

# List of Publications

August 23, 2024

**Name:** Matti Juhani Lassas

**Summary:** 1 international monographs and 1 monograph dissertation, 149 appeared or accepted papers in refereed international journals, 39 papers in edited collections or conference proceedings, 5 US patents, 14 arXiv preprints.

Following the usual convention of the field, in the papers published in the mathematical journals, the authors are in alphabetical order.

## A.1. Papers in international refereed journals:<sup>1</sup>

- [1] C. Fefferman, S. Ivanov, M. Lassas, H. Narayanan: Fitting a manifold of large reach to noisy data. To appear in *Journal of Topology and Analysis*. Preprint arXiv:1910.05084, 84 pp.
- [2]\* C. Fefferman, S. Ivanov, M. Lassas, J. Lu, H. Narayanan: Reconstruction and interpolation of manifolds II: Inverse problems for Riemannian manifolds with partial distance data. To appear *American Journal of Mathematics*. Preprint arXiv:2111.14528, 38 pp.
- [3] X. Chen, M. Lassas, L. Oksanen, G. Paternain: Retrieving Yang–Mills–Higgs fields in Minkowski space from active local measurements. To appear in *Mathematische Annalen*. Preprint arXiv:2204.12776, 44 pp.
- [4] E. Blasten, P. Exner, H. Isozaki, M. Lassas, J. Lu: Inverse problems for locally perturbed lattices – Discrete Hamiltonian and quantum graph. To appear in *Annales Henri Lebesgue*. Preprint arXiv:2202.00944, 36 pp.
- [5] D. Burago, S. Ivanov, M. Lassas, J. Lu: Stability of the Gel’fand inverse boundary problem via the unique continuation. To appear *Analysis and PDE*. Preprint arXiv:2012.04435, 74 pp.
- [6] M. Lassas, T. Liimatainen: Conformal harmonic coordinates. To appear in *Communications in Analysis and Geometry*. Preprint arXiv:1912.08030, 39 pp.
- [7] E. Karvonen, M. Lassas, P. Pankka, S. Siltanen: TILT – Topological Interface Recovery in Limited-Angle Tomography. *SIAM Journal on Imaging Sciences (SIIMS)* 17 (2024), no. 3, 1761–1794.

---

<sup>1</sup>Ten most important papers are marked by a star, e.g. [1]\*.

- [8] M. de Hoop, M. Lassas, Matti, J. Lu, L. Oksanen: Stable Recovery of Coefficients in an Inverse Fault Friction Problem. *Archive for Rational Mechanics and Analysis (ARMA)* 248 (2024), no. 4, paper 64.86A15.
- [9] M. Lassas, T. Liimatainen, L. Potenciano-Machado, T. Tyni: An inverse problem for a semi-linear wave equation: a numerical study. *Inverse Problems Imaging* 18 (2024), no. 1, 62-85.
- [10] C. Carstea, M. Lassas, T. Liimatainen, L. Oksanen: An inverse problem for the Riemannian minimal surface equation. *Journal Differential Equations* 379 (2024), 626-648.
- [11] M. de Hoop, M. Lassas, J. Lu, L.Oksanen: Quantitative unique continuation for the elasticity system with application to the kinematic inverse rupture problem *Communication in Partial Differential Equations* 48 (2023), no. 2, 286-314.
- [12] M. De Hoop, M. Lassas, J. Lu, L.Oksanen: Stable reconstruction of simple Riemannian manifolds from unknown interior sources. *Inverse Problems* 39 (2023), no. 9, Paper No. 095002, 43 pp.
- [13] E. Blasten, H. Isozaki, M. Lassas, J. Lu: Inverse problems for discrete heat equations and random walks. *SIAM Journal on Discrete Mathematics*. 37 (2023), no. 2, 831-863.
- [14] S. Rautio, R. Murthy, T. Bubba, M. Lassas, S. Siltanen: Learning a microlocal prior for limited-angle tomography. *The IMA Journal of Applied Mathematics* 88 (2023), pp. 888-916
- [15] M. Lassas, Z. Li, Z. Zhang: Well-posedness of the stochastic time-fractional diffusion and wave equations and inverse random source problems. *Inverse Problems* 39 (2023), no. 8, Paper No. 084001, 36 pp.
- [16] E. Blasten, H. Isozaki, M. Lassas, J. Lu: Gelfand’s inverse problem for the graph Laplacian *Journal of Spectral Theory* 13 (2023), no. 1, 1-45.
- [17] T. von Lerber , V. Lyubopytov , L. Ylinen , M. Lassas , F. Kuppens: All-optical phase memory circuit based on two coupled lasers and external optical injection. *IEEE Journal of Selected Topics in Quantum Electronics* 29 (2023): 7500211.
- [18] H. Kekkonen, M. Lassas, E. Saksman, S. Siltanen Random tree Besov priors – Towards fractal imaging. *Inverse problems and Imaging* 17 (2023), no. 2, 507-531.

- [19] M. De Hoop, J. Ilmavirta, M. Lassas, T. Saksala: Determination of a compact Finsler manifold from its boundary distance map and an inverse problem in elasticity. *Communications in Analysis and Geometry* 31 (2023), no. 7, 1693–1747.
- [20]\* Y. Kurylev, M. Lassas, L. Oksanen, G. Uhlmann: Inverse problem for Einstein-scalar field equations. *Duke Mathematical Journal*. 171 (2022), 3215-3282, 67 pp.
- [21] M. Lassas, T. Liimatainen, M. Salo: The Calderon problem for the conformal Laplacian. *Communications in Analysis and Geometry*. (2022), no. 5, 1121–1184.
- [22] T. Balehowsky, A. Kujanpää, M. Lassas, T. Liimatainen: An Inverse Problem for the Relativistic Boltzmann Equation. *Communications in Mathematical Physics*. 396 (2022), 983-1049.
- [23] M. Lassas, T. Liimatainen, L. Potenciano-Machado, T. Tyni: Uniqueness and stability of an inverse problem for a semi-linear wave equation. *Journal of Differential Equations*. 337 (2022), 395-435.
- [24] T. Balehowsky, M. Lassas, P. Pankka, V. Sirvio: Transformation Optics for the Modelling of Waves in a Universe with Nontrivial Topology. *SIAM Journal on Mathematical Analysis* 54 (2022), no. 3, 3420–3456
- [25] X. Chen, M. Lassas, L. Oksanen, G. Paternain: Detection of Hermitian connections in wave equations with cubic non-linearity. *Journal of European Mathematical Society (JEMS)* 24 (2022), no. 7, 2191–2232.
- [26] C. Guillarmou, M. Lassas, L. Tzou: X-Ray Transform in Asymptotically Conic Spaces. *International Mathematics Research Notices (IMRN)* 5 (2022), 3918-3976.
- [27]\* M. Puthawala, K. Kothari, M. Lassas, I. Dokmanic, M. de Hoop: Globally Injective ReLU Networks. *Journal of Machine Learning Research (JMLR)* 105 (2022), 1-55.
- [28] R. Bosi, Y. Kurylev, M. Lassas: Reconstruction and stability in Gel’fand’s inverse interior spectral problem. *Analysis and PDE* 15 (2022) 273–326.
- [29] J. Gondzio, M. Lassas, S. Latva-Aijö, S. Siltanen, F. Zanetti: Material-separating regularizer for multi-energy X-ray tomography. *Inverse Problems* 38 (2022), 025013.

- [30] L.Ylinen, T. von Lerber, F. Kuppers, M. Lassas: Analysis of a dynamical system modeling lasers and applications for optical neural networks. *SIAM Journal on Applied Dynamical Systems (SIADS)* Vol. 21 (2022), 39 pp.
- [31]\* A. Feizmohammadi, M. Lassas, L. Oksanen: Inverse problems for non-linear hyperbolic equations with disjoint sources and receivers. *Forum of Mathematics, Pi* 9 (2021), Paper No. e10, 52 pp.
- [32] J. Agnelli, V. Kolehmainen, M. Lassas, P. Ola, S. Siltanen: Simultaneous Reconstruction of Conductivity, Boundary Shape, and Contact Impedances in Electrical Impedance Tomography. *SIAM Journal on Imaging Sciences* 14 (2021), 1407–1438.
- [33] M. de Hoop, J. Ilmavirta, M. Lassas, T. Saksala: A foliated and reversible Finsler manifold is determined by its broken scattering relation. *Pure and Applied Analysis* Vol. 3 (2021), No. 4, 789-811.
- [34] X. Chen, M. Lassas, L. Oksanen, G. Paternain: Inverse problem for the Yang-Mills equations. *Communications in Mathematical Physics* 384 (2021), no. 2, 1187-1225.
- [35] M. de Hoop, M. Lassas, C. Wong: Deep learning architectures for nonlinear operator functions and nonlinear inverse problems. *Mathematical Statistics and Learning*, EMS, 4 (2021), no. 1-2, 1-86, 86 p.
- [36] A. Kirpichnikova, J. Korpela, M. Lassas, L. Oksanen: Construction of artificial point sources for a linear wave equation in unknown medium. *SIAM Journal on Control and Optimization (SICON)* 59 (2021), no. 5, 3737-3761.
- [37] T. Bubba, M. Galinier, M. Lassas, M. Prato, L. Ratti, S. Siltanen: Deep neural networks for inverse problems with pseudodifferential operators: an application to limited-angle tomography. *SIAM Journal on Imaging Sciences (SIIMS)* 14 (2021), no. 2, 470-505.
- [38] M. Lassas, T. Liimatainen, Y.-H. Lin, M. Salo: Inverse problems for elliptic equations with power type nonlinearities. *Journal de Mathématiques Pures et Appliquées* 145 (2021), 44-82.
- [39] M. Lassas, T. Liimatainen, Y.-H. Lin, M. Salo: Partial data inverse problems and simultaneous recovery of boundary and coefficients for semilinear elliptic equations. *Revista Matemática Iberoamericana* 37 (2021), no. 4, 1553-1580.

- [40] J. Agnelli, A. Col, M. Lassas, R. Murthy, M. Santacesaria, S. Siltanen: Classification of stroke using Neural Networks in Electrical Impedance Tomography. *Inverse Problems* 36 (2020), no. 11, 115008, 26 pp.
- [41] D. Dos Santos Ferreira, Y. Kurylev, M. Lassas, T. Liimatainen, M. Salo: The linearized Calderon problem in transversally anisotropic geometries. *International Mathematics Research Notices (IMRN)* 2020, no. 22, 8729-8765.
- [42]\* C. Fefferman, S. Ivanov, Y. Kurylev, M. Lassas, H. Narayanan: Reconstruction and interpolation of manifolds I: The geometric Whitney problem. *Foundations of Computational Mathematics* 20 (2020), 1035-1133.
- [43] C. Fefferman, S. Ivanov, M. Lassas, H. Narayanan: Reconstruction of a Riemannian manifold from noisy intrinsic distances. *SIAM Journal on Mathematics of Data Science* 2 (2020), No. 3, 770–808.
- [44] M. Lassas, L. Oksanen, P. Stefanov, G. Uhlmann: The Light Ray transform on Lorentzian manifolds. *Communications in Mathematical Physics* 377 (2020), no. 2, 1349-1379.
- [45] T. Helin, M. Lassas, L. Ylinen, Z. Zhang: Inverse problems for heat equation and space-time fractional diffusion equation with one measurement. *Journal of Differential Equations* 269 (2020), no. 9, 7498-7528.
- [46] M. Lassas, T. Liimatainen, M. Salo: The Poisson embedding approach to the Calderon problem. *Mathematische Annalen* 377 (2020), no. 1-2, 19-67.
- [47] T. von Lerber, M. Lassas, Q.T. Le, V. Lyubopytov, L. Ylinen, A. Chipouline, K. Hofmann, F. Kueppers: All-optical majority gate based on an injection-locked laser. *Scientific Reports* 9 (2019), 14576.
- [48] Y. Kian, Y. Kurylev, M. Lassas, L. Oksanen: Hyperbolic inverse problem with data on disjoint sets. *Journal of Differential Equations* 267 (2019), 2053-2686.
- [49] T. A. Bubba, G. Kutyniok, M. Lassas, M. Marz, W. Samek, S. Siltanen, V. Srinivasan Learning The Invisible: A Hybrid Deep Learning-Shearlet Framework for Limited Angle Computed Tomography. *Inverse Problems* 35 (2019), 064002
- [50] P. Caro, T. Helin, M. Lassas: Inverse scattering for a random potential. *Analysis and Applications*. 17 (2019), No. 04, pp. 513-567.

- [51] J. Korpela, M. Lassas, L. Oksanen: Discrete regularization and convergence of the inverse problem for 1+1 dimensional wave equation. *Inverse Problems and Imaging* 13 (2019), 575-596.
- [52]\* Y. Kurylev, M. Lassas, G. Uhlmann: Inverse problems for Lorentzian manifolds and non-linear hyperbolic equations. *Inventiones Mathematicae* 212 (2018), no. 3, 781-857.
- [53] P. Caro, T. Helin, A. Kujanpää, M. Lassas: Correlation imaging in inverse scattering is tomography on probability distributions. *Inverse Problems* 35 (2018), 015010.
- [54] M. Lassas, T. Saksala: Determination of a Riemannian manifold from the distance difference functions. *Asian Journal of Mathematics* 23 (2019), no. 2, 173–199.
- [55] M. Lassas, T. Saksala, H. Zhou: Reconstruction of a compact manifold from the scattering data of internal sources. *Inverse Problems and Imaging* 12 (2018), no. 4, 993–1031.
- [56] M. Lassas, G. Uhlmann, Y. Wang: Inverse problems for semilinear wave equations on Lorentzian manifolds. *Communications in Mathematical Physics* 360 (2018), no. 2, 555–609.
- [57] M. Lassas, L. Oksanen, P. Stefanov, G. Uhlmann: On the inverse problem of finding cosmic strings and other topological defects. *Communications in Mathematical Physics* 357 (2018), no. 2, 569–595.
- [58] H. Kettunen, M. Lassas, P. Ola: On Absence and Existence of the Anomalous Localized Resonance without the Quasi-static Approximation. *SIAM Journal in Applied Mathematics* 78 (2018), no. 1, 609–628.
- [59] R. Bosi, Y. Kurylev, M. Lassas: Stability of the unique continuation for the wave operator via Tataru inequality: the local case. *Journal d'Analyse Mathématique* 134 (2018), no. 1, 157–199.
- [60] A. Greenleaf, M. Lassas, M. Santacesaria, S. Siltanen, G. Uhlmann: Propagation and recovery of singularities in the inverse conductivity problem. *Analysis and PDE* 11 (2018), no. 8, 1901–1943.
- [61] T. Helin, M. Lassas, L. Oksanen, T. Saksala: Correlation based passive imaging with a white noise source. *Journal de Mathématiques Pures et Appliquées* (9) 116 (2018), 132–160.

- [62] A. Greenleaf, H. Kettunen, Y. Kurylev, M. Lassas, G. Uhlmann: Superdimensional Metamaterial Resonators. *SIAM Journal in Applied Mathematics* 78 (2018), no. 1, 437–456.
- [63] H. Isozaki, Y. Kurylev, M. Lassas: Conic singularities, generalized scattering matrix, and inverse scattering on asymptotically hyperbolic surfaces. *Journal für die reine und angewandte Mathematik* 724 (2017), 53–103.
- [64] T. Helin, M. Lassas, L. Päivärinta: Inverse acoustic scattering problem in half-space with anisotropic random impedance. *Journal of Differential Equations* 262 (2017), no. 4, 3139–3168.
- [65] D. Dos Santos Ferreira, Y. Kurylev, M. Lassas, M. Salo: The Calderon problem in transversally anisotropic geometries. *Journal of European Mathematical Society (JEMS)* 18 (2016), no. 11, 2579–2626.
- [66] K. Niinimäki, M. Lassas, K. Hamalainen, A. Kallonen, V. Kolehmainen, E. Niemi, S. Siltanen: Multi-resolution parameter choice method for total variation regularized tomography. *SIAM Journal on Imaging Sciences (SIIMS)* 9 (2016), no. 3, 938–974.
- [67] M. Lassas, T. Zhou: The blow-up of electromagnetic fields in 3-dimensional invisibility cloaking for Maxwell’s equations. *SIAM Journal on Applied Mathematics* 76 (2016), 457–478.
- [68] H. Kekkonen, M. Lassas, S. Siltanen: Posterior consistency and convergence rates for Bayesian inversion with hypoelliptic operators. *Inverse Problems* 32 (2016), N. 8, 085005.
- [69] K. Astala, M. Lassas, L. Päivärinta: The borderlines of the invisibility and visibility for Calderon’s inverse problem. *Analysis and PDE* 9 (2016), 43–98.
- [70] M. Lassas, L. Oksanen, Y. Yang: Determination of the Spacetime from Local Time Measurements. *Mathematische Annalen* 365 (2016), 271.
- [71] R. Bosi, Y. Kurylev, M. Lassas: Stability of the unique continuation for the wave operator via Tataru inequality and applications. *Journal of Differential Equations* 260 (2016), 6451–6492.
- [72] J. Korpela, M. Lassas, L. Oksanen: Regularization strategy for inverse problem for 1+1 dimensional wave equation. *Inverse Problems* 32 (2016), 065001.

- [73] M. de Hoop, M. Lassas, M. Santacesaria, S. Siltanen, J. Tamminen: Positive-energy D-bar method for acoustic tomography: a computational study. *Inverse Problems* 32 (2016), 025003.
- [74] E. Niemi, M. Lassas, A. Kallonen, L. Harhanen, K. Hamalainen, S. Siltanen: Dynamic multi-source X-ray tomography using a spacetime level set method. *Journal of Computational Physics* 291 (2015), 218–237.
- [75] M. de Hoop, S. Holman, E. Iversen, M. Lassas, B. Ursin: Recovering the isometry type of a Riemannian manifold from local boundary diffraction travel times. *Journal de Mathématiques Pures et Appliquées* 103 (2015), 830–848.
- [76] M. Lassas, M. Salo, L. Tzou: Inverse problems and invisibility cloaking for FEM models and resistor networks. *Mathematical Models and Methods in Applied Sciences (M<sup>3</sup>AS)* 25 (2015), 309.
- [77]\* M. Lassas, L. Oksanen: Inverse problem for the Riemannian wave equation with Dirichlet data and Neumann data on disjoint sets. *Duke Mathematical Journal* 163 (2014), 1071–1103.
- [78] T. Helin, M. Lassas, L. Oksanen: Inverse problem for the wave equation with a white noise source. *Communications in Mathematical Physics* 332 (2014), 933–953.
- [79] M. de Hoop, S. Holman, E. Iversen, M. Lassas, B. Ursin: Reconstruction of a conformally Euclidean metric from local boundary diffraction travel times, *SIAM Journal on Applied Mathematics* 46 (2014), 3705–3726.
- [80] H. Kekkonen, M. Lassas, S. Siltanen: Analysis of regularized inversion of data corrupted by white Gaussian noise. *Inverse Problems* 30 (2014), 045009. Corrigendum: *Inverse Problems* 32 (2016), 099501.
- [81] J. Takalo, J. Timonen, J. Sampo, M. Rantala, S. Siltanen, M. Lassas: Using the fibre structure of paper to determine authenticity of the documents: analysis of transmitted light images of stamps and banknotes, *Forensic Science International* 244 (2014), 252–258.
- [82] S. Hamilton, M. Lassas and S. Siltanen: A Direct Reconstruction Method for Anisotropic Electrical Impedance Tomography. *Inverse Problems* 30 (2014), 075007.
- [83] K. Krupchyk, M. Lassas, G. Uhlmann: Inverse boundary value problems for the perturbed polyharmonic operator. *Transactions of American Mathematical Society* 366 (2014), 95–112.



- [84] J. Sampo, J. Takalo, S. Siltanen, A. Miettinen, M. Lassas, J. Timonen: Curvelet–based method for orientation estimation of particles from optical images. *SPIE Optical engineering* 53 (2014) 033109.
- [85] J. Takalo, J. Timonen, J. Sampo, K. Marjanen, S. Siltanen and M. Lassas: Evaluation of the orientation distribution of fibers from reflection images of fibrous samples. *European Physical Journal – Applied Physics* 65 (2014), 10703.
- [86] K. Hamalainen, A. Kallonen, V. Kolehmainen, M. Lassas, K. Niinimaki, S. Siltanen: Sparse tomography. *SIAM Journal on Scientific Computation* 35 (2013), 644–665.
- [87] V. Kolehmainen, M. Lassas, P. Ola, S. Siltanen: Recovering boundary shape and conductivity in electrical impedance tomography. *Inverse Problems and Imaging* 7 (2013), 217–242.
- [88]\* A. Greenleaf, Y. Kurylev, M. Lassas, U. Leonhardt, G. Uhlmann: Schrödinger’s Hat: Electromagnetic, acoustic and quantum amplifiers via transformation optics. *Proceedings of the National Academy of Sciences (PNAS)* 109 (2012), no. 26, 10169–10174.
- [89] K. Krupchyk, M. Lassas: An inverse problem for a hyperbolic system on a vector bundle and energy measurements. *Mathematische Annalen*, 354 (2012), no. 4, 1431–1464.
- [90] T. Helin, M. Lassas, L. Oksanen: An inverse problem for the wave equation with one measurement and the pseudorandom source. *Analysis and PDE* 5 (2012), 887–912.
- [91] M. Lassas, J. Mueller, S. Siltanen, A. Stahel: The Novikov–Veselov Equation and the Inverse Scattering Method, Part I: Analysis. *Physica D* 241 (2012), 1322–1335.
- [92] M. Lassas, J. Mueller, S. Siltanen, A. Stahel: The Novikov–Veselov Equation and the Inverse Scattering Method, Part II: Computation. *Nonlinearity* 25 (2012), 1799–1818.
- [93] K. Krupchyk, M. Lassas, G. Uhlmann: Inverse problems with partial data for a magnetic Schrödinger operator in an infinite slab and on a bounded domain. *Communications in Mathematical Physics* 312 (2012), 87–126.
- [94] V. Kolehmainen, M. Lassas, K. Niinimaki, S. Siltanen: Sparsity promoting Bayesian inversion. *Inverse Problems* 28 (2012) 025005 (28pp)

- [95] K. Krupchyk, M. Lassas, G. Uhlmann: Determining a first order perturbation of the biharmonic operator by partial boundary measurements. *Journal of Functional Analysis* 262 (2012), 1781–1801.
- [96] T. Helin, M. Lassas: Hierarchical models in statistical inverse problems and the Mumford–Shah functional. *Inverse Problems* 27 (2011), 015008, 32 pp.
- [97] K. Krupchyk, M. Lassas, S. Siltanen: Determining electrical and heat transfer parameters using coupled boundary measurements. *SIAM Journal on Mathematical Analysis* 43 (2011), 2096–2115.
- [98] M. Lassas, T. Zhou: Two dimensional invisibility cloaking for Helmholtz equation and non–local boundary conditions. *Mathematical Research Letters* 18 (2011), 473–488.
- [99] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Approximate quantum and acoustic cloaking. *Journal of Spectral Theory* 1 (2011), 27–80.
- [100] K. Krupchyk, M. Lassas, G. Uhlmann: Inverse problems for differential forms on Riemannian manifolds with boundary. *Communications in Partial Differential Equations* 36 (2011), 1475–1509.
- [101] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Cloaking a Sensor via Transformation Optics. *Physical Review E* 83 (2011), 016603.
- [102] J. Takalo, J. Timonen, J. Sampo, S. Siltanen, M. Lassas: Evaluation of the areal material distribution of paper from its optical transmission image. *European Physical Journal – Applied Physics* 55 (2011), 20701.
- [103] H. Isozaki, Y. Kurylev, M. Lassas: Forward and Inverse scattering on manifolds with asymptotically cylindrical ends. *Journal of Functional Analysis* 258 (2010), 2060–2118.
- [104] Y. Kurylev, M. Lassas, G. Uhlmann: Rigidity of broken geodesic flow and inverse problems. *American Journal of Mathematics* 132 (2010), 529–562.
- [105] V. Kolehmainen, M. Lassas, P. Ola: Calderon’s inverse problem with an imperfectly known boundary and reconstruction up to a conformal deformation. *SIAM Journal on Mathematical Analysis* 42 (2010), 1371–1381.
- [106] T. Helin, M. Lassas, S. Siltanen: Infinite Photography: new mathematical model for high–resolution images. *Journal of Mathematical Imaging and Vision* 36 (2010), 140–158.

- [107] N. Hyvonen, M. Kalke, M. Lassas, H. Setälä, S. Siltanen: Three-dimensional X-ray imaging using hybrid data collected with a digital panoramic device. *Inverse Problems and Imaging*, special issue on Medical Imaging, 4 (2010), 257–271.
- [108] K. Krupchyk, Y. Kurylev, M. Lassas: Reconstruction of Betti numbers of manifolds for anisotropic Maxwell and Dirac systems. *Communications in Analysis and Geometry* 18 (2010), 963–986.
- [109] M. Lassas, L. Oksanen: Inverse problem for wave equation with sources and observations on disjoint set. *Inverse Problems* 26 (2010), 085012, 19 pp.
- [110] K. Knudsen, M. Lassas, J. Mueller, S. Siltanen: Regularized D-bar method for the inverse conductivity problem. *Inverse Problems and Imaging* 3 (2009), 559–642.
- [111] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Cloaking Devices, Electromagnetic Wormholes and Singular Transformation Optics. *SIAM Review* 51 (2009), 3–33.
- [112] Y. Kurylev, M. Lassas: Inverse Problems and Index Formulae for Dirac Operators. *Advances in Mathematics* 221 (2009), 170–216.
- [113] M. Dahl, A. Kirpichnikova, M. Lassas: Focusing waves in unknown media by modified time reversal iteration. *SIAM Journal on Control and Optimization* 48 (2009), 839–858.
- [114] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Invisibility and Inverse Problems. *Bulletin of the American Mathematical Society* 46 (2009), 55–97.
- [115] M. Lassas, S. Saksman, S. Siltanen: Discretization invariant Bayesian inversion and Besov space priors. *Inverse Problems and Imaging* 3 (2009), 87–122.
- [116] S. Vännska, M. Lassas, S. Siltanen: Statistical X-ray tomography using empirical Besov priors *International Journal of Tomography and Statistics*. 30 (2009), 3–32.
- [117] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Approximate quantum cloaking and almost trapped states. *Physical Review Letters* 101 (2008), 220404.

- [118] V. Kolehmainen, M. Lassas, S. Siltanen: Limited data X-ray tomography using nonlinear evolution equations. *SIAM Journal on Scientific Computing* 30 (2008), 1413–1429.
- [119] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Electromagnetic wormholes via handlebody constructions. *Communications in Mathematical Physics* 281 (2008), 369–385.
- [120] M. Lassas, L. Päivärinta, E. Saksman: Inverse Schrodinger scattering for random potentials in plane. *Communications in Mathematical Physics* 279 (2008), 669–703.
- [121] V. Kolehmainen, M. Lassas, P. Ola: Electrical Impedance Tomography Problem with Inaccurately Known Boundary and Contact Impedances. *IEEE Transactions on Medical Imaging* 27 (2008), 1404–1414.
- [122] K. Krupchyk, Y. Kurylev, M. Lassas: Inverse spectral problems on a closed manifold. *Journal de Mathematique Pures et Appliquees* 90 (2008), 42–59.
- [123] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Isotropic transformation optics: approximate acoustic and quantum cloaking. *New Journal of Physics* 10 (2008) 115024 (28pp)
- [124] K. Bingham, Y. Kurylev, M. Lassas, S. Siltanen: Iterative time reversal control for inverse problems. *Inverse Problems and Imaging* 2 (2008), 63–81.
- [125] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Improvement of cylindrical cloaking with the SHS lining. *Optics Express* 2 (2008), 63–81.
- [126] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Full-wave invisibility of active devices at all frequencies. *Communications in Mathematical Physics* 275 (2007), 749–789.
- [127]\* A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Electromagnetic wormholes and virtual magnetic monopoles from metamaterials. *Physical Review Letters* 99, 183901 (2007). Article was chosen to be Editors’ suggestion in the Highlights of PRL.
- [128] K. Knudsen, J. Mueller, M. Lassas, S. Siltanen: D-bar method for Electrical Impedance Tomography with discontinuous coefficients. *SIAM Journal on Applied Mathematics* 67 (2007), 893–913.

- [129] V. Kolehmainen, A. Vanne, S., S. Jarvenpaa, J. Kaipio, M. Lassas, M. Kalke: Bayesian Inversion Method for 3-D Dental X-ray Imaging. *Elektrotechnik und Informationstechnik* 124 (2007), 248–253.
- [130] M. Lassas, J. Mueller, S. Siltanen: Mapping properties of the nonlinear Fourier transform in dimension two. *Communications in Partial Differential Equations* 32 (2007), 591–610.
- [131] V. Kolehmainen, M. Lassas, P. Ola: The inverse conductivity problem with an imperfectly known boundary in three dimensions. *SIAM Journal on Applied Mathematics* 67 (2007), 1440–1452.
- [132] A. Katsuda, Y. Kurylev, M. Lassas: Stability of boundary distance representation and reconstruction of Riemannian manifolds. *Inverse Problems and Imaging* 1 (2007), 135–157.
- [133] V. Kolehmainen, A. Vanne, S. Siltanen, S. Jarvenpaa, J. Kaipio, M. Lassas, M. Kalke: Parallelized Bayesian inversion for three dimensional dental x-ray imaging. *IEEE Transactions on Medical Imaging* 25 (2006), 218–228.
- [134] Y. Kurylev, M. Lassas, E. Somersalo: Maxwell’s equations with a polarization independent wave velocity: Direct and inverse problems. *Journal de Mathematique Pures et Appliquees* 86 (2006), no. 3, 237–270.
- [135] M. Rantala, S. Vanska, S. Jarvenpaa, M. Kalke, M. Lassas, J. Moberg, S. Siltanen: Wavelet-based reconstruction for limited angle X-ray tomography. *IEEE Transactions on Medical Imaging* 25 (2006), 210–217.
- [136] Y. Kurylev, M. Lassas: Multidimensional Gel’fand Inverse Boundary Spectral Problem: Uniqueness and Stability. *CUBO Mathematical Journal* 8 (2006), no. 1, 41–59.
- [137] V. Kolehmainen, M. Lassas, P. Ola: Inverse conductivity problem with an imperfectly known boundary. *SIAM Journal on Applied Mathematics* 21 (2005), 365–383.
- [138] Y. Kurylev, M. Lassas, R. Weder: Multidimensional Borg–Levinson theorem. *Inverse Problems* 21 (2005), 1685–1697.
- [139] K. Astala, M. Lassas, L. Päivärinta: Calderon’s inverse problem for anisotropic conductivity in the plane. *Communications in Partial Differential Equations* 30 (2005), no. 1–3, 207–224.

- [140]\* M. Anderson, A. Katsuda, Y. Kurylev, M. Lassas, M. Taylor: Boundary regularity for the Ricci equation. Geometric Convergence, and Gel'fand's Inverse Boundary Problem. *Inventiones Mathematicae* 158 (2004), 261–321.
- [141] M. Lassas, S. Siltanen: Can one use total variation prior for edge preserving Bayesian inversion? *Inverse Problems* 20 (2004), 1537–1564.
- [142] A. Katchalov, Y. Kurylev, M. Lassas, N. Mandache: Equivalence of time-domain inverse problems and boundary spectral problem. *Inverse problems* 20 (2004), 419–436.
- [143] A. Greenleaf, M. Lassas, G. Uhlmann: On nonuniqueness for Calderón's inverse problem. *Mathematical Research Letters* 10 (2003), 685–693.
- [144]\* A. Greenleaf, M. Lassas, G. Uhlmann: The Calderón problem for conormal potentials, I: Global uniqueness and reconstruction. *Communications on Pure and Applied Mathematics* 56 (2003), 328–352.
- [145] M. Lassas, M. Taylor, G. Uhlmann: The Dirichlet-to-Neumann map for complete Riemannian manifolds with boundary. *Communications in Analysis and Geometry* 11 (2003), 207–222.
- [146] M. Lassas, V. Sharafutdinov, G. Uhlmann: Semiglobal boundary rigidity for Riemannian metric. *Mathematische Annalen* 325 (2003), no. 4, 767–793.
- [147] S. Siltanen, V. Kolehmainen, S. Jarvenpaa, J. Kaipio, P. Koistinen, M. Lassas, J. Pirttila, E. Somersalo: Statistical inversion for X-ray tomography with few radiographs I: General theory. *Physics in Medicine and Biology* 48 (2003), 1437–1463.
- [148] V. Kolehmainen, S. Siltanen, S. Jarvenpaa, J. Kaipio, P. Koistinen, M. Lassas, J. Pirttila, E. Somersalo: Statistical inversion for X-ray tomography with few radiographs II: Applications to dental radiology. *Physics in Medicine and Biology* 48 (2003), 1465–1490.
- [149] M. Anderson, A. Katsuda, Y. Kurylev, M. Lassas, M. Taylor: Metric tensor estimates, geometric convergence, and inverse boundary problems. *Electronic Research Announcements of American Mathematical Society* 9 (2003), 69–79.
- [150] Y. Kurylev, M. Lassas: Hyperbolic inverse boundary-value problem and time-continuation of the non-stationary Dirichlet-to-Neumann map. *Proceedings of the Royal Society of Edinburgh. Section A* 132 (2002), no. 4, 931–949

- [151] M. Lassas, M. Mataich, E. Somersalo, S. Siltanen: Wind velocity observation with a CW Doppler radar. *IEEE Transactions on Geoscience and Remote Sensing* 40 (2002), 2427–2438.
- [152] M. Lassas, G. Uhlmann: Determining Riemannian manifold from boundary measurements. *Annales Scientifiques de l'École Normale Supérieure* 34 (2001), no. 5, 771–787.
- [153] M. Lassas, J. Liukkonen, E. Somersalo: Complex Riemannian metric and absorbing boundary condition. *Journal de Mathématiques Pures et Appliquées* (9) 80 (2001), no. 7, 739–768.
- [154] M. Lassas, E. Somersalo: Analysis of the PML equations in general convex geometry. *Proceedings of the Royal Society of Edinburgh. Section A* 131 (2001), no. 5, 1183–1207.
- [155] M. Cheney, D. Isaacson, M. Lassas: Optimal acoustic measurements. *SIAM Journal on Applied Mathematics* 61 (2001), no. 5, 1628–1647.
- [156] Y. Kurylev, M. Lassas: Gelf'and inverse problem for a quadratic operator pencil. *Journal of Functional Analysis* 176 (2000), 247–263.
- [157] M. Lassas: The inverse boundary spectral problem for a hyperbolic equation with first order perturbation. *Applicable Analysis* 70 (1999), 219–231.
- [158] M. Lassas: Inverse boundary spectral problem for non-selfadjoint Maxwell's equations with incomplete data. *Communications in Partial Differential Equations* 23 (1998), 629–648.
- [159] M. Lassas: The essential spectrum of non-selfadjoint Maxwell operator in a bounded domain. *Journal of Mathematical Analysis and Applications* 224 (1998), 201–217.
- [160] M. Lassas, M. Cheney, G. Uhlmann: Uniqueness for a wave propagation inverse problem in a half space. *Inverse Problems* 14 (1998), 679–684.
- [161] M. Lassas, E. Somersalo: On the existence and the convergence of the solution of the PML equations. *Computing* 60 (1998), 229–241.
- [162] Y. Kurylev, M. Lassas: Abel–Lidskii basis in non-selfadjoint inverse boundary problem. *Zap. Nauchn. semin. POMI*, 250 (1998), 161–191. Translation in *Journal of Mathematical Sciences (New York)* 102 (2000), no. 4, 4237–4257.

- [163] M. Lassas: Impedance imaging problem as a low frequency limit. *Inverse Problems* 13 (1997), 1503–1518.
- [164] Y. Kurylev, M. Lassas: The multidimensional Gel'fand inverse problem for non-selfadjoint operators. *Inverse Problems* 13 (1997), 1495–1501.

**A.2. Invited papers in edited collections and refereed conference proceedings:**

- [165] H. Isozaki, M. Lassas, J. Lu: An inverse problem for the Schrodinger equation on graphs. To appear in RIMS Kokyuroku, Proceedings of Inverse Problems 2023, Kyoto.
- [166] T. Furuya, M. Puthawala, M. Lassas, M. de Hoop: Globally injective and bijective neural operators. *Advances in Neural Information Processing Systems* 36 (NeurIPS) 2023
- [167] M. Puthawala, M. Lassas, I. Dokmanic, M. de Hoop: Universal Joint Approximation of Manifolds and Densities by Simple Injective Flows. *Proceedings of the 39th International Conference on Machine Learning (ICML)*, PMLR 162:17959-17983, (2022).
- [168] G. Alberti, E. De Vito, M. Lassas, L. Ratti, M. Santacesaria: Learning the optimal Tikhonov regularizer for inverse problems. *Advances in Neural Information Processing Systems* 34 (NeurIPS 2021).
- [169] M. Lassas: Inverse problems for linear and non-linear hyperbolic equations. *Proceedings of the International Congress of Mathematicians ICM 2018*, Rio de Janeiro, Brazil. 2018, Vol III, pp. 3739–3760.
- [170] T. Bubba, M. Marz, Z. Purisha, M.Lassas, S. Siltanen: Shearlet–based regularization in sparse dynamic tomography. *Wavelets and Sparsity XVII, Proceedings of SPIE* Vol. 10394 (2017), 103940Y.
- [171] M. Lassas, T. Saksala: Distance difference representations of subsets of complete Riemannian manifolds, *Spectral and Scattering Theory and Related Topics* (Ed. T. Kakehi), *RIMS Kokyuroku* 2023 (2017), pp. 50–68.
- [172] V. Lyubopytov, T. von Lerber, M. Lassas, M. Malekizandi, A. Chipouline, F. Kueppers: Amplitude Noise Suppression and Orthogonal Multiplexing Using Injection–Locked Single–Mode VCSEL. *Optical Fiber Communication Conference 2017*, Optical Society of America, paper Tu3C.3.



- [173] A. Chipouline, V. Lyubopytov, M. Malekizandi, T. von Lerber, M. Lassas, F. Kueppers: Injection-locked single-mode VCSEL for orthogonal multiplexing and amplitude noise suppression. *Lasers and Electro-Optics Europe & European Quantum Electronics Conference, IEEE, Conference Publications*, 2017, 8086943.
- [174] H. Isozaki, Y. Kurylev, M. Lassas: Inverse scattering on multi-dimensional asymptotically hyperbolic orbifolds. *Spectral Theory and Partial Differential Equations* (Eds. G. Eskin, L. Friedlander, J. Garnett). *Contemporary Mathematics* 640 (2015), pp. 71–86.
- [175] G. Milton, M. Lassas: Invisibility cloaking. *Encyclopedia of Applied and Computational Mathematics*, B. Engquist (Ed.), 2015, Springer Verlag, pp. 751–758.
- [176] M. Lassas, L. Oksanen: Local reconstruction of a Riemannian manifold from a restriction of the hyperbolic Dirichlet-to-Neumann operator. In *Inverse Problems and Applications*, Eds. P. Stefanov, A. Vasy, M. Zworski, *Contemporary Mathematics* 615 (2014), 223–233.
- [177] J. Sampo, J. Takalo, S. Siltanen, M. Lassas, J. Timonen, and A. Miettinen: Curvelet-based method for orientation estimation of particles. *Proc. SPIE. 8858 (2014), Wavelets and Sparsity XV. 885825.*
- [178] M. Lassas, T. Zhou, Invisibility Cloaking: Singular partial differential operators and Pseudo-differential Boundary Conditions, *Proceedings of Fourier Analysis and Pseudo-Differential Operators, the satellite conference of the 6th EMS conference*, Birkhauser, 2014, 21 pp.
- [179] H. Isozaki, Y. Kurylev, M. Lassas: Recent progress of inverse scattering theory on non-compact manifolds. In *Inverse Problems and Applications*, Eds. P. Stefanov, A. Vasy, M. Zworski, *Contemporary Mathematics* 615 (2014), 143–165.
- [180] J. Takalo, J. Timonen, J. Sampo, M. Rantala, S. Siltanen, M. Lassas: Towards a "fingerprint" of paper network: separating forgeries from genuine by the properties of fibre structure Edited by D. Burgess, et al. *Optics and Photonics for counterterrorism, crime fighting and defence. Proceedings of SPIE 9253 (2014), 92530A*
- [181] E. Niemi, M. Lassas, S. Siltanen: Dynamic X-ray tomography with multiple sources. *Proceedings of 8th Int'l Symposium on Image and Signal Processing and Analysis*. 2013. 4 pp.

- [182] M. Lassas, S. Siltanen: Foreword: inverse problems in biology. *Journal of Mathematical Biology* 67 (2013), 1.
- [183] K. Astala, M. Lassas, L. Päivärinta: The Calderon's Inverse problem – Imaging and Invisibility. In the book *Inside out II* (Ed. Gunther Uhlmann), Cambridge University press, 2013, pp. 1–54.
- [184] M. Lassas, M. Salo, G. Uhlmann: Wave imaging. *Handbook of Mathematical Methods in Imaging*, O. Scherzer (Ed.), Springer-Verlag, 2011, 876–909.
- [185] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Transformation Optics Based Cloaked Sensors. Proceedings of *Metamaterials'2012: The 6th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*. Eds. S. Tretyakov, A. Schuchinsky, B. Bilotti, 2012, Metamorphose VI, 240–242.
- [186] M. Rantala, M. Lassas, J. Sampo, J. Takalo, J. Timonen, S. Siltanen: Modelling and analysing oriented fibrous structures. Edited by E. Vagenas and D. Vlachos. 2nd International conference on mathematical modelling in physical Sciences 2013. *Journal of Physics Conference Series* 290 (2014), UNSP 012089.
- [187] M. Lassas, L. Oksanen: The inverse problem for the wave equation and two acquisition geometries. *Proceedings of Workshop on Inverse Problems, Data and Mathematical Statistics and Ecology* (Eds: Kozlov et al), 2011, Linkoping University, pp. 43–50.
- [188] T. Helin, M. Lassas: On the stability of MAP estimation with hierarchical prior distributions. *8th International Conference of Numerical Analysis and Applied Mathematics*, AIP Conf. Proc. 1281, 1807 (2010).
- [189] T. Helin, M. Lassas: Bayesian signal restoration and Mumford-Shah functional. *Proc. Appl. Math. Mech.* 7 (2008), 2080013–2080014. Special issue: Sixth International Congress on Industrial Applied Mathematics (ICIAM07).
- [190] K. Knudsen, M. Lassas, J. Mueller, S. Siltanen: Reconstructions of Piecewise Constant Conductivities by the D-bar Method for Electrical Impedance Tomography. *Journal of Physics: Conference Series* 124 (2008), 012029 (9pp). Proceedings of AIP 2007 First International Congress of IPIA.
- [191] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Inverse problems, invisibility, and artificial wormholes. *Journal of Physics: Conference Series*.

- 124 (2008), 012005 (23pp) Proceedings of AIP 2007 First International Congress of IPIA.
- [192] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Mathematics of invisibility. *Journes quations aux drives partielles*. 2007, 1–11.
- [193] H. Isozaki, Y. Kurylev, M. Lassas: Inverse Scattering for Waveguides. *Seminaire de Theorie Spectrale et Geometrie*, 25 (2006–2007), 71–84.
- [194] V. Kolehmainen, M. Lassas, P. Ola: Calderón’s inverse problem with an imperfectly known boundary in two and three dimensions, proceedings of Inverse Problems in Applied Sciences, Hokkaido 2006. *Journal of Physics: Conference Series 73* (2007), 012002, 10 pp., Institute of Physics Electronic Journals.
- [195] V. Kolehmainen, M. Lassas, P. Ola: Electrical impedance tomography problem with inaccurately known boundary and contact impedances. *Biomedical Imaging: Nano to Macro, 2006. 3rd IEEE International Symposium* (2006), pp. 1124–1127.
- [196] Y. Kurylev, M. Lassas: A dynamical inverse problem for Dirac equation. *Seminar Notes of Mathematical Sciences* 8 (2005), special issue on Topics related with mathematical physics and their analytical methods (Ed. Hideo Soga), 35–44, Ibaraki University, Japan.
- [197] L. Päivärinta, M. Lassas, J. Shen: Inverse problems and imaging – two fields with shared goals and methods. *Inverse Problems and Imaging* 1 (2007), p. I–III.
- [198] M. Lassas, L. Päivärinta, E. Saksman: Inverse problem for a random potential. *Contemporary Mathematics*. 362 (2004) (Partial Differential Equations, Inverse Problems, and Non–Linear Analysis at Santiago de Chile 2003), 277–288, Amer. Math. Soc.
- [199] Y. Kurylev, M. Lassas, E. Somersalo: Focusing waves in electromagnetic inverse problems. Proceedings of Inverse problems and spectral theory, *Contemporary Mathematics* 348 (2004), 11–22.
- [200] A. Katchalov, M. Lassas: Gaussian beams and inverse boundary spectral problems. *New analytic and geometric methods in inverse problems* (Ed. K. Bingham, Y. Kurylev, and E. Somersalo), Springer-Verlag, 2003, 127–151.

- [201] A. Katsuda, Y. Kurylev, M. Lassas: Stability and Reconstruction in Gel'fand Inverse Boundary Spectral Problem. *New analytic and geometric methods in inverse problems* (Ed. K. Bingham, Y. Kurylev, and E. Somersalo), Springer-Verlag, 2003, 309–320.
- [202] Y. Kurylev, M. Lassas, E. Somersalo: Reconstruction of a manifold from electromagnetic boundary measurements. Proceedings of INdAM Workshop on Inverse Problems and Applications, *Contemporary Mathematics* 333 (2003), 147–162.
- [203] A. Katchalov, Y. Kurylev, M. Lassas: Energy measurements and equivalence of boundary data for inverse problems on non-compact manifolds. Proceedings of Geometric Methods in Inverse Problems and PDE Control. Ed. C. Croke, I. Lasiecka, G. Uhlmann, M. Vogelius, *IMA Volumes on Mathematics and Applications* 137, Springer-Verlag, 2003, 183–214.
- [204] A. Greenleaf, M. Lassas, G. Uhlmann: Anisotropic conductivities that cannot be detected by EIT, Special Issue on Electrical Impedance Tomography, *Physiological Measurement* 24 (2003), no. 2, 413–420.
- [205] M. Cheney, D. Isaacson, M. Lassas: Optimal Acoustic Measurements, *Ultrawideband Short-Pulse Electromagnetics* 5. Ed. P.D. Smith and S.R. Cloude, Springer-Verlag, 2002, 599–603.

**B. Non-refereed conference proceedings:**

- [206] Y. Kurylev, M. Lassas: Hyperbolic inverse problem with data on a part of the boundary. *Differential equations and mathematical physics* (Birmingham, AL, 1999) Ed. R. Weikard, G. Weinstein *Studies in Advanced Mathematics* 16 (2000), 259–272, Amer. Math. Soc.

**C/G. Scientific monographs and monograph dissertation:**

- [207] A. Katchalov, Y. Kurylev, M. Lassas: *Inverse Boundary Spectral Problems*, Monographs and Surveys in Pure and Applied Mathematics 123, Chapman Hall/CRC-press, 2001, xi+290 pp.
- [208] M. Lassas: *Non-selfadjoint inverse spectral problems and their applications to random bodies*. *Academiae Scientiarum Fennicae Annales. Mathematica. Dissertationes*. 103 (1995), 108 pp.

**H. Patents:**

- [209] US patent US11163210B2 - Arithmetic-logical unit with synchronized laser(s). T. von Lerber, M. Lassas, F. Kueppers, K. Hofmann. November 2, 2021.
- [210] US Patent US20130096425A1 - System and method for data reconstruction in soft-field tomography. K. Uutela, M. Lassas, P. Ola, S. Siltanen, V. Kolehmainen, A. Ross. August 24, 2017. Also published as CN 103099616 B.
- [211] US Patent US-7269241-B2 - Method and arrangement for medical x-ray imaging and reconstruction from sparse data. S. Siltanen, E. Somersalo, V. Kolehmainen, M. Lassas, J. Kaipio. September 11, 2007. Also published as WO2004019782, AU2003255550, FI116750B, DE10393159T.
- [212] US Patent US20060146983A1 - Method and arrangement for multiresolutive reconstruction for medical x-ray imaging. M. Kalke, S. Siltanen, S. Vanska, M. Lassas, M. Rantala. May 8, 2007. Also published as EP1677256, JP2006187608.
- [213] US Patent US7274766B2 - Method and arrangement for three-dimensional medical x-ray imaging J. Kaipio, S. Siltanen, M. Kalke, V. Kolehmainen, M. Lassas. Sep. 25, 2007. Also published as EP1677255, JP2006187607.

**Research reports, arXiv preprints:**

- [214] C. Fefferman, S. Ivanov, M. Lassas, H. Narayanan: Fitting a manifold to data in the presence of large noise. Preprint arXiv:2312.10598.
- [215] F. Cakoni, N. Hovsepyan, M. Lassas, M. Vogelius: On the lack of external response of a nonlinear medium in the second-harmonic generation process. Preprint arXiv:2401.00998
- [216] A. Kratsios, T. Furuya, J. Lara Benitez, M. Lassas, M. de Hoop: Mixture of Experts Soften the Curse of Dimensionality in Operator Learning. Preprint arXiv:2404.09101.
- [217] Y. Kurylev, M. Lassas, J. Lu, T. Yamaguchi: Inverse Spectral Problems for Collapsing Manifolds I: Uniqueness and Stability. Preprint arXiv:1209.5875
- [218] M. Lassas, J. Lu, T. Yamaguchi: Inverse Spectral Problems for Collapsing Manifolds II: Quantitative Stability of Reconstruction for Orbifolds. Preprint arXiv:2404.16448.
- [219] F. Schneider, D.-L. Duong, M. Lassas, M. de Hoop, T. Helin: Reducing the cost of posterior sampling in linear inverse problems via task-dependent score learning. Preprint arXiv:2405.15643.

- [220] G. Covi, M. Lassas: An inverse problem for fractional random walks on finite graphs. Preprint arXiv:2408.05072.
- [221] M. de Hoop, J. Ilmavirta, M. Lassas, A. Varilly-Alvarado: Reconstruction of generic anisotropic stiffness tensors from partial data around one polarization. Preprint arXiv:2307.03312 .
- [222] J. Ilmavirta, M. Lassas, J. Lu, L. Oksanen, L. Ylinen: Quantum computing algorithms for inverse problems on graphs and an NP-complete inverse problem. Preprint arXiv:2306.05253.
- [223] A. Kratsios, C. Liu, M. Lassas, M. de Hoop, I. Dokmanic: An Approximation Theory for Metric Space-Valued Functions With A View Towards Deep Learning. Preprint arXiv:2304.12231.
- [224] M. Lassas, M. Nursultanov, L. Oksanen, L. Ylinen Disjoint data inverse problem on manifolds with quantum chaos bounds. Preprint arXiv:2303.13342.
- [225] M. Lassas, L. Oksanen, M. Salo, A. Tetlow: Inverse problems for non-linear Schrödinger equations with time-dependent coefficients. Preprint arXiv:2201.03699
- [226] M. de Hoop, J. Ilmavirta, M. Lassas Reconstruction along a geodesic from sphere data in Finsler geometry and anisotropic elasticity. Preprint arXiv:2102.10383
- [227] M. Puthawala, M. Lassas, I. Dokmanic, P. Pankka, M. de Hoop: Deep Invertible Approximation of Topologically Rich Maps between Manifolds. Preprint arXiv:2210.00577.

**Other works:**

- [228] M. Lassas: From a coffee cup to surgery – studying applications of mathematics (In Finnish), *Arkhimedes* 5 (2004), 20–24.
- [229] M. Lassas, R. Lehtinen, J. Saramäki and S. Siltanen (eds.): *Who needs mathematics?* (In Finnish), Booklet popularizing mathematics for high-school students, three printings 1997–1999, each 60 000 copies, 52 pp.
- [230] A. Greenleaf, Y. Kurylev, M. Lassas, G. Uhlmann: Invisibility. In *Current Events Bulletin of American Mathematical Society*, January 8, 2008 (San Diego, California), 22 pp.