

Scientific Publications of Jennifer L. Mueller

Books

- *Linear and Nonlinear Inverse Problems with Practical Applications*, J.L. Mueller and S. Siltanen, SIAM, 2012.

Journal Publications

- M. Alsaker and J. L. Mueller, 2016 Use of a priori spatial information in D-bar reconstructions of EIT tank data, in review.
- P. A. Muller, J. L. Mueller, and M. Mellenthin, 2016 Calderón’s Method on General Domains, in review.
- M. Mellenthin, J. L. Mueller, E. de Camargo, F. de Moura, T. Santos, R. Lima, S. J. Hamilton, P. A. Muller, and M. Alsaker 2016 The ACE1 Electrical Impedance Tomography System for Thoracic Imaging, in review.
- S. J. Hamilton, J. L. Mueller and M. Alsaker, 2016 Incorporating a Spatial Prior into Nonlinear D-Bar EIT imaging for Complex Admittivities, *IEEE Transactions on Medical Imaging*, Vol. PP, Issue 99, DOI: 10.1109/TMI.2016.2613511 (early access article)
- M. Alsaker and J. L. Mueller, 2016 A D-bar algorithm with a priori information for 2-D electrical impedance tomography, *SIAM Journal on Imaging Science*, Vol.9 No. 4, 1619–1654.
- R. Croke, J. L. Mueller, M. Music, P. Perry, S. Siltanen and A. Stahel, 2015 The Novikov-Veselov equation: Theory and Computation, *Contemporary Mathematics*, Vol. 635, 25–70.
- R. Croke, J. L. Mueller and A. Stahel, 2015 Transverse instability of plane wave soliton solutions of the Novikov-Veselov equation, *Contemporary Mathematics*, Vol. 635, 71–89.. Arxiv link: <http://arxiv.org/abs/1304.1489>
- C.N.L. Herrera, M.F.M. Vallejo, J.L.Mueller, R. Lima 2015 Direct 2-D reconstructions of conductivity and permittivity from EIT data on a human chest, *IEEE Transactions on Medical Imaging*, Vol. 34, No. 1, pp. 267-274.
- M. Dodd and J. L. Mueller 2014 A Real-time D-bar Algorithm for 2-D Electrical Impedance Tomography Data, *Inverse Problems and Imaging*, Vol. 8, No. 4, pp.1013-1031.
- S. J. Hamilton and J. L. Mueller, 2013 Direct EIT reconstructions of complex conductivities on a chest-shaped domain in 2-D, *IEEE Transactions on Medical Imaging*, Vol. 32, No. 4, 757—769.
- S. J. Hamilton, C. N. L. Herrera, J. L. Mueller, and A. Von Herrmann, 2012 A direct D-bar reconstruction algorithm for recovering a complex conductivity in 2-D, *Inverse Problems* Vol. 25, 095005 (24 pp). Arxiv link: <http://arxiv.org/abs/1202.1785>
- M. Lassas, J. L. Mueller, S. Siltanen, A. Stahel 2012 The Novikov-Veselov Equation and the Inverse Scattering Method, Part I: Analysis, *Physica D*, Vol. 241, 1322–1335. Arxiv link: <http://arxiv.org/abs/1105.3903>
- M. Lassas, J. L. Mueller, S. Siltanen, and A. Stahel, 2012 The Novikov-Veselov Equation and the Inverse Scattering Method, Part II: Numerics, *Nonlinearity*, Vol. 25, 1799–1818.

- K. Knudsen and J. L. Mueller, 2011 The Born approximation and Calderón’s method for reconstruction of conductivities in 3-D, *Discrete and Continuous Dynamical Systems*, pp. 884–893.
- J. Bikowski, K. Knudsen, J. L. Mueller, 2011 Direct numerical reconstruction of conductivities in three dimensions, *Inverse Problems*, Vol. 27.
- K. Astala, J. L. Mueller, A. Perämäki, L. Päivärinta, S. Siltanen, 2010 Direct electrical impedance tomography for nonsmooth conductivities, *Inverse Problems and Imaging*, Vol. 3, No. 3, pp. 531–549.
- K. Astala, J. L. Mueller, L. Päivärinta, S. Siltanen, 2010 Numerical computation of complex geometrical optics solutions to the conductivity equation, *Applied and Computational Harmonic Analysis*, Vol. 29, No. 1, pp. 2–17.
- M. DeAngelo and J. L. Mueller 2010 D-bar reconstructions of human chest and tank data using an improved approximation to the scattering transform, *Physiological Measurement*, Vol. 31, No. 2, pp. 221–232.
- K. Knudsen, M. Lassas, J. L. Mueller, S. Siltanen 2009 Regularized D-bar method for the inverse conductivity problem, *Inverse Problems and Imaging*, Vol. 3, No. 4, pp. 599–624.
- E.K. Murphy and J. L. Mueller, 2009 Effect of domain-shape modeling and measurement errors on the 2-D D-bar method for electrical impedance tomography, *IEEE Trans. Med. Imaging*, Vol. 28, No. 10, pp. 1576–1584.
- K. Knudsen, M. Lassas, J. L. Mueller, S. Siltanen 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*, Vol. 124, 2008.
- J. Bikowski and J. L. Mueller, 2008 2D EIT reconstructions using Calderon’s method, *Inverse Problems and Imaging*, Vol. 2, No. 1, 43–61.
- E.K. Murphy, J. L. Mueller, J. C. Newell, 2007 Reconstructions of conductive and insulating targets using the D-bar method on an elliptical domain, *Physiological Measurement*, Vol. 28, No. 7 S101–S144.
- M. Lassas, J. L. Mueller, and S. Siltanen 2007 Mapping properties of the nonlinear Fourier transform in dimension two, *Comm. PDE’s.*, Vol. 32, No. 4 591–610.
- K. Knudsen, M. Lassas, J. L. Mueller, S. Siltanen 2006 D-bar method for electrical impedance tomography with discontinuous conductivities, *SIAM J. on Applied Math.*, Vol. 67, No. 3 893–913.
- D. Isaacson, J. L. Mueller, J. Newell, and S. Siltanen 2006 Imaging Cardiac Activity by the D-bar Method for Electrical impedance tomography, *Physiol Meas.* Vol. 27, S43–S50.
- K. Knudsen, J. L. Mueller, and S. Siltanen 2004 Numerical solution method for the dbar-equation in the plane, *J. Comp. Phys*, Vol. 198, No. 2, 500–517.
- D. Isaacson, J. L. Mueller, J. Newell, and S. Siltanen 2004 Reconstructions of Chest Phantoms by the D-Bar Method for Electrical Impedance Tomography, *IEEE Trans. on Med. Imaging*, Vol. 23, No. 7, 821–828.
- J. L. Mueller and T. Shores, 2004 A New Sinc-Galerkin Method for the Solution of Convection- Diffusion Equations with Mixed Boundary Conditions, *Computers and Mathematics with Applications*, Vol. 47 803–822.

- J.L. Mueller, S. Siltanen, and D. Isaacson 2003 A Direct Reconstruction Algorithm for Electrical Impedance Tomography, *IEEE Transactions of Medical Imaging*, Vol. 21, No. 6, 555–559.
- J. L. Mueller and S. Siltanen 2003 Direct Reconstructions of Conductivities from Boundary Measurements, *SIAM Journal on Scientific Computation*, Vol. 24, No. 4, 1232–1266.
- S. Siltanen, J. L. Mueller, and D. Isaacson 2001 Reconstruction of High Contrast 2-D Conductivities by the Algorithm of A. Nachman. In *AMS proceedings of the 2000 conference on Radon Transforms and Tomography*, E. Quinto, editor, pp.241-254.
- J. L. Mueller, D. Isaacson, and J. Newell 2001 Reconstruction of Conductivity Changes Due to Ventilation and Perfusion from EIT Data Collected on a Rectangular Electrode Array. *Physiol. Meas.*, Vol. 22, No. 1, 97–106 .
- A. Hasanov and J. L. Mueller 2001 A Numerical Method for Backward Parabolic Problems with Non-Selfadjoint Elliptic Operators. *Appl. Num. Math.*, Vol. 37, pp. 55-78.
- S. Siltanen, J. L. Mueller, and D. Isaacson 2000 An Implementation of the Reconstruction Algorithm of A. Nachman for the 2-D Inverse Conductivity Problem. *Inverse Problems*, **16** , 681–699.
- A. Hasanov, J. L. Mueller, S. Cohn, and J. Redepenning 2000 Numerical Solution of a Nonlocal Identification Problem for Nonlinear Ion Transport. *Computers Math. Applic.*, Vol. 39, No. 7/8, 225–235.
- J. L. Mueller, D. Isaacson, and J. Newell 1999 A Reconstruction Algorithm for Electrical Impedance Tomography Data Collected on Rectangular Electrode Arrays. *IEEE Trans. Biomed. Engr.*, Vol. 46, No. 11 , 1379–1386.
- J. L. Mueller and T. Shores 1997 Uniqueness and Numerical Recovery of a Potential on the Real Line. *Inverse Problems* **13**, 781–800.

Referreed Proceedings Publications

- E. Murphy and J. Mueller, 2008, *Effect of errors in domain shape modeling in 2-D reconstructions by the D-bar method*, In: Proceedings of the Conference on Electrical Impedance Tomography, Dartmouth University.
- J. Mueller, 2004, *EIT Reconstructions and Faddeev Solutions for a Numerically Simulated Phantom Chest*, In: Biomedical Sciences Instrumentation, Vol. 40, ISA Volume 449, (S. James and H. Valenta, editors) pp. 213-218
- J. Mueller and D. Isaacson, 2004, *Regularization of the computed scattering transform for the D-bar method for electrical impedance tomography*, In: Proceedings of the 2004 SPIE Annual Meeting Vol. 5562, (Bones, Fiddy, and Millane, editors) pp. 121-128
- J. Bikowski and J. Mueller, 2004, *Electrical impedance tomography and the fast multipole method*, In: Proceedings of the 2004 SPIE Annual Meeting Vol. 5562, (Bones, Fiddy, and Millane, editors) pp. 129-140.