

List of Publications of Nuutti Hyvönen (August 27, 2024)

Contact information

Aalto University
P.O. Box 11100
FI-00076 Aalto
Finland

Phone: +358 50 5934409
nuutti.hyvonen@aalto.fi

<http://users.aalto.fi/nhyvonen/>

List of publications

An up-to-date list of publications, accompanied by the submitted manuscripts, can be found at <http://users.aalto.fi/nhyvonen/>.

Articles submitted to peer-reviewed international scientific journals

1. Y. SUZUKI, N. HYVÖNEN AND T. KARVONEN. Möbius-transformed trapezoidal rule. (<https://arxiv.org/abs/2407.13650>)
2. A. AUTIO, H. GARDE, M. HIRVENSAALO AND N. HYVÖNEN. Linearization-based direct reconstruction for EIT using triangular Zernike decompositions. (<https://arxiv.org/abs/2403.03320>)

A.1: Articles in peer-reviewed international scientific journals

3. N. HYVÖNEN, A. JÄÄSKELÄINEN, R. MAITY AND A. VAVILOV. Bayesian experimental design for head imaging by electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **84**:1718–1741, 2024 (<https://doi.org/10.1137/23M1624634>)
4. S. EBERLE-BLICK AND N. HYVÖNEN. Bayesian experimental design for linear elasticity. *Inverse Problems and Imaging*, **18**:1294–1319, 2024 (<https://doi.org/10.3934/ipi.2024015>)
5. J. NOUSIAINEN, J.-P. PUSKA, T. HELIN, N. HYVÖNEN AND M. KASPER. The power of prediction: spatiotemporal Gaussian process modeling for predictive control in slope-based wavefront sensing. *Journal of Astronomical Telescopes, Instruments, and Systems*, **10**:039001, 2024 (<https://doi.org/10.1117/1.JATIS.10.3.039001>)
6. H. GARDE AND N. HYVÖNEN. Linearised Calderón problem: Reconstruction and Lipschitz stability for infinite-dimensional spaces of unbounded perturbations. *SIAM Journal on Mathematical Analysis*, **56**:3588–3604, 2024 (<https://doi.org/10.1137/23M1609270>)
7. J. TOIVANEN, A. PALDANIUS, B. DEKDOUK, V. CANDIANI, A. HÄNNINEN, T. SAVOLAINEN, D. STRBIAN, N. FORSS, N. HYVÖNEN, J. HYTTINEN AND V. KOLEHMAINEN. An algorithm for detection and monitoring of intracerebral hemorrhages using EIT, *Journal of Medical Imaging*, **11**:014502, 2024 (<https://doi.org/10.1117/1.JMI.11.1.014502>)
8. T. HELIN, N. HYVÖNEN, J. MAANINEN AND J.-P. PUSKA. Bayesian design of measurements for magnetorelaxometry imaging. *Inverse Problems*, **39**:125020, 2024 (<https://doi.org/10.1088/1361-6420/ad07fd>)
9. H. GARDE, N. HYVÖNEN AND T. KUUTELA. Series reversion for practical electrical impedance tomography with modeling errors. *Inverse Problems*, **39**:085007, 2023 (<https://doi.org/10.1088/1361-6420/acdab8>)
10. P. HIRVI, T. KUUTELA, Q. FANG, A. HANNUKAINEN, N. HYVÖNEN AND I. NISSILÄ. Effects of atlas-based anatomy on modelled light transport in the neonatal head. *Physics in Medicine & Biology*, **68**:135019, 2023 (<https://doi.org/10.1088/1361-6560/acd48c>)
11. H. GARDE AND N. HYVÖNEN. Reconstruction of singular and degenerate inclusions in Calderón’s problem. *Inverse Problems and Imaging*, **16**:1219–1227, 2022 (<https://doi.org/10.3934/ipi.2022021>)

12. T. HELIN, N. HYVÖNEN AND J.-P. PUSKA. Edge-promoting adaptive Bayesian experimental design for X-ray imaging. *SIAM Journal on Scientific Computing*, **44**:B506–B530, 2022 (<https://doi.org/10.1137/21M1409330>)
13. H. GARDE AND N. HYVÖNEN. Series reversion in Calderón’s problem. *Mathematics of Computation*, **91**:1925–1953, 2022 (<https://doi.org/10.1090/mcom/3729>)
14. J. DARDÉ, N. HYVÖNEN, T. KUUTELA AND T. VALKONEN. Contact adapting electrode model for electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **82**:427–449, 2022 (<https://doi.org/10.1137/21M1396125>)
15. V. CANDIANI, N. HYVÖNEN, J. KAIPIO AND V. KOLEHMAINEN. Approximation error method for imaging the human head by electrical impedance tomography. *Inverse Problems*, **37**:125008, 2021 (<https://doi.org/10.1088/1361-6420/ac346a>)
16. M. BURGER, A. HAUPTMANN, T. HELIN, N. HYVÖNEN AND J.-P. PUSKA. Sequentially optimized projections in X-ray imaging. *Inverse Problems*, **37**:075006, 2021 (<https://doi.org/10.1088/1361-6420/ac01a4>)
17. A. HANNUKAINEN, N. HYVÖNEN AND L. PERKKIÖ. Inverse heat source problem and experimental design for determining iron loss distribution. *SIAM Journal on Scientific Computing*, **43**:B243–B270, 2021 (<https://doi.org/10.1137/20M1329986>)
18. H. GARDE AND N. HYVÖNEN. Mimicking relative continuum measurements by electrode data in two-dimensional electrical impedance tomography. *Numerische Mathematik*, **147**:579–609, 2021 (<https://doi.org/10.1007/s00211-020-01170-8>)
19. V. CANDIANI, J. DARDÉ, H. GARDE AND N. HYVÖNEN. Monotonicity-based reconstruction of extreme inclusions in electrical impedance tomography. *SIAM Journal on Mathematical Analysis*, **52**:6234–6259, 2020 (<https://doi.org/10.1137/19M1299219>)
20. H. GARDE, N. HYVÖNEN AND T. KUUTELA. On regularity of the logarithmic forward map of electrical impedance tomography. *SIAM Journal on Mathematical Analysis*, **52**:1997–2020, 2020 (<https://doi.org/10.1137/19M1256476>)
21. H. GARDE AND N. HYVÖNEN. Optimal depth-dependent distinguishability bounds for electrical impedance tomography in arbitrary dimension. *SIAM Journal on Applied Mathematics*, **80**:20–43, 2020 (<https://doi.org/10.1137/19M1258761>)
22. V. CANDIANI, A. HANNUKAINEN AND N. HYVÖNEN. Computational framework for applying electrical impedance tomography to head imaging. *SIAM Journal on Scientific Computing*, **41**:B1034–B1060, 2019. (<https://doi.org/10.1137/19M1245098>)
23. A. HANNUKAINEN, N. HYVÖNEN AND L. MUSTONEN. An inverse boundary value problem for the p-Laplacian: a linearization approach. *Inverse Problems*, **35**: 034001, 2019. (<https://doi.org/10.1088/1361-6420/aaf2df>)
24. N. HYVÖNEN AND L. MUSTONEN. Thermal tomography with unknown boundary. *SIAM Journal on Scientific Computing*, **40**:B663–B683, 2018. (<https://doi.org/10.1137/16M1104573>)
25. N. HYVÖNEN AND L. MUSTONEN. Generalized linearization techniques in electrical impedance tomography. *Numerische Mathematik*, **140**:95–120, 2018. (<https://doi.org/10.1007/s00211-018-0959-1>)
26. N. HYVÖNEN, L. PÄIVÄRINTA AND J. TAMMINEN. Enhancing D-bar reconstructions for electrical impedance tomography with conformal maps. *Inverse Problems and Imaging*, **12**:373–400, 2018. (<https://doi.org/10.3934/ipi.2018017>)
27. N. HYVÖNEN AND L. MUSTONEN. Smoothed complete electrode model. *SIAM Journal on Applied Mathematics*, **77**:2250–2271, 2017. (<https://doi.org/10.1137/17M1124292>)
28. A. BARTH, B. HARRACH, N. HYVÖNEN AND L. MUSTONEN. Detecting stochastic inclusions in electrical impedance tomography. *Inverse Problems*, **33**: 115012, 2017. (<https://doi.org/10.1088/1361-6420/aa8f5c>)

29. N. HYVÖNEN, H. MAJANDER AND S. STABOULIS. Compensation for geometric modeling errors by positioning of electrodes in electrical impedance tomography. *Inverse Problems*, **33**:035006, 2017. (<http://dx.doi.org/10.1088/1361-6420/aa59d0>)
30. N. HYVÖNEN, V. KAARNIOJA, L. MUSTONEN AND S. STABOULIS. Polynomial collocation for handling an inaccurately known measurement configuration in electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **77**:202–223, 2016. (<http://dx.doi.org/10.1137/16M1068888>)
31. A. HANNUKAINEN, N. HYVÖNEN, H. MAJANDER AND T. TARVAINEN. Efficient inclusion of total variation type priors in quantitative photoacoustic tomography. *SIAM Journal on Imaging Sciences*, **9**:1132–1153, 2016. (<http://dx.doi.org/10.1137/15M1051737>)
32. A. HANNUKAINEN, L. HARHANEN, N. HYVÖNEN AND H. MAJANDER. Edge-promoting reconstruction of absorption and diffusivity in optical tomography. *Inverse Problems*, **32**:015008, 2016. (<http://dx.doi.org/10.1088/0266-5611/32/1/015008>)
33. L. CHESNEL, N. HYVÖNEN AND S. STABOULIS. Construction of invisible conductivity perturbations for the point electrode model in electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **75**:2093–2109, 2015. (<http://dx.doi.org/10.1137/15M1006404>)
34. N. HYVÖNEN AND M. LEINONEN. Stochastic Galerkin finite element method with local conductivity basis for electrical impedance tomography. *SIAM/ASA Journal on Uncertainty Quantification*, **3**:998–1019, 2015. (<http://dx.doi.org/10.1137/140999050>)
35. L. HARHANEN, N. HYVÖNEN, H. MAJANDER AND S. STABOULIS. Edge-enhancing reconstruction algorithm for three-dimensional electrical impedance tomography. *SIAM Journal on Scientific Computing*, **37**:B60–B78, 2015. (<http://dx.doi.org/10.1137/140971750>)
36. N. HYVÖNEN, A. SEPPÄNEN AND S. STABOULIS. Optimizing electrode positions in electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **74**:1831–1851, 2014. (<http://dx.doi.org/10.1137/140966174>)
37. H. HAKULA, N. HYVÖNEN AND M. LEINONEN. Reconstruction algorithm based on stochastic Galerkin finite element method for electrical impedance tomography. *Inverse Problems*, **30**:065006, 2014. (<http://dx.doi.org/10.1088/0266-5611/30/6/065006>)
38. M. LEINONEN, H. HAKULA AND N. HYVÖNEN. Application of stochastic Galerkin FEM to the complete electrode model of electrical impedance tomography. *Journal of Computational Physics*, **269**:181–200, 2014. (<http://dx.doi.org/10.1016/j.jcp.2014.03.011>)
39. J. DARDÉ, A. HANNUKAINEN AND N. HYVÖNEN. An H_{div} -based mixed quasi-reversibility method for solving elliptic Cauchy problems. *SIAM Journal on Numerical Analysis*, **51**:2123–2148, 2013. (<http://dx.doi.org/10.1137/120895123>)
40. J. DARDÉ, N. HYVÖNEN, A. SEPPÄNEN AND S. STABOULIS. Simultaneous recovery of admittivity and body shape in electrical impedance tomography: An experimental evaluation. *Inverse Problems*, **29**:085004, 2013. (<http://dx.doi.org/10.1088/0266-5611/29/8/085004>)
41. N. HYVÖNEN, A. K. NANDAKUMARAN, H. M. VARMA AND R. M. VASU. Generalized eigenvalue decomposition of the field autocorrelation in correlation diffusion of photons in turbid media. *Mathematical Methods in the Applied Sciences*, **36**:1447–1458, 2013. (<http://dx.doi.org/10.1002/mma.2697>)
42. R. GRIESMAIER, N. HYVÖNEN AND O. SEISKARI. A note on analyticity properties of far field patterns. *Inverse Problems and Imaging*, **7**:491–498, 2013. (<http://dx.doi.org/10.3934/ipi.2013.7.491>)
43. J. DARDÉ, N. HYVÖNEN, A. SEPPÄNEN AND S. STABOULIS. Simultaneous reconstruction of outer boundary shape and admittivity distribution in electrical impedance tomography. *SIAM Journal on Imaging Sciences*, **6**:176–198, 2013. (<http://dx.doi.org/10.1137/120877301>)

44. N. HYVÖNEN, P. PIROINEN AND O. SEISKARI. Point measurements for a Neumann-to-Dirichlet map and the Calderon problem in the plane. *SIAM Journal on Mathematical Analysis*, **44**:3526–3536, 2012. (<http://dx.doi.org/10.1137/120872164>)
45. N. HYVÖNEN AND O. SEISKARI. Detection of multiple inclusions from sweep data of electrical impedance tomography. *Inverse Problems*, **28**:095014, 2012. (<http://dx.doi.org/10.1088/0266-5611/28/9/095014>)
46. H. HAKULA, N. HYVÖNEN AND T. TUOMINEN. On hp-adaptive solution of complete electrode model forward problems of electrical impedance tomography. *Journal of Computational and Applied Mathematics*, **236**:4645–4659, 2012. (<http://dx.doi.org/10.1016/j.cam.2012.04.005>)
47. J. DARDÉ, H. HAKULA, N. HYVÖNEN AND S. STABOULIS. Fine-tuning electrode information in electrical impedance tomography. *Inverse Problems and Imaging*, **6**:399–421, 2012. (<http://dx.doi.org/10.3934/ipi.2012.6.399>)
48. M. HANKE, L. HARHANEN, N. HYVÖNEN AND E. SCHWEICKERT. Convex source support in three dimensions. *BIT Numerical Mathematics*, **52**:45–63, 2012. (<http://dx.doi.org/10.1007/s10543-011-0338-0>)
49. R. GRIESMAIER AND N. HYVÖNEN. A regularized Newton method for locating thin tubular conductivity inhomogeneities. *Inverse Problems*, **27**:115008, 2011. (<http://dx.doi.org/10.1088/0266-5611/27/11/115008>)
50. H. M. VARMA, K. P. MOHANAN, N. HYVÖNEN, A. K. NANDAKUMARAN AND R. M. VASU. Ultrasound-modulated optical tomography: Recovery of amplitude of vibration in the insonified region from boundary measurement of light correlation. *Journal of the Optical Society of America A*, **28**:2322–2331, 2011. (<http://dx.doi.org/10.1364/JOSAA.28.002322>)
51. H. HAKULA, L. HARHANEN AND N. HYVÖNEN. Sweep data of electrical impedance tomography. *Inverse Problems*, **27**:115006, 2011. (<http://dx.doi.org/10.1088/0266-5611/27/11/115006>)
52. M. HANKE, B. HARRACH AND N. HYVÖNEN. Justification of point electrode models in electrical impedance tomography. *Mathematical Models and Methods in Applied Sciences*, **21**:1395–1413, 2011. (<http://dx.doi.org/10.1142/S0218202511005362>)
53. M. HANKE, N. HYVÖNEN AND S. REUSSWIG. Erratum: An inverse backscatter problem for electric impedance tomography. *SIAM Journal on Mathematical Analysis*, **43**:1495–1497, 2011. (<http://dx.doi.org/10.1137/110821780>)
54. M. HANKE, N. HYVÖNEN AND S. REUSSWIG. Convex backscattering support in electric impedance tomography. *Numerische Mathematik*, **117**:373–396, 2011. (<http://dx.doi.org/10.1007/s00211-010-0320-9>)
55. L. HARHANEN AND N. HYVÖNEN. Convex source support in half-plane. *Inverse Problems and imaging*, **4**:429–448, 2010. (<http://dx.doi.org/10.3934/ipi.2010.4.429>)
56. N. HYVÖNEN, M. KALKE, M. LASSAS, H. SETÄLÄ AND S. SILTANEN. Three-dimensional dental X-ray imaging by combination of panoramic and projection data. *Inverse Problems and imaging*, **4**:257–271, 2010. (<http://dx.doi.org/10.3934/ipi.2010.4.257>)
57. N. HYVÖNEN, K. KARHUNEN AND A. SEPPÄNEN. Fréchet derivative with respect to the shape of an internal electrode in electrical impedance tomography. *SIAM Journal on Applied Mathematics*, **70**:1878–1898, 2010. (<http://dx.doi.org/10.1137/09075929X>)
58. M. HANKE, N. HYVÖNEN AND S. REUSSWIG. An inverse backscatter problem for electric impedance tomography. *SIAM Journal on Mathematical Analysis*, **41**:1948–1966, 2009. (<http://dx.doi.org/10.1137/080739045>)
59. N. HYVÖNEN. Comparison of idealized and electrode Dirichlet-to-Neumann maps in electric impedance tomography with an application to boundary determination of conductivity. *Inverse Problems*, **25**:085008, 2009. (<http://dx.doi.org/10.1088/0266-5611/25/8/085008>)

60. N. HYVÖNEN. Approximating idealized boundary data of electric impedance tomography by electrode measurements. *Mathematical Models and Methods in Applied Sciences*, **19**:1185–1202, 2009. (<http://dx.doi.org/10.1142/S0218202509003759>)
61. H. HAKULA AND N. HYVÖNEN. On computation of test dipoles for factorization method. *BIT Numerical Mathematics*, **49**:75–91, 2009. (<http://dx.doi.org/10.1007/s10543-008-0205-9>)
62. M. HANKE, N. HYVÖNEN AND S. REUSSWIG. Convex source support and its application to electric impedance tomography. *SIAM Journal on Imaging Sciences*, **1**:364–378, 2008. (<http://dx.doi.org/10.1137/080715640>)
63. H. HAKULA AND N. HYVÖNEN. Two noniterative algorithms for locating inclusions using one electrode measurement of electric impedance tomography. *Inverse Problems*, **24**:055018, 2008. (<http://dx.doi.org/10.1088/0266-5611/24/5/055018>)
64. B. GEBAUER AND N. HYVÖNEN. Factorization method and inclusions of mixed type in an inverse elliptic boundary value problem. *Inverse Problems and Imaging*, **2**:355–372, 2008. (<http://dx.doi.org/10.3934/ipi.2008.2.355>)
65. M. HANKE, N. HYVÖNEN, M. LEHN AND S. REUSSWIG. Source supports in electrostatics. *BIT Numerical Mathematics*, **48**:245–264, 2008. (<http://dx.doi.org/10.1007/s10543-008-0172-1>)
66. A. LECHLEITER, N. HYVÖNEN AND H. HAKULA. The factorization method applied to the complete electrode model of impedance tomography. *SIAM Journal on Applied Mathematics*, **68**:1097–1121, 2008. (<http://dx.doi.org/10.1137/070683295>)
67. N. HYVÖNEN. Fréchet derivative with respect to the shape of a strongly convex nonscattering region in optical tomography. *Inverse Problems*, **23**:2249–2270, 2007. (<http://dx.doi.org/10.1088/0266-5611/23/5/026>)
68. B. GEBAUER AND N. HYVÖNEN. Factorization method and irregular inclusions in electrical impedance tomography. *Inverse Problems*, **23**:2159–2170, 2007. (<http://dx.doi.org/10.1088/0266-5611/23/5/020>)
69. N. HYVÖNEN. Locating transparent regions in optical absorption and scattering tomography. *SIAM Journal on Applied Mathematics*, **67**:1101–1123, 2007. (<http://dx.doi.org/10.1137/06066299X>)
70. N. HYVÖNEN. Application of the factorization method to the characterization of weak inclusions in electrical impedance tomography. *Advances in Applied Mathematics*, **39**:197–221, 2007. (<http://dx.doi.org/doi:10.1016/j.aam.2006.12.004>)
71. N. HYVÖNEN, H. HAKULA AND S. PURSIAINEN. Numerical implementation of the factorization method within the complete electrode model of electrical impedance tomography. *Inverse Problems and Imaging*, **1**:299–317, 2007. (<http://dx.doi.org/10.3934/ipi.2007.1.299>)
72. N. HYVÖNEN. Application of a weaker formulation of the factorization method to the characterization of absorbing inclusions in optical tomography. *Inverse Problems*, **21**:1331–1342, 2005. (<http://dx.doi.org/10.1088/0266-5611/21/4/009>)
73. N. HYVÖNEN. Characterizing inclusions in optical tomography. *Inverse Problems*, **20**:737–751, 2004. (<http://dx.doi.org/10.1088/0266-5611/20/3/006>)
74. N. HYVÖNEN. Complete electrode model of electrical impedance tomography: Approximation properties and characterization of inclusions. *SIAM Journal on Applied Mathematics*, **64**:902–931, 2004. (<http://dx.doi.org/10.1137/S0036139903423303>)
75. N. HYVÖNEN. Analysis of optical tomography with non-scattering regions. *Proceedings of the Edinburgh Mathematical Society*, **45**:257–276, 2002. (<http://dx.doi.org/10.1017/S0013091501000360>)

G: Theses

1. N. HYVÖNEN. *Diffusive Tomography Methods: Special Boundary Conditions and Characterization of Inclusions*. Dissertation, Helsinki University of Technology, 2004.
2. N. HYVÖNEN. *Analysis of optical tomography with non-scattering regions*. Master's Thesis, Helsinki University of Technology, 2000.