Biographical sketch of Habib Ammari

Professor of Applied Mathematics
Department of Mathematics, ETH Zürich

Personal data

Born June 28, 1969, in Eljem, Tunisia; married; one son; French-Tunisian citizen.

Contact information

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Educational Record

Habilitation Degree, Mathematics, January 1999, University of Paris VI, France.

Doctor of Philosophy, Applied Mathematics, May 1995, Ecole Polytechnique, France.

Master of Science, Applied Mathematics, June 1993, Ecole Polytechnique, France.

Bachelor of Science, July 1992, Ecole Polytechnique, France.

Baccalaureate, June 1988, Tunisia, Presidential Prize.

Research Interests

Wave propagation in complex media, inverse problems and imaging.

Awards and Honors

Member of the European Academy of Sciences, 2018–.

Highly Cited Researcher in Mathematics by Clarivate Analytics, 2016.

Member of the Tunisian Academy of Sciences, Letters, and Arts, 2015–.

Khwarizmi International Award 2015 in Basic Sciences.

Kuwait Prize 2013 in Basic Sciences.

European Research Council Advanced Investigator Grant 2010–2015.

Professional Experience

Full-Professor of Applied Mathematics, ETH Zürich, 2015–

Director of Research (first class) at the French National Center for Scientific Research, Department of Mathematics and Applications, Ecole Normale Supérieure, 2010-2015.

Director of Research (second class) at the French National Center for Scientific Research, Center of Applied Mathematics, Ecole Polytechnique, 2006-2010.

Adjunct Professor in Applied Mathematics at Ecole Polytechnique, 2005-2015.

Researcher at the French National Center for Scientific Research, 1997-2006.

Researcher at Ecole Polytechnique, 1995-1997.

Books

8 authored books (2 published by the American Mathematical Society, 1 published by Princeton Academic Press, 1 by World Scientific, and 4 by Springer).

10 edited books (5 published by the American Mathematical Society, 3 by Springer, 1 by the French Society of Industrial and Applied Mathematics, and 1 by the French Mathematical Society).

Publications

More than 230 papers in leading international peer-reviewed journals (80 papers in SIAM journals, Trans. of the AMS, Arch. Rat. Mech. Anal., Comm. Math. Phys., Math. of Comp., Num. Math., CPDE, JDE, Ann. Sci. Ecole Norm. Sup., J. Math. Pures Appl., Proc. AMS, Math. Ann., Proc. Natl. Acad. Sci. USA, . . .).

Publication citations

MathSciNet: 3625 Sum of Times Cited by 1084 Authors;

ISI Knowledge: 4296 Sum of Times Cited; h-index: 35;

GoogleScholar: 8751 sum of Times Cited; h-index: 46; i10 index: 172.

List of PhD students and postdocs advised

31 PhD students: N. Béreux (PhD 1998), C. Latiri-Grouz (PhD 1999), A. Khelifi (PhD 2002), F. Triki (PhD 2002), K. Touibi (PhD 2004), S. Soussi (PhD 2004), E. Iakovleva (PhD 2004), H. Zribi (PhD 2005), K. Laouti (PhD 2006), A. Dossevi (PhD 2007), A. Kozhemyak (PhD 2008), W.K. Park (PhD 2009), P. Garapon (PhD 2009, Best Thesis Prize at Ecole Polytechnique), S. Khan (PhD 2010), L. Guadarrama Bustos (PhD 2010), V. Jugnon (PhD 2010, Best Thesis Prize at Ecole Polytechnique), J.B. Bellet ((PhD 2010), A. Wahab (PhD 2011), T. Boulier (PhD 2013), L. Giovangigli (PhD 2014), and L. Seppecher (PhD 2014); P. Millien (PhD 2015), M. Ruiz (PhD 2017), T. Wintz (PhD 2017), W. Zhang (PhD 2017), W. Wu (PhD 2018), F. Romero (PhD 2018), B. Fitzpatrick (PhD 2018), L. Baldassari (in progress), and A. Scapin (in progress).

22 postdocs: M. Lim (2003-2006), E. Kim (2005-2006), J.P. Groby (2006-2007), S. Gdoura (2009-2010), A. Rozanova (2006-2007), C. Poignard (2006-2008), H. Lee (2007-2008), G. Ciraolo (2008-2009), K. Kalimeris (2009-2010), E. Bretin (2009-2011), Y. Deng (2012-2013), W. Jing (2011-2013), M.P. Tran (2012-2013), L. Nguyen (2011-2013), H. Wang (2011-2014), A. Waters (2013-2015), G. Alberti (2014-2016), H. Zhang (2013-2015), T. Widlack (2015-2016), G. Zheng (2015-2016), D. Gontier (2015-2016), and S. Yu (2015-).

Selected recent synergetic activities

Member of the European Research Council Starting Grant Panel (PE1), 2013–.

Member of the Cancer Plan Panel of the French National Institute of Health and Medical Research, 2011–2014 and 2016–.

Member of the Scientific Committee of the Mediterranean Institute for Mathematical Sciences.

Member of the Scientific Committees of the Applied and Inverse Problems Conferences 2013, 2017, and 2019, and member of the Calderon Prize Committee 2013.

Member of the evaluation committee of the Institut de Mathématiques de Marseille, 2016.

Member of the evaluation panel of INRIA, 2018.

Editorial board member of Journal de l'Ecole Polytechnique, Mathematical Methods in the Applied Sciences, Inverse Problems and Imaging, Kuwait Journal of Science, Moroccan Journal of Pure and Applied Analysis, Journal of Computational Mathematics, Numerical Mathematics: Theory, Methods and Applications; managing editor of Modelling and Simulation in Medical Imaging, Book Series, World Scientific, UK.

Organizer of Minicourse on Mathematics of Emerging Biomedical Imaging IV (March 24-26, 2010); III (February 4-6, 2009); II (February 11-13, 2008); I (March 21-23, 2007), Institut Henri Poincaré, Paris.

Visiting professorships

Mathematical Sciences Research Institute, Berkeley (2001), Institute of Pure and Applied Mathematics, UCLA (2003), Seoul National University (2006), Korean Institute of Advanced Science and Technology (2012), Yonsei University (2013, 2014, 2015).

Major Scientific Achievements

The aim of H.A.'s research is to develop new mathematical and numerical tools, frameworks and inversion methods to address emerging modalities in nanophotonics and nanophononics, medical imaging, nondestructive testing, and environmental inverse problems. His research synergizes asymptotic imaging, stochastic modelling, and analysis of both deterministic and stochastic wave propagation phenomena in order to go further in the field of mathematical imaging and solve challenging problems posed by new imaging modalities.

H.A.'s work has been exceptionally well recognized. H.A. is not only a world class leading expert in the mathematical aspects of imaging but also a very influential scientific figure. Whenever he got involved in a challenging applied problem in imaging, he resolutely succeeded in proposing a very apposite, innovative, and unified approach for solving it. His work has opened new avenues of research in algorithms for target classification using wave measurements, modeling of multi-wave hybrid imaging and time-reversal techniques in elasticity. All of these problems, which have pertinent applications in diverse domains of science were considered to be very elusive and intriguing.

In his recent book *Mathematical and Statistical Methods for Multistatic Imaging* published by Springer-Verlag in 2013, H.A. has designed very novel frameworks for the detection, localization, dictionary recognition and tracking of a target from wave measurements. He introduced the concept of generalized polarization tensors, analyzed the spectral properties of the first-order polarization tensors, and pioneered the rigorous use of random matrix theory in wave imaging. He also developed an efficient numerical framework for eddy current imaging problems. By extracting conductivity tensors from eddy current data and comparing them with precomputed ones at multiple frequencies, he initiated the use of classification approaches in imaging from induction data. These contributions are gradually changing the comprehension and handling of inverse problems. They rely on a very profound understanding of wave propagation phenomena and lead to efficient algorithms for various imaging paradigms with precise estimations of convergence, resolution, and stability properties.

In his book *Mathematical Methods in Elasticity Imaging* published by Princeton University Press in 2015, H.A. proposed incredibly efficient algorithms for time reversal in viscoelastic media. He also developed highly effective optimal control algorithms for imaging the shear modulus distribution in a tissue from internal measurements of the displacement field. These are fundamental contributions to the field of elasticity imaging.

Another of his books *Introduction of Emerging Biomedical Imaging* was published by Springer-Verlag in 2008, wherein he introduced the concept of using interior perturbations and modulations of the probed medium in order to achieve better image resolution and stability. His work on multi-wave imaging prototypes has opened the door to a lot of mathematical and numerical studies by many groups working around the globe. This book is now considered a classic and serves as a useful reference tool for a generation of scientists interested in hybrid imaging.

Since that reference book, H.A. has had many more outstanding achievements in the field of medical imaging. He introduced a mathematical framework for cell membrane imaging and understood the fundamental mechanisms underlying the fact that effective biological tissue electrical properties and their frequency dependence reflect tissue composition and physiology. H.A. has fathomed how the dependence of the effective electrical admittivity on the frequency measures the complexity of the cellular organization of the tissue. He has also introduced a mathematical and computational framework for nanoparticle imaging. A comprehensive treatment of H.A.'s research on super-resolution biomedical imaging is provided in his recent book *Mathematics of Super-resolution Biomedical Imaging* published by World Scientific.

Super-resolution imaging refers to modern techniques aimed at achieving resolution beyond conventional

limits. H.A. developed various mathematical and computational techniques to accomplish this, providing a solid foundation on which to further develop the knowledge and skills needed for practical application of the techniques. These techniques include scale separation techniques, dynamical separation techniques, spectral separation approaches, dictionary matching techniques, and resonant media.

H.A. unified the mathematical theory of metamaterials, super-resolution in resonant media, sub-wavelength bandgap opening, and double-negative metamaterials. In his book *Mathematical and Computational Methods in Photonics and Phononics* to be published by the American Mathematical Society, H.A. introduced the notion of sub-wavelength resonance and addressed challenging problems in wave propagation problems at sub-wavelength scales. The results obtained in this book can be used for the accurate modelling of nanodevices.

H.A.'s contributions to imaging and wave propagation in complex media bridge the gap between mathematics, physics, and real-world applications, particularly in the fields of nanophotonics and phononics, medicine and nondestructive testing. They have been recognized as extremely outstanding from the point of view of mathematics as well as physics.

Major Contributions to the Early Career of Excellent Researchers

H.A. also has an exemplary record in mentoring students and postdoctoral researchers. He has attracted brilliant Ph.D. students and postdoctoral researchers from the elite institutes of the world (Ecole Normale Supérieure, Ecole Polytechnique, Cambridge, Oxford, Columbia, UCLA, Seoul National University, Chinese Academy of Sciences, ...). He advised twenty five PhD students and twenty postdoctoral researchers. Many of them went to the top ranked universities in the United States of America (Pierre Garapon to Stanford, Vincent Jugnon and Laurent Seppecher to MIT, Sheraz Khan to Harvard, etc.) after completing their PhD's with him. Two of his students won the prize for best thesis at Ecole Polytechnique.

Examples of Leadership in Industrial Innovation or Design

H.A. has been establishing many fruitful industrial partnerships with Thalès, the Nuclear Energy Agency (CEA), L'OREAL, Schlumberger, and Supersonic Imagine. Some of his students went to work in high-tech companies and are playing a key role in the rapid transfer of the mathematical tools he developed on imaging from academia to industry. The interdisciplinary approaches he has been developing in medical imaging and nondestructive testing are expected to have an important societal impact.

Publications

Monographs

1. H. Ammari, B. Fitzpatrick, H. Kang, M. Ruiz, S. Yu, and H. Zhang, Mathematical and Computational Methods in Photonics and Phononics, American Mathematical Society, Providence, to appear.
2. H. Ammari, J. Garnier, H. Kang, L. Nguyen, and L. Seppecher, Mathematics of Super-resolution Biomedical Imaging. *Modelling and Simulation in Medical Imaging*, Volume 2, Imperial College Press, London, 2016, 534 pages.
3. H. Ammari, E. Bretin, J. Garnier, H. Kang, H. Lee, and A. Wahab, Mathematical Methods in Elasticity Imaging. *Princeton Series in Applied Mathematics*, Princeton University Press, 2015, 240 pages.
4. H. Ammari, J. Garnier, W. Jing, H. Kang, M. Lim, K. Sølna, and H. Wang, Mathematical and Statistical Methods for Multistatic Imaging. *Lecture Notes in Mathematics*, Volume 2098, Springer-Verlag, Berlin, 2013, 361 pages.
5. H. Ammari, An Introduction to Mathematics of Emerging Biomedical Imaging.*Mathématiques et Applications*, Volume 62, Springer-Verlag, Berlin, 2008.

6. H. Ammari, H. Kang, and H. Lee, Layer Potential Techniques in Spectral Analysis. *Mathematical Surveys and Monographs*, Volume 153, American Mathematical Society, Providence, 2009.
7. H. Ammari and H. Kang, Polarization and Moment Tensors: with Applications to Inverse Problems and Effective Medium Theory. *Applied Mathematical Sciences Series*, Volume 162, Springer-Verlag, New York, 2007.
8. H. Ammari and H. Kang, Reconstruction of Small Inhomogeneities from Boundary Measurements, *Lecture Notes in Mathematics*, Volume 1846, Springer-Verlag, Berlin 2004.

Edited books

1. H. Ammari, Y. Capdeboscq, H. Kang, and I. Sim, Imaging, Multi-Scale and High Contrast PDE. Contemporary Mathematics, Volume 660, American Mathematical Society, Providence, 2016.
2. H. Ammari and J. Garnier, Inverse Problems and Imaging. Panoramas et synthses, Volume 44, Société Mathématique de France, 2015.
3. H. Ammari, Y. Capdeboscq, and H. Kang, Multi-scale and High-Contrast Partial Differential Equations. Contemporary Mathematics, Volume 577, American Mathematical Society, Providence, 2012.
4. H. Ammari, Mathematical Modeling in Biomedical Imaging II: Optical, Ultrasound, and Opto-Acoustic Tomographies. Lecture Notes in Mathematics: Mathematical Biosciences Subseries, Volume 2035, Springer-Verlag, Berlin, 2011.
5. H. Ammari, J. Garnier, H. Kang, and K. Solna, Mathematical and Statistical Methods for Imaging. Contemporary Mathematics, Volume 548, American Mathematical Society, Providence, 2011.
6. H. Ammari and H. Kang, Imaging Microstructures: Mathematical and Computational Challenges. Contemporary Mathematics, Volume 494, American Mathematical Society, Providence, 2009.
7. H. Ammari, Mathematical Modeling in Biomedical Imaging I: Electrical and Ultrasound Tomographies, Anomaly Detection, and Brain Imaging. Lecture Notes in Mathematics: Mathematical Biosciences Subseries, Volume 1983, Springer-Verlag, Berlin, 2009.
8. H. Ammari, Modeling and Computations in Electromagnetics: A Volume Dedicated to Jean-Claude Ndlec. Lecture Notes in Computational Science and Engineering, Volume 59, Springer-Verlag, Berlin 2007.
9. H. Ammari, H. Kang, Inverse Problems, Multi-Scale Analysis, and Homogenization. Contemporary Mathematics, Volume 408, American Mathematical Society, Providence, 2006.

Recent publications (since 2010; full texts at `http://www.sam.math.ethz.ch/~hammari/reprints.html`)

Papers in peer-reviewed journals

1. S. Yu and H. Ammari, Plasmonic interaction between nanospheres. To appear in SIAM Review.
2. H. Ammari, F. Romero, and M. Ruiz, Heat generation with plasmonic nanoparticles. To appear in Multiscale Modeling and Simulation: A SIAM Interdisciplinary Journal.
3. H. Ammari, M. Putinar, M. Ruiz, S. Yu, and H. Zhang, Shape reconstruction of nanoparticles from their associated plasmonic resonances. Journal de Mathématiques Pures et Appliquées, DOI:10.1016/j.matpur.2017.09.003.
4. H. Ammari, M. Ruiz, S. Yu, and H. Zhang, Reconstructing fine details of small objects by using plasmonic spectroscopic data. SIAM Journal on Imaging Sciences, 11 (2018), 1-23.
5. H. Ammari, Y.T. Chow and J. Zou, Super-resolution in highly contrasted media from the perspective of scattering coefficients. Journal de Mathématiques Pures et Appliquées, DOI:10.1016/j.matpur.2017.09.008.
6. H. Ammari, P. Millien, M. Ruiz, and H. Zhang, Mathematical analysis of plasmonic nanoparticles: the scalar case. Archive on Rational Mechanics and Analysis, 224 (2017), 597-658.
7. H. Ammari, B. Fitzpatrick, D. Gontier, H. Lee, and H. Zhang, Sub-wavelength focusing of acoustic waves in bubbly media. Proceedings of the Royal Society A, 473 (2017), 20170469.
8. H. Ammari and F. Triki, Identification of an inclusion in multifrequency electric impedance tomography. Communications in Partial Differential Equations, 42 (2017), 159-177.
9. H. Ammari, B. Fitzpatrick, H. Lee, S. Yu, and H. Zhang, Subwavelength phononic bandgap opening in bubbly media. Journal of Differential Equations, 263 (2017), 5610-5629.

10. H. Ammari and H. Zhang, Effective medium theory for acoustic waves in bubbly fluids near Minnaert resonant frequency. SIAM Journal on Mathematical Analysis, 49 (2017), 3252-3276.
11. H. Ammari, F. Romero, and C. Shi, A signal separation technique for sub-cellular imaging using dynamic optical coherence tomography. Multiscale Modeling and Simulation: A SIAM Interdisciplinary Journal, 15 (2017), 1155-1175.
12. H. Ammari, B. Fitzpatrick, D. Gontier, H. Lee, and H. Zhang, A mathematical and numerical framework for bubble meta-screens. SIAM Journal on Applied Mathematics, 77 (2017), 1827-1850.
13. G.S. Alberti and H. Ammari, Disjoint sparsity for signal separation and applications to hybrid inverse problems in medical imaging. Journal of Applied and Computational Harmonic Analysis, 42 (2017), 319-349.
14. H. Ammari, L. Giovangigli, L. Nguyen, and J.K. Seo, Admittivity imaging from multi-frequency micro-electrical impedance tomography. Journal of Mathematical Analysis and Applications, 449 (2017), 16011618.
15. H. Ammari, G.S. Alberti, F. Romero, and T. Wintz, Mathematical analysis of ultrafast ultrasound imaging. SIAM Journal on Applied Mathematics, 77 (2017), 1-25.
16. H. Ammari, Y. Song and J.K. Seo, Fast Magnetic resonance electrical impedance tomography with highly undersampled data. SIAM Journal on Imaging Sciences, 10 (2017), 558577.
17. H. Ammari, H. Kwon, S. Lee, and J.K. Seo, Mathematical framework for abdominal electrical impedance tomography to assess fatness. SIAM Journal on Imaging Sciences, 10 (2017), 900-919.
18. T. Abbas, H. Ammari, G. Hu, A. Wahab, and J.C. Ye, Elastic Scattering Coefficients and Enhancement of Nearly Elastic Cloaking. Journal of Elasticity, 128 (2017), 203243.
19. H. Ammari, T. Widlak, and W. Zhang, Towards monitoring critical microscopic parameters for electropermeabilization. Quarterly of Applied Mathematics, 75 (2017), 1-17.
20. H. Ammari, L. Qiu, F. Santosa, and W. Zhang, Determining anisotropic conductivity using diffusion tensor imaging data in magneto-acoustic tomography with magnetic induction. Inverse Problems, 33 (2017), 125006.
21. H. Ammari, A. I. Aviles, T. Widlak, A. Casals, and M. M. Nillesen, Robust cardiac motion estimation using ultrafast ultrasound data: A low-rank-topology-preserving approach. Physics in Medicine and Biology, 62 (2017), 4831-4851.
22. H. Ammari, T. Boulier, J. Garnier, and H. Wang, Mathematical modelling of the electric sense of fish: the role of multifrequency measurements and movement. Bioinspiration & Biomimetics, 12 (2017), 025002.
23. H. Ammari, M. Ruiz, S. Yu, and H. Zhang, Mathematical analysis of plasmonic resonances for nanoparticles: the full Maxwell equations. Journal of Differential Equations, 261 (2016), 3615-3669.
24. H. Ammari, M. Ruiz, W. Wu, S. Yu, and H. Zhang, Mathematical and numerical framework for metasurfaces using thin layers of periodically distributed plasmonic nanoparticles. Proceedings of the Royal Society A, 472 (2016), 20160445.
25. G.S. Alberti, H. Ammari, B. Jin, J.-K. Seo, and W. Zhang, The Linearized inverse problem in multifrequency electrical impedance tomography. SIAM Journal on Imaging Sciences, 9 (2016), 1525-1551.
26. H. Ammari, J.K. Seo and T. Zhang, Mathematical framework for multi-frequency identification of thin insulating and small conductive inhomogeneities. Inverse Problems, 32 (2016), 105001.
27. H. Ammari, Y.T. Chow and J. Zou, Phased and phaseless domain reconstructions in the inverse scattering problem via scattering coefficients. SIAM Journal on Applied Mathematics, 76 (2016), 1000-1030.
28. H. Ammari, J. Garnier, L. Giovangigli, W. Jing, and J.K. Seo, Spectroscopic imaging of a dilute cell suspension. Journal de Mathématiques Pures et Appliquées, 105 (2016), 603-661.
29. H. Ammari, D. Chen and J. Zou, Well-posedness of a pulsed electric field model in biological media and its finite element approximation. Mathematical Models and Methods in the Applied Sciences, 26 (2016), 601-625.
30. H. Ammari and H. Zhang, A mathematical theory of super-resolution by using a system of subwavelength Helmholtz resonators. Communications in Mathematical Physics, 337 (2015), 379-428.
31. H. Ammari, L. Giovangigli, H . Kwon, J.K. Seo, and T. Wintz, Spectroscopic conductivity imaging of

a cell culture. Asymptotic Analysis, 100 (2016), 87-109.
32. H. Ammari, E. Bonnetier, F. Triki, and M. Vogelius, Elliptic estimates in composite media with smooth inclusions: an integral equation approach. Annales Scientifiques de l'Ecole Normale Supérieure, 48 (2015), 453-495.
33. H. Ammari, P. Grasland-Mongrain, P. Millien, J.K. Seo, and L. Seppecher, A mathematical and numerical framework for ultrasonically-induced Lorentz force electrical impedance tomography. Journal de Mathématiques Pures et Appliquées, 103 (2015), 1390-1409.
34. H. Ammari and H. Zhang, Super-resolution in high contrast media. Proceedings of the Royal Society A, 2015 (471) 20140946.
35. H. Ammari, E. Bretin, P. Millien, J.K. Seo, and L. Seppecher, Mathematical modeling in full-field optical coherence elastography. SIAM Journal on Applied Mathematics, 75 (2015), 1015-1030.
36. H. Ammari, H. Kwon, E. Lee, J.K. Seo, and E.J. Woo, Mathematical modeling of mechanical vibration assisted conductivity imaging. SIAM Journal on Applied Mathematics, 75 (2015), 1031-1046.
37. H. Ammari, K. Lee, K. Kang, and J.K. Seo, Electrical impedance tomography-based pressure sensing using conductive membrane. SIAM Journal on Applied Mathematics, 75 (2015), 1493-1512.
38. H. Ammari, S. Boulmier and P. Millien, A mathematical and numerical framework for magnetoacoustic tomography with magnetic induction. Journal of Differential Equations, 259 (2015),5379-5405.
39. H. Ammari, H. Kwon, Y. Lee, K. Kang, and J.K. Seo, Magnetic resonance-based reconstruction method of conductivity and permittivity distributions at the Larmor frequency. Inverse Problems, 31 (2015) 105001 (24pp).
40. H. Ammari, Y.T. Chow, K. Liu, and J. Zou, Optimal shape design by partial spectral data. SIAM Journal on Scientific Computing, 37 (2015), B855-B883.
41. H. Ammari, J. Chen, Z. Chen, D. Volkov, and H. Wang, Detection and classification from electromagnetic induction data. Journal of Computational Physics, Journal of Computational Physics, 301 (2015), 201-217.
42. H. Ammari, H. Dong, H. Kang, and S. Kim, On an elliptic equation arising from photo-acoustic imaging in inhomogeneous media. International Mathematics Research Notices, 22 (2015), 12105-12113.
43. H. Ammari, A. Waters and H. Zhang, Stability analysis for hybrid systems in elastography. Journal of Mathematical Analysis and Applications, 430 (2015), 919-931.
44. H. Ammari, D. Chung, H. Kang, and H. Wang, Invariance properties of generalized polarization tensors and design of shape descriptors in three dimensions. Applied and Computational Harmonic Analysis, 38 (2015), 140-147.
45. H. Ammari, L. Nguyen and L. Seppecher, Reconstruction and stability in acousto-optic imaging for absorption maps with bounded variation. Journal of Functional Analysis, 267 (2014), 4361-4398.
46. H. Ammari, T. Boulier, J. Garnier, and H. Wang, Shape identification and classification in electrolocation. Proceedings of the National Academy of Sciences of the United States of America, 111 (2014), 11652-11657.
47. H. Ammari, Y.T. Chow and J. Zou, The concept of heterogeneous scattering coefficients and its application in inverse medium scattering. SIAM Journal on Mathematical Analysis, 46 (2014), 2905-2935.
48. H. Ammari, J. Garnier, J. de Rosny, and K. Solna, Medium induced resolution enhancement. Inverse Problems, 30 (2014), 085006 (25pp).
49. H. Ammari, M.P. Tran and H. Wang, Shape identification and classification in echolocation. SIAM Journal on Imaging Sciences, 7 (2014), 1883-1905.
50. H. Ammari, J. Garnier and P. Millien, Backpropagation imaging in nonlinear harmonic holography in the presence of measurement and medium noises. SIAM Journal on Imaging Sciences, 7 (2014), 239-276.
51. H. Ammari, H. Kang, H. Lee, M. Lim, and S. Yu, Enhancement of near cloaking for the full Maxwell equations. SIAM Journal on Applied Mathematics, 73 (2013), 2055-2076.
52. H. Ammari, Y. Deng, H. Kang, and H. Lee, Reconstruction of inhomogeneous conductivities via the concept of generalized polarization tensors. Annales de l'Institut Henri Poincaré Analyse Nonlinéaire,

31 (2014), 877-897.
53. H. Ammari, T. Boulier, J. Garnier, W. Jing, H. Kang, and H. Wang, Target identification using dictionary matching of generalized polarization tensors. Foundations of Computational Mathematics, 14 (2014), 27-62.
54. H. Ammari, E. Bretin, J. Garnier, W. Jing, H. Kang, and A. Wahab, Localization, stability, and resolution of topological derivative based imaging functionals in elasticity. SIAM Journal on Imaging Sciences, 6 (2013), 2174-2212.
55. H. Ammari, J. Chen, Z. Chen, J. Garnier, and D. Volkov, Target detection and characterization from electromagnetic induction data. Journal de Mathématiques Pures et Appliquées, 101 (2014), 54-75.
56. H. Ammari, J. Garnier, L.H. Nguyen, and L. Seppecher, Reconstruction of piecewise smooth absorption map by an acousto-optic process. Communications in Partial Differential Equations, 38 (2013), 1737-1762.
57. H. Ammari, H. Kang, K. Kim, and H. Lee, Strong convergence of the solutions of the linear elasticity and uniformity of asymptotic expansions in the presence of small inclusions. Journal of Differential Equations, 254 (2013), 4446-4464.
58. H. Ammari, J. Garnier and W. Jing, Correlation-based imaging in a weakly random waveguide. SIAM Multiscale Modeling and Simulations, 11 (2013), 656-681.
59. H. Ammari, T. Boulier, J. Garnier, H. Kang, and H. Wang, Tracking of a mobile target using generalized polarization tensors. SIAM Journal on Imaging Sciences, 6 (2013), 1477-1498.
60. H. Ammari, G. Ciraolo, H. Kang, H. Lee, and G. Milton, Anomalous localized resonance using a folded geometry in three dimensions. Proceedings of the Royal Society A, 469 (2013), 20130048.
61. H. Ammari, G. Ciraolo, H. Kang, H. Lee, and G. Milton, Spectral analysis of a Neumann-Poincaré-type operator and analysis of cloaking due to anomalous localized resonance. Archive on Rational Mechanics and Analysis, 208 (2013), 667-692.
62. H. Ammari, G. Ciraolo, H. Kang, H. Lee, and K. Yun, Spectral analysis of the Neumann-Poincaré operator and characterization of the stress blow-up in anti-plane elasticity. Archive on Rational Mechanics and Analysis, 208 (2013), 275-304.
63. H. Ammari, E. Bretin, J. Garnier and A. Wahab, Time-reversal in visco-elastic media. European Journal of Applied Mathematics, 24 (2013), 565-600.
64. H. Ammari, H. Bahouri, D. Dos Santos Ferreira, and I. Gallagher, Stability estimates for an inverse scattering problem at high frequencies. Journal of Mathematical Analysis and Applications, 400 (2013), 525-540.
65. H. Ammari, J. Garnier, W. Jing, and L.H. Nguyen, Quantitative thermo-acoustic imaging: An exact reconstruction formula. Journal of Differential Equations, 254 (2013), 1375-1395.
66. H. Ammari, J. Garnier, H. Kang, M. Lim, and S. Yu, Generalized polarization tensors for shape description. Numerische Mathematik, 126 (2014), 199-224.
67. H. Ammari, J. Garnier and L. Giovangigli, Mathematical modeling of fluorescence diffuse optical imaging of cell membrane potential changes. Quarterly of Applied Mathematics, 72 (2014), 137-176.
68. H. Ammari, E. Bossy, J. Garnier, W. Jing, and L. Seppecher, Radiative transfer and diffusion limits for wave fields correlations in locally shifted random media. Journal of Mathematical Physics, 54 (2013), 021501.
69. H. Ammari, E. Bossy, J. Garnier, L.H. Nguyen, and L. Seppecher, A reconstruction algorithm for ultrasound-modulated diffuse optical tomography. Proceedings of the American Mathematical Society, 142 (2014), 3221-3236.
70. H. Ammari, H. Kang, H. Lee, and J. Lim, Boundary perturbations due to the presence of small linear cracks in an elastic body. Journal of Elasticity, 113 (2013), 75-91.
71. H. Ammari, J. Garnier and K. Sølna, Limited view resolving power of linearized conductivity imaging from boundary measurements. SIAM Journal on Mathematical Analysis, 45 (2013), 1704-1722.
72. H. Ammari, T. Boulier and J. Garnier, Modeling active electrolocation in weakly electric fish. SIAM Journal on Imaging Sciences, 5 (2013), 285-321.
73. H. Ammari, E. Bossy, J. Garnier, and L. Seppecher, Acousto-electromagnetic tomography. SIAM

Journal on Applied Mathematics, 72 (2012), 1592-1617.
74. H. Ammari, H. Kang, H. Lee, and M. Lim, Enhancement of near-cloaking using generalized polarization tensors vanishing structures. Part I: The conductivity problem. Communications in Mathematical Physics, 317 (2013), 253-266.
75. H. Ammari, H. Kang, H. Lee, and M. Lim, Enhancement of near cloaking. Part II: the Helmholtz equation. Communications in Mathematical Physics, 317 (2013), 485-502.
76. H. Ammari, J. Garnier and K. Sølna, Resolution and stability analysis in full-aperture, linearized conductivity and wave imaging. Proceedings of the American Mathematical Society, 141 (2013), 3431-3446.
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