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LIST OF PUBLICATIONS

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Regular papers

- 1) V. Kolehmainen, M. Vauhkonen, P. A. Karjalainen and J. P. Kaipio. "Assessment of errors in static electrical impedance tomography with adjacent and trigonometric current patterns". *Physiological Measurement*, Vol. 18, pages 289-303, (1997).
- 2) Jyrki T. Kuikka, Jean L. Bailieu, Jukka Hiltunen, Christer Halldin, Kim A. Bergström, Lars Ferde, Patrik Emond, Sylvie Chalon, Meixiang Yu, Tomi Laitinen, Jari Karhu, Erkki Tupala, Tero Hallikainen, Ville Kolehmainen, Laurent Mauclaire, Bernard Maziere, Jari Tiihonen, and Denis Guilloteau. "Pharmacokinetics and dosimetry of iodine-123 labelled PE2I in humans, a radioligand for dopamine transporter imaging". *European Journal of Nuclear Medicine*, Vol. 25, pages 531-534, (1998).
- 3) J. P. Kaipio, V. Kolehmainen, M. Vauhkonen and E. Somersalo. "Inverse problem with structural prior information". *Inverse Problems*, Vol. 15, No. 3, pages 713-729, (1999).
- 4) V. Kolehmainen, S. R. Arridge, W. R. B. Lionheart, M. Vauhkonen and J. P. Kaipio. "Recovery of region boundaries of piecewise constant coefficients of an elliptic PDE from boundary data". *Inverse Problems*, Vol. 15, No. 5, pages 1375-1391, (1999).
- 5) J. P. Kaipio, V. Kolehmainen, E. Somersalo and M. Vauhkonen. "Statistical inversion and Monte Carlo sampling methods in electrical impedance tomography". *Inverse Problems*, Vol. 16, pages 1487-1522, (2000).
- 6) V. Kolehmainen, S. R. Arridge, M. Vauhkonen and J. P. Kaipio. "Simultaneous reconstruction of internal tissue region boundaries and coefficients in optical diffusion tomography". *Phys Med Biol*, Vol. 45, pages 3267-3283, (2000).
- 7) A. Voutilainen, V. Kolehmainen and J. P. Kaipio. "Statistical inversion of aerosol size distribution data". *Inv Prob Eng*, Vol. 15, pages 1375-1391, (2000).
- 8) V. Kolehmainen, M. Vauhkonen, J. P. Kaipio and S. R. Arridge. "Recovery of piecewise constant coefficients in optical diffusion tomography". *Opt. Express*, Vol. 7, No. 13, pages 468-480, (2000).
- 9) V. Kolehmainen, A. Voutilainen and J. P. Kaipio. "Estimation of non-stationary region boundaries in EIT – State estimation approach". *Inverse Problems*, Vol. 17, pages 1937-1956, (2001)
- 10) V. Kolehmainen, S. Prince, S. R. Arridge and J. P. Kaipio. "A state estimation approach to non-stationary optical tomography problem". *J. Opt. Soc. Am. A*, Vol. 20, pages 876 – 889, (2003).
- 11) S. Siltanen, V. Kolehmainen, J. P. Kaipio, E. Somersalo, M. Lassas, S. Järvenpää, P. Koistinen and J. Pirttilä. "Statistical inversion for medical X-ray tomography with few radiographs 1: General theory." *Phys. Med. Biol.* Vol. 48, pages 1437 – 1463, (2003).
- 12) V. Kolehmainen, S. Siltanen, S. Järvenpää, J. P. Kaipio, E. Somersalo, M. Lassas, P. Koistinen and J. Pirttilä. "Statistical inversion for medical X-ray tomography with few radiographs 2: Application to dental radiology." *Phys. Med. Biol.* Vol. 48, pages 1465 – 1490, (2003).
- 13) S. Prince, V. Kolehmainen, J. P. Kaipio, M. A. Franceschini, D. Boas and S. R. Arridge. "Time series estimation of biological factors in optical diffusion tomography". *Phys. Med. Biol.* Vol. 48, pages 1491 – 1504, (2003).
- 14) T. Tarvainen, M. Vauhkonen, V. Kolehmainen and J. P. Kaipio. "Hybrid radiative transfer – diffusion model for optical tomography". *Applied Optics*, Vol. 44, pages 876 – 886, (2005).

- 15) T. Tarvainen, V. Kolehmainen, M. Vauhkonen, A. Vanne, A. P. Gibson, S. R. Arridge, M. Schweiger and J. P. Kaipio. "Computational calibration method for optical tomography". *Applied Optics*. Vol. 44, pages 1879 – 1888, (2005).
- 16) T. Tarvainen, M. Vauhkonen, V. Kolehmainen, S. R. Arridge and J. P. Kaipio. "Coupled radiative transfer equation and diffusion approximation model for photon migration in turbid medium with low-scattering and non-scattering regions". *Physics in Medicine and Biology*. Vol. 50. pages. 4913 - 4930. (2005).
- 17) V. Kolehmainen, M. Lassas and P. Ola. "Inverse conductivity problem with an imperfectly known boundary", *SIAM Journal on Applied Mathematics*. Vol. 66, pages 365 – 383, (2005).
- 18) T. Tarvainen, M. Vauhkonen, V. Kolehmainen and J. P. Kaipio. "Finite element model for the coupled radiative transfer equation and diffusion approximation". *International Journal for Numerical Methods In Engineering*. Vol. 65, pages 383 – 405, (2006).
- 19) S. G. Diamond, T. J. Huppert, V. Kolehmainen, M. A. Franceschini, J. P. Kaipio, S. R. Arridge and D. A. Boas. "Dynamic physiological modelling for functional diffuse optical tomography". *NeuroImage*. Vol. 30, pages 88-101, (2006).
- 20) M. Schweiger, S. R. Arridge, O. Dorn, A. D. Zacharopoulos and V. Kolehmainen. "Reconstructing absorption and diffusion shape profiles in optical tomography by using a level set technique". *Optics Letters*. Vol. 31, pages. 471-473, (2006).
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- 27) S. R. Arridge, J. P. Kaipio, V. Kolehmainen, M. Schweiger, E. Somersalo, T. Tarvainen and M. Vauhkonen. "Approximation errors and model reduction with an application in optical diffusion tomography". *Inverse Problems*. Vol. 22, pages. 175-195, (2006).
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- 32) V. Kolehmainen, A. Vanne, S. Siltanen, S. Järvenpää, J. P. Kaipio, M. Lassas and M. Kalke. "Bayesian inversion method for 3-D dental X-ray imaging". *Elektrotechnik & Informationstechnik*, Vol. 124 (7-8), pages 248–253 (2007).
- 33) K. Niinimäki, S. Siltanen and V. Kolehmainen, "Bayesian multiresolution method for local tomography in dental X-ray imaging". *Physics in Medicine and Biology*, Vol. 52, pages 6663-6678 (2007)
- 34) V. Kolehmainen, M. Lassas and S. Siltanen. "Limited data X-ray tomography using nonlinear evolution equations". *SIAM Journal on Scientific Computing*.(2007). *In press*.

Chapters in Books (other than conferences)

- 35) A. Voutilainen, V. Kolehmainen, F. Stratmann and J. P. Kaipio. "Computational methods for the estimation of aerosol size distributions." In L. A. Uvarova and A. V. Latyshev, editors, *Mathematical Modeling: Problems, Methods, Applications*. Pages. 219-230. Kluwer Academic/Plenum Publishers, 2001.

Patents

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- 37) GE Healthcare Finland (assignee). "Method and arrangement for medical X-ray imaging and reconstruction from sparse data". United States patent US 7269241 B2. Inventors S. Siltanen, E. Somersalo, V. Kolehmainen, M. Lassas and J. P. Kaipio. Date of patent 11 Sep 2007.
- 38) Instrumentarium corporation (assignee). "Method and arrangement for three-dimensional medical X-ray imaging". United States patent US 7274766 B2. Inventors J. P. Kaipio, S. Siltanen, M. Kalke, V. Kolehmainen and M. Lassas. Date of patent 25 Sep 2007.

Theses

- 39) V. Kolehmainen. "Static imaging in electrical impedance tomography". *M.Sc. thesis*. University of Kuopio, Finland, 1997 (In Finnish).
- 40) V. Kolehmainen. "Novel approaches to image reconstruction in diffusion tomography". *Ph.D. -thesis*. Kuopio University Publications C: Natural and Environmental Sciences 125. 2001, 164 pages.

Conference papers

- 41) V. Kolehmainen, M. Vauhkonen, P. A. Karjalainen and J. P. Kaipio. "Spatial inhomogeneity and regularization in EIT", In *Proc 19th Int Conf IEEE Eng Med Biol Soc*, pages 449-452, Chicago (IL), USA, October 30-November 2, (1997).
- 42) V. Kolehmainen, M. Vauhkonen, P. A. Karjalainen and J. P. Kaipio. "Comparison of adjacent and trigonometric current patterns in electrical impedance tomography". *Med Biol Eng Comput*, Vol. 35, Suppl part 1, page 320, (1997).
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- 44) J. P. Kaipio, V. Kolehmainen, M. Vauhkonen and E. Somersalo. "Construction of anatomy based priors with anisotropic characteristics with application to electrical impedance tomography". In *Proc 20th Ann Int Conf IEEE Eng Med Biol Soc*, pages 1032-1035, Hong Kong, China, October 29-November 2, (1998).
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- 46) P. A. Karjalainen, J. P. Kaipio, V. Kolehmainen, A. S. Koistinen and J. Partanen. "Regularization approach to the single trial estimation of multi channel evoked potentials". In *Proc of the 1st Joint BMES/EMBS Conf.* page 423, Atlanta (GA), USA, October 13-16, (1999)
- 47) A. Voutilainen, V. Kolehmainen and J. P. Kaipio. "Statistical inversion of aerosol size distribution data". *J Aerosol Sci*, Vol. 31, Suppl 1, pages S767-S768, (2000).
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- 50) T. Vilhunen, V. Kolehmainen, M. Vauhkonen, A. Vanne, A. Gibson, M. Schweiger, S. R. Arridge and J. P. Kaipio. "Computational calibration method for optical tomography", in *Biomedical Topical Meetings CD-ROM* (The Optical Society of America, Washington, DC, 2004), ThD3.
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- 53) T. Tarvainen, M. Vauhkonen, V. Kolehmainen and J. P. Kaipio. "Coupled radiative transfer equation and diffusion approximation". Proc. SPIE Vol. 5859 *Photon migration and diffuse light imaging II*, K. Licha and R. Cubeddu, Eds., pages 262 – 270, (2005).
- 54) S. G. Diamond, T. J. Huppert, V. Kolehmainen, M. A. Franceschini, J. P. Kaipio, S. R. Arridge and D. A. Boas. "Physiological system identification with the Kalman filter in diffuse optical tomography". J. Duncan and G. Gerig (Eds.): MICCAI 2005, in Lecture notes in computer science, Vol. 3750, pages. 649-656, (2005).
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- 56) M. Vauhkonen, T. Tarvainen, V. Kolehmainen, and J.P. Kaipio, "Finite element approximations for the radiative transfer equation," in Biomedical Optics 2006 Technical Digest (Optical Society of America, Washington, DC, 2006), SH47.
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- 60) V. Kolehmainen, M. Lassas and P. Ola. "Calderon's inverse problem with an imperfectly known boundary in two and three dimensions" In Inverse Problems in Applied Sciences - towards breakthrough, *Journal of Physics: Conference Series*, vol. 73 (2007) 012002.