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List of Publications

26.1.2026

Articles in refereed scientific journals

1. Sahlström T, Tarvainen T, Estimation of dielectric parameters from ultrasound waves in quantitative thermoacoustic tomography, Submitted.
2. Kultima J, Ramlau R, Sahlström T, Tarvainen T, Fast reconstruction approaches for photoacoustic tomography with smoothing Sobolev / Matérn priors, *Inverse Problems and Imaging,* Accepted for publication.
3. Rahaman J, Mozumder M, Farina A, Tarvainen T, Spatial and temporal modulation in time-domain diffuse optical tomography*, Optics Continuum*, 4(11):2646-2663, 2025.
4. Mozumder M, Seppänen A, Tarvainen T, Non-stationary estimation of optical absorption in ultrasound-modulated diffuse optical tomography, *Journal of the Optical Society of America A,* 42(8): 1234-1243, 2025.
5. Suhonen M, Lucka F, Pulkkinen A, Arridge S, Cox B, Tarvainen T, Reconstructing initial pressure and speed of sound distributions simultaneously in photoacoustic tomography, *Photoacoustics,* 45:100748, 2025.
6. Sahlström T, Lähivaara T, Tarvainen T, Simultaneous estimation of electrical conductivity and permittivity in quantitative thermoacoustic tomography, *Inverse Problems,* 41:035015, 2025.
7. Kangasniemi J, Mozumder M, Pulkkinen A, Tarvainen T, Stochastic Gauss-Newton method for estimating absorption and scattering in optical tomography with the Monte Carlo method for light transport, *Biomedical Optics Express,* 15(8):4925-4942, 2024.
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9. Afkham BM, Knudsen K, Rasmussen AK, Tarvainen T, A Bayesian approach for consistent reconstruction of inclusions, *Inverse Problems*, 40:045004, 2024.
10. Suhonen M, Pulkkinen A, Tarvainen T, Single-stage approach for estimating optical parameters in spectral quantitative photoacoustic tomography, *Journal of the Optical Society of America A,* 41(3):527-542, 2024.
11. Tarvainen T, Cox B, Quantitative photoacoustic tomography: modelling and inverse problems, *Journal of Biomedical Optics,* 29(S1):S11509, 2024 (Invited review).
12. Manninen A, Mozumder M, Tarvainen T, Hauptmann A, Sparsity promoting reconstructions via hierarchical prior models in diffuse optical tomography, *Inverse Problems and Imaging,* 18(1):113-137, 2024.
13. Koponen E, Leskinen J, Tarvainen T, Pulkkinen A, Background-oriented schlieren sensitivity in terms of geometrical parameters of measurement setup, *The Journal of the Acoustical Society of America*, 154(6): 3726-3736, 2023.
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15. Sahlström T, Tarvainen T, Utilizing variational autoencoders in the Bayesian inverse problem of photoacoustic tomography, *SIAM Journal on Imaging Sciences*, 16(1):89-110, 2023 (article was selected in SIAM High Impact Article Collection on Machine Learning in 2024).

16. Mozumder M, Leskinen J, Tarvainen T, Utilising nanosecond sources in diffuse optical tomography, *Measurement Science and Technology,* 34:025901, 2023.
17. Mozumder M, Hauptmann A, Nissilä I, Arridge SR, Tarvainen T, A model-based iterative learning approach for diffuse optical tomography, *IEEE Transactions on Medical Imaging*, 41(5):1289-1299, 2022.
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1. Time-domain diffuse optical tomography system based on nanosecond scale pulse illuminations, UEF Dnro 1330/02.08.02.01/2021, 27.8.2021.
2. MATLAB-toolbox for simulating light transport using Monte Carlo method, UEF Dnro 323.02.07.03.01.18, 26.2.2018.
3. Photoacoustic tomography system based on LED illumination, UEF Dnro 407/02.07.03.01/2018, 19.3.2018.

Software

1. ValoMC - A Monte Carlo software for simulating light transport https://inverselight.github.io/ValoMC/