

A Peer-reviewed scientific articles

1. Karvonen E, Lassas M, Pankka P and Siltanen S **2024**, *TILT: Topological interface recovery in limited-angle tomography*. SIAM Journal of Imaging Sciences 17(3): pp. 1761–1794.
2. Latva-Äijö SM, Zanetti F, Honkanen AP, Huotari S, Lassas M and Siltanen S **2024**, *Inner product regularized multi-energy X-ray tomography for material decomposition*. Applied Mathematics for Modern Challenges 2(1): pp. 1–16
3. Juvonen M, Siltanen S and Moura F **2023**, *Helsinki deblur challenge 2021: Description of photographic data* Inverse Problems and Imaging 17(5): pp. 1008–1023,
4. Kekkonen H, Lassas M, Saksman E and Siltanen S **2023**, *Random tree Besov priors—Towards fractal imaging*. Inverse Problems and Imaging 17(2): pp. 507–531
5. Lahtinen J, Moura F, Samavaki M, Siltanen S and Pursiainen S **2023**, *In silico study of the effects of cerebral circulation on source localization using a dynamical anatomical atlas of the human head*. Journal of Neural Engineering, 20 026005.
6. Meaney A, Moura F, Juvonen M and Siltanen S **2023**, *Helsinki Tomography Challenge 2022: Description of the Competition and Dataset*. Applied Mathematics for Modern Challenges 1(2): pp. 170–201.
7. Rautio S, Murthy R, Bubba TA, Lassas M and Siltanen S **2023**, *Learning a microlocal prior for limited-angle tomography*. IMA Journal of Applied Mathematics 88(6): pp. 8887-916,
8. Virta R, Bubba TA, Moring M, Siltanen S, Honkamaa T and Dendooven P **2023**, *In-air and in-water performance comparison of Passive Gamma Emission Tomography with activated Co-60 rods*, Scientific reports 13:16189.
9. Gondzio J, Lassas M, Latva-Äijö S-M, Siltanen S and Zanetti F **2022**, *Material-separating regularizer for multi-energy X-ray tomography*. Inverse Problems 38, 025013.
10. Virta R, Bubba TA, Moring M, Siltanen S, Honkamaa T and Dendooven P **2022**, *Improved Passive Gamma Emission Tomography image quality in the central region of spent nuclear fuel*. Scientific Reports, 12(1), 12473.
11. Agnelli JP, Kolehmainen V, Lassas M, Ola P and Siltanen S **2021**, *Simultaneous reconstruction of conductivity, boundary shape and contact impedances in electrical impedance tomography*. SIAM Journal on Imaging Sciences 14(4), pp. 1407-1438.
12. Bubba TA, Galinier M, Lassas M, Prato M, Ratti L and Siltanen S **2021**, *Deep neural networks for inverse problems with pseudodifferential operators: An application to limited-angle tomography*. SIAM Journal on Imaging Sciences 14(2), pp. 470–505.

13. Bubba TA, Heikkilä T and Siltanen S **2021**, 4D Dual-Tree Complex Wavelets for Time-Dependent Data. In 2021 21st International Conference on Computational Science and Its Applications (ICCSA) (pp. 146-156). IEEE.
14. Cueva E, Meaney A, Siltanen S and Ehrhardt M J **2021**, *Synergistic Multi-spectral CT Reconstruction with Directional Total Variation*. Phil. Trans. R. Soc. A. 379, 20200198
15. Ketola JHJ, Heino H, Juntunen MAK, Nieminen MT, Siltanen S and Inkinen SI **2021**, *Generative adversarial networks improve interior computed tomography angiography reconstruction*. Biomedical Physics & Engineering Express 7(6), pp. 065041.
16. Moura F S, Beraldo R G, Ferreira L A and Siltanen S **2021**, *Anatomical atlas of the upper part of the human head for electroencephalography and bioimpedance applications*. Physiological measurement 42, 105015.
17. Virta R, Backholm R, Bubba TA, Helin T, Kähkönen T, Leppänen J, Moring M, Siltanen S, Dendooven P and Honkamaa T **2021**, *Verifying spent nuclear fuel with Passive Gamma Emission Tomography prior to disposal in a geological repository in Finland*. In INMM & ESARDA Joint Virtual Annual Meeting.
18. Agnelli J P, Çöl A, Lassas M, Murthy R, Santacesaria M and Siltanen S **2020**, *Classification of stroke using neural networks in Electrical Impedance Tomography*. Inverse Problems 36 115008.
19. Backholm R, Bubba T A, Bélanger-Champagne C, Helin T, Dendooven P and Siltanen S **2020**, *Simultaneous Reconstruction of Emission and Attenuation in Passive Gamma Emission Tomography of Spent Nuclear Fuel*. Inverse Problems and Imaging, 14(2), pp. 317–337.
20. Bubba T A, Heikkilä T, Help H, Huotari S, Salmon Y and Siltanen S **2020**, *Sparse dynamic tomography. A shearlet-based approach for iodine perfusion in plant stems*. Inverse Problems 36, 094002.
21. Lytle G, Perry P and Siltanen S **2020**, *Nachman's reconstruction for the Calderón problem with discontinuous conductivities*. Inverse Problems 36 035018
22. Mueller J L and Siltanen S **2020**, *The D-bar method for electrical impedance tomography - demystified*. Inverse Problems 36(9), 093001.
23. Siltanen S and Ide T **2020**, *Electrical impedance tomography, enclosure method and machine learning*. 2020 IEEE 30th International Workshop on Machine Learning for Signal Processing (MLSP). IEEE, 2020. pp. 1-6.
24. Toivanen J, Meaney A, Siltanen S and Kolehmainen V **2020**, *Joint Reconstruction in Low Dose Multi-Energy CT*. Inverse Problems and Imaging 14(1), pp. 607–629
25. Virta R, Backholm R, Bubba T A, Dendooven P, Helin T, Honkamaa T, Moring M and Siltanen S **2020**, *Reconstructing Activity and Attenuation of a Spent Fuel Assembly from Passive Gamma Emission Tomography (PGET) Measurements*, 2020 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC), pp. 1–3.

26. Bubba T, Kutyniok G, Lassas M, Maerz M, Samek W, Siltanen S and Srinivasan **2019**, *Learning The Invisible: A Hybrid Deep Learning-Shearlet Framework for Limited Angle Computed Tomography*. Inverse Problems 35, 064002.
27. Hakkarainen J, Purisha Z, Solonen A and Siltanen S **2019**, *Undersampled dynamic X-ray tomography with dimension reduction Kalman Filter*. IEEE Transactions on Computational Imaging 5(3), pp. 492–501
28. Hauptmann A, Ikehata M, Itou H and Siltanen S **2019**, *Revealing cracks inside conductive bodies by electric surface measurements*. Inverse Problems 35, 025004
29. Purisha Z, Karhula SS, Ketola J, Rimpeläinen J, Nieminen MT, Saarakkala S, Kröger H and Siltanen S **2019**, *An Automatic Regularization Method: An Application for 3-D X-Ray Micro-CT Reconstruction Using Sparse Data*. IEEE Transactions on Medical Imaging 38(2), pp. 417–425
30. Greenleaf A, Lassas M, Santacesaria M, Siltanen S and Uhlmann G **2018**, *Propagation and recovery of singularities in the inverse conductivity problem*. Analysis and PDE 11(8), pp. 1901–1943.
31. Ketola J H, Karhula S S, Finnilä M A J, Korhonen R K, Herzog W, Siltanen S, Nieminen M T and Saarakkala S **2018**, *Iterative and discrete reconstruction in the evaluation of the rabbit model of osteoarthritis*. Scientific Reports 8:12051.
32. Purisha Z, Rimpeläinen J, Bubba T and Siltanen S **2018**, *Controlled Wavelet Domain Sparsity for X-ray Tomography*. Measurement Science and Technology 29(1), 014002.
33. Bleyer I, Lybeck L, Auvinen H, Airaksinen M, Alku P and Siltanen S **2017**, *Alternating Minimisation for Glottal Inverse Filtering*. Inverse Problems 33, 065005.
34. Bubba T A, März M, Purisha Z, Lassas M and Siltanen S **2017** Shearlet-based regularization in sparse dynamic tomography. Wavelets and Sparsity XVII, Proc. of SPIE Vol. 10394, 103940Y
35. Burger M, Dirks H, Frerking L, Hauptmann A, Helin T and Siltanen S **2017**, *A Variational Reconstruction Method for Undersampled Dynamic X-ray Tomography based on Physical Motion Models*. Inverse Problems 33, 124008.
36. Haario H, Kallonen A, Laine M, Niemi E, Purisha Z and Siltanen S **2017**, *Shape recovery for sparse-data tomography*. Mathematical Methods in the Applied Sciences.
37. Hauptmann A, Santacesaria M and Siltanen S **2017**, *Direct inversion from partial-boundary data in electrical impedance tomography*. Inverse Problems **33**, 025009.
38. Hamilton S, Reyes J M, Siltanen S and Zhang X **2016**, *A Hybrid Segmentation and D-bar Method for Electrical Impedance Tomography*. SIAM Journal on Imaging Sciences **9**(2), pp. 770–793.
39. de Hoop M, Lassas M, Santacesaria M, Siltanen S and Tamminen J P **2016**, *Positive-energy D-bar method for acoustic tomography: a computational study*. Inverse Problems **32** 025003.

40. Kekkonen H, Lassas M and Siltanen S **2016**, *Posterior consistency and convergence rates for Bayesian inversion with hypoelliptic operators*. Inverse Problems **32** 085005.
41. Liu D, Kolehmainen V, Siltanen S, Laukkanen A-M and Seppänen **2016**, *Non-linear difference imaging approach to three-dimensional electrical impedance tomography in the presence of geometric modeling errors*. IEEE Transactions on Biomedical Engineering **63**(9), pp. 1956–1965.
42. Niinimäki K, Lassas M, Hämäläinen K, Kallonen A, Kolehmainen V, Niemi E and Siltanen S **2016**, *Multi-resolution parameter choice method for total variation regularized tomography*. SIAM Journal on Imaging Sciences **9**(3), pp. 938–974.
43. Purisha, Z and Siltanen, S **2016** Tomographic Inversion Using NURBS and MCMC. In Forging Connections between Computational Mathematics and Computational Geometry, Springer Proceedings in Mathematics & Statistics 124, pp. 153–166.
44. Tamminen J P, Tarvainen T and Siltanen S **2016**, *The D-Bar Method for Diffuse Optical Tomography: a Computational Study*. Experimental Mathematics.
45. Croke R, Mueller J L, Music M, Perry P, Siltanen S and Stahel A **2015**, *The Novikov-Veselov Equation: Theory and Computation*. Contemporary Mathematics **635**, pp. 25–70.
46. Gaitan P, Isozaki H, Poisson O, Siltanen S and Tamminen J P **2015**, *Inverse Problems for Time-Dependent Singular Heat Conductivities: Multi-Dimensional Case*. Communications in Partial Differential Equations **40**(5), pp. 837–877.
47. Liu D, Kolehmainen V, Siltanen S and Seppänen A **2015**, *A non-linear approach to difference imaging in EIT; assessment of the robustness in the presence of modelling errors*. Inverse Problems **31**, 035012.
48. Liu D, Kolehmainen V, Siltanen S, Laukkanen A-M and Seppänen A **2015**, *Estimation of conductivity changes in a region of interest with electrical impedance tomography*. Inverse Problems and Imaging **9**(1), pp. 211–229.
49. Niemi E, Lassas M, Kallonen A, Harhanen L, Hämäläinen K and Siltanen S **2015**, *Dynamic multi-source X-ray tomography using a spacetime level set method*. Journal of Computational Physics **291**, pp. 218–237.
50. Astala K, Päivärinta L, Reyes J M and Siltanen S **2014**, *Nonlinear Fourier analysis for discontinuous conductivities: computational results*. Journal of Computational Physics **276**, 74–91.
51. Auvinen H, Raitio T, Siltanen S, Story B and Alku P **2014**, *Automatic Glottal Inverse Filtering with Markov Chain Monte Carlo Method*. Computer Speech and Language **28**(5), pp. 1139–1155.
52. Hämäläinen K, Harhanen L, Hauptmann A, Kallonen A, Niemi E and Siltanen S **2014**, *Total variation regularization for X-ray tomography*. International journal for tomography and simulation **25**(1), pp. 1–25.
53. Hamilton S, Hauptmann A and Siltanen S **2014**, *A Data-Driven Edge-Preserving D-bar Method for Electrical Impedance Tomography*. Inverse Problems and Imaging **8**(4), pp. 1053–1072

54. Hamilton S, Lassas M and Siltanen S **2014**, *A Direct Reconstruction Method for Anisotropic Electrical Impedance Tomography*. *Inverse Problems* **30**(7).
55. Hamilton S and Siltanen S **2014**, *Nonlinear Inversion from Partial EIT Data: Computational Experiments*. *Contemporary Mathematics* **615**, pp. 105–129.
56. Kalke M and Siltanen S **2014**, *Sinogram interpolation method for sparse-angle tomography*. *Applied Mathematics* **5**(3), pp. 423–441.
57. Kekkonen H, Lassas M and Siltanen S **2014**, *Analysis of regularized inversion of data corrupted by white Gaussian noise*. *Inverse Problems* **30**(4), 045009.
58. Määttä J, Siltanen S and Roos T **2014**, *A Fixed-Point Image Denoising Algorithm with Automatic Window Selection*. 2014 5th European Workshop on Visual Information Processing (EUVIP). IEEE, 2014.
59. Purisha Z and Siltanen S **2014**, *Tomographic Reconstruction of Homogeneous 2D Geometric Models with Unknown Attenuation*. Proceedings of IFIP TC 7 / 2013 System Modeling and Optimization, Klagenfurt, Austria, September 8-13, 2013. IFIP Advances in Information and Communication Technology 443, pp. 247-256
60. Rantala M, Lassas M, Sampo J, Takalo J, Timonen J and Siltanen S **2014**, *Modelling and analysing oriented fibrous structures*. Proceedings of 2nd International Conference on Mathematical Modeling in Physical Sciences 2013. *Journal of Physics: Conference Series* 490 (2014) 012089
61. Sampo J, Takalo J, Siltanen S, Miettinen A, Lassas M and Timonen J **2014**, *Curvelet-based method for orientation estimation of particles from optical images*. *Opt. Eng.* **53** (3), 033109.
62. Siltanen S and Tamminen J P **2014**, *Reconstructing conductivities with boundary corrected D-bar method*. *Journal of Inverse and Ill-posed Problems* **22**(6), pp. 847–870.
63. Takalo J, Timonen J, Sampo J, Marjanen K, Siltanen S and Lassas M **2014**, *Evaluation of the orientation distribution of fibers from reflection images of fibrous samples*. *The European Physical Journal—Applied Physics* **65**(1), 10703.
64. Takalo J, Timonen J, Sampo J, Rantala M, Siltanen S and Lassas M **2014**, *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**, pp. 252–258.
65. Kalke M and Siltanen S **2013**, *Adaptive frequency-domain regularization for sparse-data tomography*. *Inverse Problems in Science and Engineering* **21**(7), pp 1099–1124.
66. Gaitan P, Isozaki H, Poisson O, Siltanen S and Tamminen J P **2013**, *Inverse problems for time-dependent singular heat conductivities - one-dimensional case*. *SIAM Journal of Mathematical Analysis* **45**(3), pp. 1675–1690.
67. Hämäläinen K, Kallonen A, Kolehmainen V, Lassas M, Niinimäki K and Siltanen S **2013**, *Sparse tomography*. *SIAM Journal of Scientific Computing* **35**(3), pp. B644-B665.

68. Kolehmainen V, Lassas M, Ola P and Siltanen S **2013**, *Recovering boundary shape and conductivity in electrical impedance tomography*. Inverse Problems and Imaging **7**(1), pp. 217–242.
69. Music M, Perry P and Siltanen S **2013**, *Exceptional circles of radial potentials*. Inverse Problems **29**(4) 045004.
70. Niemi E, Lassas M and Siltanen S **2013**, *Dynamic X-ray tomography with multiple sources*. 2013 8th International Symposium on Image and Signal Processing and Analysis (ISPA). IEEE, 2013.
71. Auvinen H, Raitio T, Siltanen S and Alku P **2012**, *Utilizing Markov Chain Monte Carlo (MCMC) Method for Improved Glottal Inverse Filtering*. Thirteenth Annual Conference of the International Speech Communication Association. 2012.
72. Gaitan P, Isozaki H, Poisson O, Siltanen S and Tamminen J P **2012**, *Probing for inclusions in heat conductive bodies*. Inverse Problems and Imaging **6**(3), pp. 423–446.
73. Ikehata M, Niemi E and Siltanen S **2012**, *Inverse obstacle scattering with limited-aperture data*. Inverse Problems and Imaging **6**(1), pp. 77–94.
74. Kolehmainen V, Lassas M, Niinimäki K and Siltanen S **2012**, *Sparsity-promoting Bayesian inversion*. Inverse Problems **28**, 02005.
75. Lassas M, Mueller J L, Siltanen S and Stahel A **2012**, *The Novikov-Veselov Equation and the Inverse Scattering Method, Part I: Analysis*. Physica D **241**, pp. 1322–1335.
76. Lassas M, Mueller J L, Siltanen S and Stahel A **2012**, *The Novikov-Veselov Equation and the Inverse Scattering Method, Part II: Computation*. Nonlinearity **25**, pp. 1799–1818.
77. Astala K, Mueller J L, Päivärinta L, Perämäki A and Siltanen S **2011**, *Direct electrical impedance tomography for nonsmooth conductivities*. Inverse Problems and Imaging **5**(3), pp. 531–549.
78. Krupchyk K, Lassas M and Siltanen S **2011**, *Determining electrical and heat transfer parameters using coupled boundary measurements*. SIAM Journal on Mathematical Analysis **43**(5), pp. 2096–2115.
79. Nakamura G, Ronkanen P, Siltanen S and Tanuma K **2011**, *Recovering conductivity at the boundary in three-dimensional electrical impedance tomography*. Inverse Problems and Imaging **5**(2), pp. 485–510.
80. Seppänen A, Nissinen A, Kolehmainen V, Siltanen S and Laukkanen A-M **2011**, *Electrical impedance tomography imaging of larynx*. Models and analysis of vocal emissions for biomedical applications, 7th International Workshop, August 25–27, 2011, Firenze, Italy.
81. Takalo J, Timonen J, Sampo J, Siltanen S and Lassas M **2011**, *Determination of the areal material distribution of paper from its optical transmission image*. European Physical Journal - Applied Physics **55**, 20701
82. Astala K, Mueller J L, Päivärinta L and Siltanen S **2010**, *Numerical computation of complex geometrical optics solutions to the conductivity equation*. Applied and Computational Harmonic Analysis **29**, pp. 2–17.

83. Helin T, Lassas M and Siltanen S **2010**, *Infinite Photography: new mathematical model for high-resolution images*. Journal of Mathematical Imaging and Vision **36**(2), pp. 140-158
84. Hyvönen N, Kalke M, Lassas M, Setälä H and Siltanen S **2010**, *Three-dimensional X-ray imaging using hybrid data collected with a digital panoramic device*. Inverse Problems and Imaging **4**(2), pp. 257–271.
85. Ide T, Isozaki H, Nakata S and Siltanen S **2010**, *Local detection of three-dimensional inclusions in electrical impedance tomography*. Inverse Problems **26** 035001.
86. Knudsen K, Lassas M, Mueller J L and Siltanen S **2009**, *Regularized D-bar method for the inverse conductivity problem*. Inverse Problems and Imaging **3**(4), pp. 599-624.
87. Kolehmainen V, Niinimäki K and Siltanen S **2009**, *Bayesian Wavelet Based Multiresolution Method for Local Tomography*, The 10th European Congress of Stereology and Image Analysis, Milan, Italy, June 2009.
88. Lassas M, Saksman E and Siltanen S **2009**, *Discretization invariant Bayesian inversion and Besov space priors*. Inverse Problems and Imaging **3**, pp. 87-122.
89. Vänskä S, Lassas M and Siltanen S **2009**, *Statistical X-ray tomography using empirical Besov priors*. International Journal of Tomography & Statistics **11**, pp. 3-32.
90. Bingham K, Kurylev Y, Lassas M and Siltanen S **2008**, *Iterative Time-Reversal Control for Inverse Problems*. Inverse Problems and Imaging **2**, pp. 63–81.
91. Knudsen K, Lassas M, Mueller J and Siltanen S **2008**, *Reconstructions of piecewise constant conductivities by the d-bar method for electrical impedance tomography*. Proceedings of the 4th AIP International Conference and the 1st Congress of the IPIA, Vancouver, 2007. Journal of Physics: Conference Series **124**.
92. Kolehmainen V, Lassas M and Siltanen S **2008**, *Limited data X-ray tomography using nonlinear evolution equations*. SIAM Journal of Scientific Computation **30**, pp. 1413–1429.
93. Ide T, Isozaki H, Nakata S, Siltanen S and Uhlmann G **2007**, *Probing for electrical inclusions with complex spherical waves*. Communications on Pure and Applied Mathematics **60**, pp. 1415–1442.
94. Knudsen K, Lassas M, Mueller J L and Siltanen S **2007**, *D-bar method for electrical impedance tomography with discontinuous conductivities*. SIAM Journal of Applied Mathematics **67**, pp. 893–913.
95. Kolehmainen V, Vanne A, Siltanen S, Järvenpää S, Kaipio J P, Lassas M and Kalke M **2007**, *Bayesian Inversion Method for 3-D Dental X-ray Imaging*. Elektrotechnik & Informationstechnik **124**, pp. 248–253.
96. Lassas M, Mueller J L and Siltanen S **2007**, *Mapping properties of the nonlinear Fourier transform in dimension two*. Communications in Partial Differential Equations **32**, pp. 591–610.

97. Niinimäki K, Siltanen S and Kolehmainen V **2007**, *Bayesian multiresolution method for local tomography in dental X-ray imaging*. *Physics in Medicine and Biology* 52, pp. 6663–6678.
98. Niinimäki K, Siltanen S and Kolehmainen V **2007**, *Multiresolution local tomography in dental radiology using wavelets* 29th International Conference of the IEEE Engineering in Medicine and Biology Society, Lyon, France, August, 2007.
99. Zhong D, Siltanen S, Tanskanen J M A and Hyttinen J **2007**, *Using MEAs for On-line EIT Measurement*, Proceeding of 13th International Conference on Electrical Bioimpedance (ICEBI07), Graz, Austria, August 2007
100. Cornean H, Knudsen K and Siltanen S **2006**, *Towards a d -bar reconstruction method for three-dimensional EIT*. *Journal of Inverse and Ill-Posed Problems* 14, pp. 111–134.
101. Isaacson D, Mueller J L, Newell J and Siltanen S **2006** *Imaging Cardiac Activity by the D -bar Method for Electrical Impedance Tomography*. *Physiological Measurement* 27, pp. S43–S50.
102. Kolehmainen V, Vanne A, Siltanen S, Järvenpää S, Kaipio J P, Lassas M and Kalke M **2006**, *Parallelized Bayesian inversion for three-dimensional dental X-ray imaging*, *IEEE Transactions on Medical Imaging* 25(2), pp. 218–228.
103. Rantala M, Vänskä S, Järvenpää S, Kalke M, Lassas M, Moberg J and Siltanen S **2006**, *Wavelet-based reconstruction for limited angle X-ray tomography*. *IEEE Transactions on Medical Imaging* 25(2), pp. 210–217.
104. Isaacson D, Mueller J L, Newell J and Siltanen S **2005**, *D-Bar Images of Cardiac Activity*, 6th Conference on Biomedical Applications of Electrical Impedance Tomography, University College London, UK, June 22-24, 2005.
105. Nakamura G, Siltanen S, Tanuma K and Wang S **2005** *Numerical recovery of conductivity at the boundary from the localized Dirichlet to Neumann map* *Computing* 75(2-3), pp. 197–213.
106. Ikehata M and Siltanen S **2004** *Electrical impedance tomography and Mittag-Leffler's function*. *Inverse Problems* 20, pp. 1325–1348
107. Ikehata M and Siltanen S **2004** *Numerical solution of the Cauchy problem for the stationary Schrödinger equation using Faddeev's Green function*. *SIAM Journal of Applied Mathematics* 64(6), pp. 1907–1932
108. Isaacson D, Mueller J L, Newell J and Siltanen S **2004** *Reconstructions of chest phantoms by the d -bar method for electrical impedance tomography*. *IEEE Transactions on Medical Imaging* 23(7), pp. 821–828
109. Knudsen K, Mueller J L and Siltanen S **2004** *Numerical solution method for the d -bar-equation in the plane*. *Journal of Computational Physics* 198(2), pp. 500–517
110. Lassas M and Siltanen S **2004** *Can one use total variation prior for edge-preserving Bayesian inversion?* *Inverse Problems* 20, pp. 1537–1563

111. Kolehmainen V, Siltanen S, Järvenpää S, Kaipio J P, Koistinen P, Lassas M, Pirttilä J and Somersalo E **2003** *Statistical inversion for medical X-ray tomography with few radiographs II: Application to dental radiology*. Physics in Medicine and Biology 48, pp. 1465–1490
112. Lehtimäki M, Pamilo M, Raulisto L, Roiha M, Kalke M, Siltanen S and Ihamäki T **2003**, *Diagnostic Clinical Benefits of Digital Spot and Digital 3D Mammography Following Analysis of Screening Findings* Medical Imaging 2003: Visualization, Image-Guided Procedures, and Display, Robert L. Galloway. Jr., Editor, Proceedings of SPIE 5029, 698-706.
113. Nykänen K and Siltanen S **2003** *X-ray scattering in full-field digital mammography*. Medical Physics 30(7), pp. 1864–1873; Also appeared in Virtual Journal of Biological Physics Research, July 1, 2003
114. Siltanen S, Kolehmainen V, Järvenpää S, Kaipio J P, Koistinen P, Lassas M, Pirttilä J and Somersalo E **2003** *Statistical inversion for medical X-ray tomography with few radiographs I: General theory*. Physics in Medicine and Biology 48, pp. 1437–1463
115. Mueller J L and Siltanen S **2003** *Direct reconstructions of conductivities from boundary measurements*. SIAM Journal of Scientific Computation 24(4), pp. 1232–1266
116. Nykänen K and Siltanen S **2003**, *Advantages of gridless full-field digital mammography*, Proc. SPIE Int. Soc. Opt. Eng. 5030, 137
117. Mueller J L, Siltanen S and Isaacson D **2002** *A direct reconstruction algorithm for electrical impedance tomography*. IEEE Transactions on Medical Imaging 21(6), pp. 555–559
118. Lassas M, Matakich M, Siltanen S and Somersalo E **2002** *Wind velocity observation with a CW Doppler radar*. IEEE Transactions on Geoscience and Remote Sensing 40(11), pp. 2427–2437
119. Siltanen S, Mueller J L and Isaacson D **2001** *Reconstruction of High Contrast 2-D Conductivities by the Algorithm of A. Nachman*. Contemporary Mathematics 278, pp. 241–254
120. Siltanen S, Mueller J L and Isaacson D **2000** *An implementation of the reconstruction algorithm of A. Nachman for the 2-D inverse conductivity problem*. Inverse Problems 16, pp. 681–699; *Erratum* Inverse problems 17 , pp. 1561–1563
121. Ikehata M and Siltanen S **2000** *Numerical method for finding the convex hull of an inclusion in conductivity from boundary measurements*. Inverse Problems 16, pp. 1043–1052

B Non-refereed scientific articles

1. Isaacson D, Jennifer LM and Siltanen S **2021**, D-bar Methods for EIT. Chapter in the book Electrical Impedance Tomography. CRC Press, 2021, pp. 137-150.

2. Siltanen S **2012**, Electrical impedance imaging using nonlinear Fourier transform. Oberwolfach Reports 11/2012.
3. Siltanen S **2010**, Wavelet-based Bayesian inversion for tomographic problems with sparse data, Oberwolfach Reports 7(2), pp. 1085-1088.

C Scientific books (monographs)

Mueller J L and Siltanen S 2012: *Linear and Nonlinear Inverse Problems with Practical Applications*, SIAM Computational Science and Engineering 10.

- E1. Moura F, Siltanen S and Juvonen M (eds.) **2023** Special issue on Helsinki Deblur Challenge 2021 of *Inverse Problems and Imaging* (Volume 17, Number 5)
- E2. Hamilton S, Knudsen K, Siltanen S and Uhlmann G (eds.) **2014** Special issue on complex geometrical optics solutions of *Inverse Problems and Imaging* (Volume 8, Number 4)
- E3. Lassas M and Siltanen S (eds.) **2013** Special Issue on Inverse Problems in Mathematical Biology of *Journal of Mathematical Biology* (Volume 67, Issue 1)
- E4. Isaacson D, Mueller J L and Siltanen S (eds.) **2004**: Special issue on electrical impedance tomography of *Physiological Measurement*, Vol. **24**

D Publications intended for professional communities

Siltanen S and Virta R 2020: *Gamma emission tomography reveals the content of spent nuclear fuel assemblies (in Finnish)*, Finnish Nuclear Society's journal "ATS Ydintekniikka" 4/2020.

E Publications intended for the general public

1. Siltanen S 2021, *Step Into the World of Mathematics*, Springer. The first popular-science book written by a Finnish mathematician and translated.
2. Siltanen S 2019, *Astu matematiikan maailmaan* (book in Finnish), Otava
3. Siltanen S 2015, *Synthesizing Speech*. Physics World 28(1), pp. 28–32.
4. Siltanen S 2015, *Low-dose dental X-ray imaging (in Finnish)*. Arkhimedes 1/2015, pp. 19–29.
5. Siltanen S 2011, *Three-dimensional X-ray imaging for dentists*. European success stories in industrial mathematics, Springer, p. 10.

G Theses

Siltanen S **1999** *Electrical Impedance Tomography and Faddeev's Green functions*. Annales Academiæ Scientiarum Fennicæ Mathematica Dissertationes 121. PhD thesis.

H Patents and invention disclosures

- P1. Kalke M, Suuronen E, Siltanen S and Setälä Henri **2009**, Method and system for determining a sharp panoramic image constructed from a group of projection images, Finnish patent 119080.
- P2. Kaipio J, Siltanen S, Kalke M, Kolehmainen V and Lassas M **2007**, Method and arrangement for three-dimensional medical X-ray imaging, United States patent 7274766.
- P3. Kalke M, Siltanen S, Vänskä S, Lassas M and Rantala M **2007**, *Method and arrangement for multiresolutive reconstruction for medical X-ray imaging*. United States patent 7215730.
- P4. Siltanen S **2007**, *Method and arrangement for enhanced detection of breast cancer*. Finnish patent 117744.
- P5. Kaipio J L, Kolehmainen V, Lassas M, Siltanen S, Somersalo E **2005**, *Method and arrangement for three-dimensional medical X-ray imaging*. Finnish patent 116750.

I Audiovisual material, ICT software

- 200 popular-science videos published at my YouTube channel *Samun tiedekanava* and TikTok account @samuntiede, with over 600 000 views in total.
- Open scientific software published at <https://github.com/ssiltane>
- Producer of the open data challenge Helsinki Tomography Challenge 2022, see <https://www.fips.fi/HTC2022.php>
- Producer of the open data challenge Helsinki Deblur Challenge 2021, see <https://www.fips.fi/HDC2021.php>
- Producer of the open datasets in <https://www.fips.fi/datasetpage.php>