, June 19-21, 2001.

[T41] Workshop on Inverse Problems and Applications, MSRI, Berkeley, November 15, 2001.

[T42] Journées sur les méthodes d'evaluations non destructives pour le génie civil LCPC, Nantes, October 7-8, 1999.

Seminars

[T43] Applied Mathematics seminar, Department of Mathematics, Stanford University, Stanford, February 2023.

[T44] Modeling and Computation seminar, Department of Mathematics, University of Arizona, January 2023.

[T45] Applied Mathematics seminar, Department of Mathematics and Statistics, Auburn University, April 2022.

[T46] Colloquium, Department of Mathematical Sciences, New Jersey Institute of Technology, February 2022.

[T47] Colloquium, Department of Computational Mathematics, Science, and Engineering, Michigan State University, November 2021.

[T48] Inverse Problems Seminar, UC Irvine, October 2020.

[T49] Colloquium, Mathematics Department, San Francisco State University, November 2019.

[T50] Colloquium, Mathematics Department, San Jose State University, October 2019.

[T51] Center of Computational and Applied Mathematics, Purdue University, October 2019.

[T52] Applied Mathematic Seminar, UC Merced, January 2019.

[T53] Applied Mathematic Seminar, Stanford University, February 2018.

[T54] Mathematical Sciences Colloquium, Worcester Polytechnic Institute, November 2017.

[T55] Applied Math Seminar, UMass Amherst, November 2017.

[T56] Applied Math Seminar, UC Irvine, May 2017.

[T57] Applied Math Seminar, University of Utah, April 2017.

[T58] Colloquium, Department of Mathematics, Penn State University, February 2017.

[T59] Applied Math Seminar, UC Merced, November 2016.

[T60] Applied Math Seminar, UC Berkeley, October 2016.

[T61] Geophysical and Astrophysical Fluid Dynamics Seminar, UC Santa Cruz, October 2016.

[T62] Laboratoire d'Acoustique de l'Université du Maine, July 2013.

[T63] CSCAMM Seminar, University of Maryland, April 26, 2006.

[T64] Applied Math Seminar, University of Delaware, February 28, 2006.

[T65] ICME Seminar, Stanford University, November 7, 2005.

[T66] Inverse Problems Seminar, Inverse Problems Center at Rensselaer Polytechnic Institute, October 3, 2005.

[T67] CMAP Inverse Problems Seminar, École Polytechnique, May 18, 2005.

[T68] Seminar LMA, Marseille, France, December 16, 2004.

[T69] Applied and Interdisciplinary Mathematics (AIM) seminar, Department of Mathematics, University of Michigan, December 10, 2004.

[T70] Computational and Applied Mathematics Colloquium, Rice University, November 15, 2004.

[T71] Computational and Applied Mathematics Seminar, Department of Mathematics, University of California, Irvine, March 15, 2004.

[T72] Department of Mathematical and Computer Sciences, Colorado School of Mines, February 16, 2004.

[T73] Department of Mathematics, Texas A&M University, February 13, 2004.

[T74] Department of Mathematics, University of Florida, February 6, 2004.

[T75] Department of Mathematics, Rutgers University, February 2, 2004.

[T76] Department of Mathematics, University of California, Davis, January 21, 2004.

[T77] Mathematics Department, University of Wisconsin, Madison, January 16, 2004.

[T78] Mathematics Department, University of Wisconsin, Madison, November 10, 2003.

[T79] Computational and Applied Mathematics, Rice University, April 7, 2003.

[T80] Seminar LMA, Marseille, France, December 16, 2002.

[T81] ISITV, Université de Toulon et du Var, Toulon, November 2002.

[T82] LOA, École Supérieur de Physique et Chimie Industrielles de la ville de Paris, Paris, June 2002.

[T83] Department of Mathematics, Université de Nice, January 2002.

[T84] Seminar projet POEMS, ENSTA, Paris, April 2001.

[T85] Applied Mathematics seminar, Stanford University, April 7, 2000.

[T86] Department of Mathematics, University of Crete, Greece, June 1999.

[T87] Mathématiques Appliquées, ENSTA, Paris, April 1999.

[T88] Projet ONDES, INRIA, February 1997.

Workshop & Conference Presentations

[T89] SIAM Conference on Imaging Science (IS22), (held online) 21-25, 2022.

[T90] XXXIV General Assembly and Scientific Symposium (GASS) of the International Union of Radio Science (Union Radio Scientifique Internationale-URSI), hybrid, August 28-September 4, 2021

[T91] SIAM Annual Meeting, Spokane, Washington, (held online) July 19-23, 2021.

[T92] 21st ECMI Conference on Industrial and Applied Mathematics, held online, April 13-15, 2021.

[T93] 14th WCCM-ECCOMAS (14th World Congress on Computational Mechanics and European Congress on Computational Methods in Applied Sciences and Engineering), held online, January 11-15, 2021.

[T94] "The Noise Collector for Sparse Recovery in High Dimensions," SIAM Conference on Imaging Science, July 2020 (held online).

[T95] "Imaging sparse reflectivities from noisy data," Applied Inverse Problems, July 2019, Grenoble, France.

[T96] "Robust multifrequency imaging with MUSIC," Applied Inverse Problems, July 2019, Grenoble, France.

[T97] Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, USA, October 2018.

[T98] SIAM Conference on Imaging Science, Albuquerque, New Mexico, May 23-26, 2016.

[T99] SIAM Conference on Mathematical and Computational Issues in Geosciences, Stanford, June 29-July 2, 2015.

[T100] Congrés SMAI 2015, Savoie, France, June 8-12, 2015.

[T101] Applied Inverse Problems Conference, Helsinki, Finland, May 25-29, 2015.

[T102] International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2015), Crete, Greece, May 25-27, 2015.

[T103] SIAM 2014 Annual Meeting, Chicago, July 7-11, 2014.

[T104] SIAM Conference on Imaging Science, Hong Kong Baptist University, Hong-Kong, May 12-14, 2014.

[T105] SIAM Conference on Analysis of Partial Differential Equations, San Diego Marriott Mission Valey, San Diego, CA, United States, November 14-17, 2011.

[T106] International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2011), Corfu, Greece, May 26-28, 2011.

[T107] IV European conference on computational mechanics, ECCM 2010, Paris, France, May 16-21, 2010.

[T108] SIAM conference on Imaging Science, Chicago, United States, April 12-14, 2010.

[T109] SIAM conference on Analysis of Partial Differential Equations, Miami, United States, December 7-9, 2009.

[T110] 9th International conference on Theoretical and Computational Acoustics, Dresden, Germany, September 7-11, 2009.

[T111] 2nd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Rhodes, Greece, June 22-24, 2009.

[T112] SIAM Conference on Imaging Science, San Diego, CA, United States, July 7-9, 2008.

[T113] WCCM8-ECCOMAS 08 (8th World Congress on Computational Mechanics (WCCM8) and 5th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008)), Venice, Italy, June 30-July 4, 2008.

[T114] Computational Methods in Structural Dynamics and Earthquake Engineering, COMPDYN, Rethymnon, Crete, June 13-16, 2007.

[T115] Progress in Electromagnetics Research Symposium (PIERS 2006), Cambridge, MA, March 2006.

[T116] Joint AMS-SIAM meeting, Special session on Time Reversal Methods: Analysis and Applications, San Antonio, Texas, January 12-15, 2006.

[T117] Applied Inverse Problems: Theoretical and Computational Aspects conference, United Kingdom, June 26-30, 2005.

[T118] First International wireless Summit, Aalborg, Denmark, September 17-22, 2005.

[T119] Seventh International Conference on Mathematical and Numerical Aspects of Wave Propagation, Brown University, June 20-24, 2005.

[T120] Joint AMS-SIAM meeting, Special session on Theoretical and Computational Aspects of Inverse Problems, Atlanta, Georgia, January 5-8, 2005.

[T121] The fifth international conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona (Los Angeles), June 16-19, 2004.

[T122] Progress in Electromagnetics Research Symposium (PIERS 2004), Pisa, Italy, March 28-31, 2004.

[T123] Fifth World Congress on Ultrasonics, Paris, France, September 7-10, 2003.

[T124] Sixth International Conference on Mathematical and Numerical Aspects of Wave Propagation, Jyvaskyla, Finland, June 30-July 4, 2003.

[T125] SIAM, Philadelphia, PA, July 2002.

[T126] Conference AMRTMA, Frejus, June 2002.

[T127] Annual meeting of the Acoustical Society of America, Fort Lauderdale, FL, December 3, 2001.

[T128] Fourth International Congress on Industrial and Applied Mathematics, Edinburgh, July 1999.

[T129] 3rd National Congress on Computational Mechanics, Volos, Greece, June 1999.

[T130] 31e Congrès d'Analyse Numérique, May 1999.

[T131] Fourth International Conference on Theoretical and Computational Acoustics, Trieste, May 1999.

[T132] Fifth National Congress on Mechanics, Ioannina, Greece, August 1998.

[T133] Fourth International Conference on Mathematical and Numerical Aspects of Wave Propagation, Golden, Colorado, June 1998.

Chrysoula Tsogka
List of Publications

Chapters in Books

[B1] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Data structures for robust multifrequency imaging* in First Congress of Greek Mathematicians, edited by I. Emmanouil, A. Fellouris, A. Giannopoulos and S. Lambropoulou, Berlin, Boston: De Gruyter, 2020, pp.181–230.

[B2] C. Panagiotopoulos, Y. Petromichelakis and C. Tsogka, *Time reversal and imaging for structures*, in Dynamic Response of Infrastructure to Environmentally Induced Loads, edited by A. Sextos and G.D. Manolis, pp. 158-182, Springer International Publishing AG, 2017.

[B3] P. Joly and C. Tsogka, *Finite Element Methods with Discontinuous Displacement*, in Effective Computational Methods in Wave Propagation, edited by N. A. Campanis, V. A. Dougalis and J. A. Ekaterinaris, Chapman & Hall/CRC, 2008.

[B4] P. Joly and C. Tsogka, *Fictitious Domains Methods for Wave Diffraction*, in Effective Computational Methods in Wave Propagation, edited by N. A. Campanis, V. A. Dougalis and J. A. Ekaterinaris, Chapman & Hall/CRC, 2008.

[B5] P. Joly and C. Tsogka, *Numerical Methods for Treating Unbounded Media*, in Effective Computational Methods in Wave Propagation, edited by N. A. Campanis, V. A. Dougalis and J. A. Ekaterinaris, Chapman & Hall/CRC, 2008.

[B6] L. Borcea, G. Papanicolaou and C. Tsogka, *Assymptotics for the space-time Wigner transform with applications to imaging*, in Stochastic Differential Equations: Theory and Applications. Volume in Honor of Professor Boris L. Rozovskii, edited by P. H. Baxendale and S. V. Lototsky, volume 2 of Interdisciplinary Mathematical Sciences, pp. 91–112 (World Scientific), 2007.

Papers in Refereed Journals

[J1] M. Leibovich, G. Papanicolaou and C. Tsogka, *Statistical Stability of Correlation Based Imaging Algorithms*, in IEEE Transactions on Computational Imaging, vol. 9, pp. 327-334, 2023.

[J2] A. D. Kim and C. Tsogka, *Imaging in lossy media*, Inverse Problems, vol. 39, pp. 054002 (2023).

[J3] A. D. Kim and C. Tsogka, *Tunable high-resolution synthetic aperture radar imaging*, Radio Science, 57, e2022RS007572 (2022).

[J4] Ch G. Panagiotopoulos, S. Kouzoupis and C Tsogka, *Computational vibro-acoustic time reversal for source and novelty localization*, Advances in Signal Processing for SHM and NDT, 2022

[J5] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Quantitative phase and absorption contrast imaging*, IEEE Transactions on Computational Imaging, vol. 8, pp. 784-794, 2022.

[J6] A.D. Kim and C. Tsogka, *High-Resolution, Quantitative Signal Subspace Imaging for Synthetic Aperture Radar*, SIAM Journal on Imaging Sciences,15:3 (2022).

[J7] E. Daskalakis, C.G. Panagiotopoulos, C. Tsogka, *Stretching Method-Based Damage Detection Using Neural Networks*, Sensors (Basel). 2022;22(3):830. Published 2022 Jan 22.

[J8] P González-Rodríguez, A.D. Kim, C. Tsogka, *Quantitative signal subspace imaging*, Inverse Problems 37 (12), 125006, 2021, doi:10.1088/1361-6420/ac349b

[J9] C.G. Panagiotopoulos and C. Tsogka, *A Mixed Finite Element-Based Numerical Method for Elastodynamics Considering Adhesive Interface Damage for Dynamic Fracture*, Journal of Theoretical and Computational Acoustics, Vol. 29 , No. 02, 2150010 (2021). doi:10.1142/S2591728521500109

[J10] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Fast Signal Recovery From Quadratic Measurements*, in IEEE Transactions on Signal Processing, vol. 69, pp. 2042-2055, 2021, doi: 10.1109/TSP.2021.3067140.

[J11] T. Roubíček and C. Tsogka, *Staggered explicit-implicit time-discretization for elastodynamics with dissipative internal variables*, ESAIM Math. Model. Numer. Anal. 55 (2021), S397–S416.

[J12] S. Papadimitropoulos, D. A. Mitsoudis and C. Tsogka, *Imaging in three-dimensional waveguides with partial aperture data*, Journal of Theoretical and Computational Acoustics, Vol. 29, No. 03, 2050018 (2021). doi:10.1142/S2591728520500188.

[J13] M. Leibovich, G. Papanicolaou and C. Tsogka, *Correlation Based Imaging for Rotating Satellites*, SIAM J. Imaging Sci. 14 (2021), no. 1, 271–303.

[J14] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Three-dimensional imaging from single-element holographic data*, JOSA A 38 (2), A1-A6.

[J15] L. Borcea, E. Karasmani and C. Tsogka, *Incoherent source localization in random acoustic waveguides*, Waves in Random and Complex Media, 30:1, 81–106, (2020)
doi: 10.1080/17455030.2018.1486052

[J16] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Synthetic aperture imaging with intensity-only data*, IEEE Transactions on Computational Imaging, vol. 6, pp. 87–94, 2020. (doi: 10.1109/TCI.2019.2919272.)

[J17] M. Leibovich, G. Papanicolaou and C. Tsogka, *Low Rank Plus Sparse Decomposition of Synthetic Aperture Radar Data for Target Imaging*, IEEE Transactions on Computational Imaging, vol. 6, pp. 491–502, 2020.

[J18] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Imaging with highly incomplete and corrupted data*, Inverse Problems, 36(3), 035010 (2020) (https://doi.org/10.1088/1361-6420/ab5a21)

[J19] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *The Noise Collector for sparse recovery in high dimensions*, PNAS 117 (21), 11226–11232 (2020) (https://doi.org/10.1073/pnas.1913995117)

[J20] M. Leibovich, G. Papanicolaou and C. Tsogka, *Synthetic aperture imaging and motion estimation using tensor methods*, SIAM J. Imaging Sci. 13 (2020), no. 4, 2213–2249.

[J21] M. Leibovich, G. Papanicolaou and C. Tsogka, *Generalized correlation based imaging for satellites*, SIAM J. Imaging Sci. 13 (2020), no. 3, 1331–1366.

[J22] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Robust multifrequency imaging with MUSIC*, Inverse Problems, 35(1), 015007 (2019) (https://doi.org/10.1088/1361-6420/aaede6).

[J23] E. Daskalakis, C.G. Panagiotopoulos, C. Tsogka, N.S. Melis and I. Kalogeras, *Stretching Method-Based Operational Modal Analysis of An Old Masonry Lighthouse*, Sensors, vol. 9, 3599, 2019.

[J24] A.D. Kim and C. Tsogka, *Intensity-only inverse scattering with MUSIC*, J. Opt. Soc. Am. A 36, 1829–1837 (2019).

[J25] C. Tsogka and D. A. Mitsoudis and S. Papadimitropoulos, *Imaging extended reflectors in a terminating waveguide*, SIAM Journal on Imaging Sciences, Vol. 11, No. 2, pp. 1680–1716, 2018. doi: 10.1137/17M1159051

[J26] I. Petromichelakis, C. Tsogka and C.G. Panagiotopoulos, *Signal-to-Noise Ratio analysis for time-reversal based imaging techniques in bounded domains*, Wave Motion (2018), pp. 23–43. doi: 10.1016/j.wavemoti.2018.02.007

[J27] P. González-Rodriguez, A. D. Kim, M. Moscoso and C. Tsogka, *Quantitative subsurface imaging in strongly scattering media*, Optics Express, Vol. 26, Issue 21, pp. 27346–27357, 2018. doi: 10.1364/OE.26.027346

[J28] C. Tsogka, E. Daskalakis, G. Comanducci and F. Ubertini, *The stretching method for vibration-based SHM of civil structures*, Computer-Aided Civil and Infrastructure Engineering, Vol. 32, Issue 4, pp. 288–303, 2017.

[J29] L. Borcea, G. Papanicolaou and C. Tsogka, *Time and direction of arrival detection and filtering for imaging in strongly scattering random media*, Waves in Random and Complex Media, 2017, doi:10.1080/17455030.2017.1303220.

[J30] L. Borcea, J. Garnier, G. Papanicolaou, K. Solna and C. Tsogka, *Resolution analysis of passive synthetic aperture imaging of fast moving objects*, SIAM Journal on Imaging Sciences , Vol. 10, No. 2, pp. 665–710, 2017.

[J31] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Multifrequency interferometric imaging with intensity-only measurements*, SIAM Journal on Imaging Sciences, Vol. 10, No. 3, pp. 1005–1032, 2017.

[J32] J. Fournier, J. Garnier, G. Papanicolaou and C. Tsogka, *Matched-filter and correlation-based imaging for fast moving objects using a sparse network of receivers*, SIAM Journal on Imaging Sciences, Vol. 10, No. 4, pp. 2165–2216, 2017.

[J33] C. Tsogka and M. Apostolopoulos, *A comparative study of data filtering methods for imaging in strongly scattering media*, Wave Motion (2017), pp. 97–113.
doi: 10.1016/j.wavemoti.2016.09.009

[J34] L. Borcea, M. Moscoso, G. Papanicolaou and C. Tsogka, *Synthetic aperture imaging of directional and frequency dependent reflectivity*, SIAM Journal on Imaging Science, Vol. 9, No. 1, pp. 52–81, 2016.

[J35] E. Daskalakis, C. Evangelidis, J. Garnier, N. Melis, G. Papanicolaou and C. Tsogka, *Robust seismic velocity change estimation using ambient noise recordings*, Geophysical Journal International, 2016. doi: 10.1093/gji/ggw142

[J36] C. Tsogka, D. A. Mitsoudis and S. Papadimitropoulos, *Partial-aperture array imaging in acoustic waveguides*, Inverse Problems, Vol. 32, p. 125011 (31pp), 2016.

[J37] J. Garnier, G. Papanicolaou, A. Semin, and C. Tsogka, *Signal to Noise Ratio Analysis in Virtual Source Array Imaging*, SIAM Journal on Imaging Sciences, Vol. 8, No. 1, pp. 248–279, 2015.

[J38] L. Borcea, J. Garnier and C. Tsogka, *A quantitative study of source imaging in random waveguides*, Commun. Math. Sci., Vol. 13, No. 3, pp. 749–776, 2015.

[J39] J. Garnier, G. Papanicolaou, A. Semin and C. Tsogka, *Signal-to-Noise Ratio Estimation in Passive Correlation-Based Imaging*, SIAM Journal on Imaging Sciences, Vol. 6, No. 2, pp. 1092–1110, 2013.

[J40] C. Tsogka, D. A. Mitsoudis and S. Papadimitropoulos, *Selective imaging of extended reflectors in two-dimensional waveguides*, SIAM Journal on Imaging Science, Vol. 6, No. 4, pp. 2714–2739, 2013.

[J41] L. Borcea F. González del Cueto, G. Papanicolaou and C. Tsogka. *Filtering Deterministic Layer Effects in Imaging*, SIAM Review 2012, Vol. 54, No. 4, pp. 757–798, 2012. **2012 SIGEST best paper award**.

[J42] L. Borcea, J. Garnier, G. Papanicolaou and C. Tsogka, *Coherent interferometric imaging, time gating and beamforming*, Inverse Problems, Vol. 27, p. 065008 (17pp), 2011.

[J43] R. Alonzo, L. Borcea, G. Papanicolaou and C. Tsogka, *Detection and imaging in strongly backscattering randomly layered media*, Inverse Problems, Vol. 27, p. 025004 (43pp), 2011.

[J44] L. Borcea, G. Papanicolaou and C. Tsogka, *Adaptive time-frequency detection and filtering for imaging in heavy clutter*, SIAM Journal on Imaging Sciences, 4(3), pp. 827–849, 2011.

[J45] L. Borcea, J. Garnier, G. Papanicolaou and C. Tsogka, *Enhanced statistical stability in coherent interferometric imaging*, Inverse Problems, 27 (8), p. 085003, 2011.

[J46] L. Borcea, L. Issa and C. Tsogka, *Source localization in random acoustic waveguides*, SIAM Multiscale Modeling Simulations, Vol. 8 (5), pp. 1981–2022, 2010.

[J47] L. Borcea, G. Papanicolaou and C. Tsogka, *Subspace projection filters for imaging in random media*, Comptes Rendus Mecanique, Vol. 338, pp. 390–401, 2010.

[J48] L. Borcea, F. González del Cueto, G. Papanicolaou and C. Tsogka, *Filtering Random Layering Effects in Imaging*, SIAM Multiscale Model. Simul., 8:3, pp. 751–781, 2010.

[J49] E. Bécache, J. Rodriguez and C. Tsogka, *Convergence results of the fictitious domain method for a mixed formulation of the wave equation with a Neumann boundary condition*, ESAIM: Mathematical Modelling and Numerical Analysis, 43:2, pp. 377–398, 2009.

[J50] L. Borcea, F. González del Cueto, G. Papanicolaou and C. Tsogka, *Filtering Deterministic Layer Effects in Imaging*, SIAM Multiscale Model. Simul., 7:3, pp. 1267–1301, 2008.

[J51] L. Borcea, G. Papanicolaou and C. Tsogka, *Optimal illumination and waveform design for imaging in random media*, J. Acoust. Soc. Am., 122, pp. 3507–3519, 2007.

[J52] L. Borcea, G. Papanicolaou and C. Tsogka, *Optimal waveform design for array imaging*, Inverse Problems, 23, pp. 1973–2020, 2007.

[J53] E. Bécache, J. Rodriguez and C. Tsogka, *A fictitious domain method with mixed finite elements for elastodynamics*, SIAM J. on Scientific Computing, 29, pp. 1244–1267, 2007.

[J54] G. Derveaux, G. Papanicolaou and C. Tsogka, *Time reversal imaging for sensor networks with optimal compensation in time*, J. Acoust. Soc. Am., 121, pp. 2071–2085, 2007.

[J55] L. Borcea, G. Papanicolaou and C. Tsogka, *Adaptive interferometric imaging in clutter and optimal illumination*, Inverse Problems, 22, pp. 1405–1436, 2006.

[J56] G. Derveaux, G. Papanicolaou and C. Tsogka, *Resolution and Denoising in Near-Field imaging*, Inverse Problems, 22, pp. 1437–1456, 2006.

[J57] K. Huang, G. Papanicolaou K. Solna, C. Tsogka and H. Zhao, *Efficient numerical simulation for long range wave propagation*, J. Comp. Phys., 215:2, pp. 448–464, 2006.

[J58] L. Borcea, G. Papanicolaou and C. Tsogka, *Coherent interferometry in finely layered random media*, SIAM J. on Multiscale Model. Simul, 5 (1), pp. 62–83, 2006.

[J59] L. Borcea, G. Papanicolaou and C. Tsogka, *Coherent interferometric imaging in clutter*, Geophysics, 71:4, pp. SI165–SI175, 2006.

[J60] J.P. Groby and C. Tsogka, *A time domain method for modeling viscoacoustic wave propagation*, J. of Comput. Acoustics, 14:2, pp. 201–236, 2006.

[J61] L. Le Marrec, P. Lasaygues, T. Scotti and C. Tsogka, *Efficient shape reconstruction of non-circular tubes using broadband acoustic measurments*, Acta Acoustica united with Acoustica, 92, pp. 355–361, 2006.

[J62] L. Borcea, G. Papanicolaou and C. Tsogka, *Interferometric array imaging in clutter*, Inverse Problems, 21, pp. 1419–1460, 2005.

[J63] J.P. Groby, C. Tsogka and A. Wirgin, *Simulation of seismic response in a city-like environment*, Soil Dynamics and Earthquake Engineering, 25:7-10, pp. 487–504, 2005.

[J64] J. Berryman, L. Borcea, G. Papanicolaou and C. Tsogka, *Statistical stability and time-reversal imaging in random media*, Geometric methods in inverse problems and PDE control, IMA Vol. Math. Appl., 137, Springer, New York, pp. 15–24, 2004.

[J65] L. Borcea, G. Papanicolaou and C. Tsogka, *Theory and applications of time reversal and interferometric imaging*, Inverse Problems, 19, pp. S139–S164, 2003.

[J66] L. Borcea, G. Papanicolaou and C. Tsogka, *A resolution study for imaging and time reversal in random media*, Contemporary Math, 333, pp. 63–77, 2003.

[J67] C. Tsogka and A. Wirgin, *Seismic response of a set of blocks partially imbedded in soft soil*, Comptes Rendus Mecanique, Vol. 331, No. 3, pp. 217–224, 2003.

[J68] C. Tsogka and A. Wirgin, *Simulation of seismic response in an idealized city*, Soil Dynamics and Earthquake Engineering, Vol. 23, pp. 391–402, 2003.

[J69] E. Bécache, P. Joly and C. Tsogka. *A new family of mixed finite elements for the linear elastodynamic problem*, SIAM J. of Num. Anal., Vol. 39, No. 6, pp. 2109–2132. 2002.

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[J72] C. Tsogka and G. Papanicolaou, *Time reversal through a solid-liquid interface and super-resolution*, Inverse Problems, Vol 18, pp. 1639–1657, 2002.

[J73] F. Collino and C. Tsogka. *Application of the PML absorbing layer model to the linear elastodynamic problem in anisotropic heterogeneous media*, Geophysics, Vol. 66, No. 1, pp. 294–307, 2001.

[J74] E. Bécache, P. Joly and C. Tsogka. *Application of the fictitious domain method to 2D linear elastodynamic problems*, J. of Comput. Acoustics, Vol. 9, No. 3, pp. 1175–1202, 2001.

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Papers in Refereed Conferences

[C1] A. D. Kim and C. Tsogka, *High-resolution imaging for synthetic aperture radar,* 2022 IEEE Research and Applications of Photonics in Defense Conference (RAPID), Miramar Beach, FL, USA, 2022, pp. 1-2, doi: 10.1109/RAPID54472.2022.9911271.

[C2] C. Carvalho, E. Cortes and C. Tsogka, *Boundary Integral Equation Methods for Optical Cloaking Models* in proceedings of 15th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2022, ENSTA Paris, July 25-29, 2022.

[C3] J. Alvarez, A. Kim, R. F. Marcia, C. Tsogka, *Synthetic aperture radar inverse scattering reconstruction using convolutional neural networks*, Proc. SPIE 12227, Applications of Machine Learning 2022; 1222703 (2022) https://doi.org/10.1117/12.2633577.

[C4] O. DeGuchy, J. Alvarez, A. Kim, R. F. Marcia, C. Tsogka, *Machine learning for forward and inverse scattering in synthetic aperture radar*, Proc. SPIE 11511, Applications of Machine Learning 2020, 115110S (19 August 2020); https://doi.org/10.1117/12.2568302.

[C5] S. Papadimitropoulos, D. Mitsoudis and C. Tsogka, *Imaging in three-dimensional terminating waveguides with partial-aperture data*, in proceedings of 14th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2019, Vienna University of Technology (TU Wien), August 25-30, 2019.

[C6] M. Moscoso, A. Novikov, G. Papanicolaou and C. Tsogka, *Imaging sparse reflectivities from noisy data*, in proceedings of 14th International Conference on Mathematical and Numerical Aspects of Wave Propagation, WAVES 2019, Vienna University of Technology (TU Wien), August 25-30, 2019.

[C7] J. Fournier, J. Garnier, G. Papanicolaou and C. Tsogka, *Correlation-based imaging of fast moving objects using a sparse network of passive receivers*, in proceedings of 52nd Asilomar Conference on Signals, Systems, and Computers, 1618-1622 (2018) (https://doi.org/10.1109/ACSSC.2018.8645287)

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