

# Curriculum Vitae of Nuutti Hyvönen

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## Contact information

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## Personal information

Born November 19, 1977 in Kuopio, Finland. Married to Merja Oja since January 2007.

## Language skills

Finnish (mother tongue), English (excellent), Swedish (basic)

## Education

Doctor of Science in Technology June 2004

Department of Engineering Physics and Mathematics, Helsinki University of Technology.

Major: mathematics. Minor: information science.

Thesis: *Diffusive tomography methods: Special boundary conditions and characterization of inclusions* (pass with distinction, opponent: Prof. Martin Hanke).

Master of Science in Technology December 2000

Department of Engineering Physics and Mathematics, Helsinki University of Technology.

Major: mathematics. Minor: information science.

Thesis: Analysis of optical tomography with non-scattering regions.

Matriculation examination June 1996

Otavan opiston aikuislukio, Mikkelin maalaiskunta.

## Professional experience

Full Professor 1.7.2017 onwards

Dept. of Mathematics and Systems Analysis Aalto University

Head of Department since September 2018.

Associate Professor (tenured) 1.12.2012–30.6.2017

Dept. of Mathematics and Systems Analysis Aalto University

Head of the Inverse Problems Research Group.

Academy Research Fellow 1.8.2010–30.11.2012

Dept. of Mathematics and Systems Analysis Aalto University

Head of the Inverse Problems Research Group.

Researcher 1.1.2010–31.7.2010

Dept. of Mathematics and Systems Analysis Aalto University

Head of the Inverse Problems Research Group.

Postdoctoral researcher 1.1.2007–31.12.2009

Institute of Mathematics Helsinki University of Technology

Academy of Finland, postdoctoral researcher's project: *Diffuse tomography — theory and algorithms*. Head of the Inverse Problems Research Group from January 2009 onwards.

Visiting scholar Department of Mathematics Host: Prof. John Sylvester.	1.1.2008–21.12.2008 University of Washington, USA
Researcher Institute of Mathematics Postdoctoral research funded by the Finnish Funding Agency for Technology and Innovation and the Academy of Finland.	1.9.2005–31.12.2006 Helsinki University of Technology
Researcher/assistant Institute of Mathematics Teaching and writing doctoral thesis.	1.1.2001–31.7.2004 Helsinki University of Technology
Research/teaching assistant Institute of Mathematics Teaching and writing master's thesis.	1.6.1999–31.12.2000 Helsinki University of Technology
Part-time teacher Institute of Mathematics Giving tutorials.	1997–1998 Helsinki University of Technology

## Funding ID

*Electrical impedance tomography – a novel method for improved diagnostics of stroke*, Jane and Aatos Erkko Foundation. January 2021 – December 2023. Role: Principal Investigator of the Aalto University team. Funding: Aalto's share is 242 871 EUR of the total funding 1 328 000 EUR.

*Centre of Excellence of Inverse Modelling and Imaging*, Academy of Finland, May 2020 – December 2022. Role: One of the Principal Investigators. Funding from the Academy of Finland: 234 740 EUR.

*Visiting Professor Funding*, Aalto Science Institute (ASci), February 2019 – December 2019. Role: Host of Prof. Henrik Garde (Aalborg University). Funding: 43 440 EUR.

*Centre of Excellence of Inverse Modelling and Imaging*, Academy of Finland, January 2018 – December 2020. Role: One of the Principal Investigators. Funding from the Academy of Finland: 292 766 EUR. Funding from the Aalto University: 300 000 EUR shared with the other Aalto PI Antti Hannukainen.

*Uncertainty quantification in electrical impedance tomography*, Academy of Finland, September 2013 – August 2017. Role: Principal Investigator. Funding: 457 423 EUR.

*Starting grant of a tenured Associate Professor*, Aalto University, January 2013 – December 2015. Funding: 150 000 EUR.

*Fine-tuning of a realistic measurement model in electrical impedance tomography*, Academy of Finland and Deutsche Forschungsgemeinschaft, January 2011 – December 2013. Role: Finnish Principal Investigator. German Principal Investigator: Prof. Andreas Rieder, Karlsruhe Institute of Technology. Funding of the Finnish team: 205 730 EUR.

*Inverse problems with incomplete data*, Academy of Finland, August 2010 – November 2012 (position as an Academy Research Fellow plus research costs). Role: Principal Investigator. Funding: 608 300 EUR. Note: The research cost funding ran until July 2013.

*Diffuse tomography: theory and algorithms*, Academy of Finland, January 2007 – December 2009 (postdoctoral project). Role: Principal Investigator. Funding: 180 000 EUR.

## Scientific responsibilities

Head of the Inverse Problems Research Group at the Aalto University (January 2009 onwards).

Advisory Editor for Mathematical Methods in the Applied Sciences (August 2018 onwards).

Reviewer for the Swedish Foundation for Strategic Research, the Austrian Science Fund, the Czech Science Foundation, and the Canadian Natural Sciences and Engineering Research Council (NSERC).

Responsible researcher at the Aalto University in the project *Inverse Problems and reliability of the measurements* (40370/08) funded by the Finnish Funding Agency for Technology and Innovation (January 2009 – December 2011).

Responsible researcher at the Helsinki University of Technology in the project *Inverse Problems and reliability of the measurements* (40233/07) funded by the Finnish Funding Agency for Technology and Innovation (the year 2009).

Examiner of Hugo Girardon's PhD Thesis (École Polytechnique, 2020).

Evaluator of Esa Vesalainen's docent application (University of Helsinki, 2020).

Opponent at the public defence of Matti Niskanen's doctoral thesis (University of Eastern Finland, 2020).

Opponent at the public defence of Zenith Purisha's doctoral thesis (University of Helsinki, 2018).

Pre-examiner of Andreas Hauptmann's PhD Thesis (University of Helsinki, 2017).

Examiner of Jem Teresa John's PhD Thesis (Indian Institute of Science, Bangalore, 2017).

Examiner of Dmitry Ponomarev's PhD Thesis (Nice Sophia Antipolis University, 2016).

Examiner of Henrik Garde's PhD Thesis (Technical University of Denmark, 2016).

Examiner of Marcel Ullrich's PhD Thesis (University of Stuttgart, 2015).

Pre-examiner of Meghdoot Mozumder's PhD Thesis (University of Eastern Finland, 2015).

Evaluator of Markus Harju's docent application (University of Oulu, 2014).

Pre-examiner of Paul Hadwin's PhD Thesis (University of Auckland, 2014).

Evaluator of Miren Zubeldia's docent application (University of Helsinki, 2014).

Opponent at the public defence of Anssi Lehikoinen's doctoral thesis (University of Eastern Finland, 2012).

Pre-examiner of Valter Pohjola's licentiate thesis (University of Helsinki, 2013).

Pre-examiner of Emilia Blåsten's licentiate thesis (University of Helsinki, 2010).

Evaluator of Hanna Pikkarainen's docent application (University of Helsinki, 2010).

Pre-examiner of Markus Harju's licentiate thesis (University of Oulu, 2005).

Reviewer for *Inverse Problems* (32 manuscripts), *Inverse Problems and Imaging* (8), *SIAM Journal on Applied Mathematics* (4), *IEEE Transactions on Medical Imaging* (3), *SIAM Journal on Mathematical Analysis* (2), *Numerische Mathematik* (2), *Inverse Problems in Science and Engineering* (2), *Measurement Science and Technology* (2), *SIAM/ASA Journal on Uncertainty Quantification* (1), *BIT Numerical Mathematics* (1), *Scientific Reports* (1), *Journal of Complexity* (1), *Complex Variables and Elliptic Equations* (1), *Journal of Mathematical Biology* (1), *Journal of Mathematical Imaging and Vision* (1), *Physiological Measurement* (1), *Journal of Integral Equations and Applications* (1), *Applied Numerical Mathematics* (1), *International Journal of Heat and Mass Transfer* (1), *Computational and Mathematical Methods in Medicine* (1), *Boundary Value Problems* (1), *Biomedical Optics Express* (1), *Artificial Intelligence in Medicine* (1), *Rakenteiden Mekaniikka* (1).

### Commissions of trust

Member of the board of the Finnish Centre of Excellence in Inverse Modelling and Imaging (January 2018 onwards).

Member of the board of the Finnish Centre of Excellence in Inverse Problems Research (January 2009 – December 2017).

Member of the board of the Finnish Inverse Problems Society (December 2011 onwards).

Member of the board of the Graduate School of Inverse Problems (January 2010 – December 2013).

## **Institutional responsibilities**

Head of the Department of Mathematics and Systems Analysis, School of Science, Aalto University (September 2018 onwards).

Vice Head of the Department of Mathematics and Systems Analysis, School of Science, Aalto University (January 2017 – September 2018).

Head of the Master's Programme in Mathematics and Operations Research, School of Science, Aalto University (2014–2017).

Four times the Chair of a Departmental Tenure Track Recruitment Committee at the Department of Mathematics and Systems Analysis, School of Science, Aalto University (2014–2015, 2017–2018, 2018 and 2020). Member of three other departmental tenure track recruitment committees at Aalto University.

Twice the Chair of a Departmental Tenure Review Committee at the Department of Mathematics and Systems Analysis, School of Science, Aalto University (2019, 2020). Member of five other departmental tenure or full professor review committees at Aalto University.

Chair of a Departmental Lecturer Track Recruitment Committee at the Department of Mathematics and Systems Analysis, School of Science, Aalto University (2018–2019). Member of one other departmental lecturer track recruitment committee at Aalto University.

Chair of a Departmental Recruitment Committee regarding an adjunct professorship at the Department of Mathematics and Systems Analysis, School of Science, Aalto University (2019–2020). Member of one other departmental recruitment committee regarding an adjunct professorship at Aalto University.

Member of the Management Team, School of Science, Aalto University (January 2015 onwards).

Member of the Education Management Team, School of Science, Aalto University (January 2015 onwards).

Member of the Steering Group of the Department of Mathematics and Systems Analysis, School of Science, Aalto University (January 2014 onwards).

Member of the Degree Programme Committee of Engineering Physics and Mathematics, School of Science, Aalto University (January 2013 onwards). Vice-chair.

Member of the Degree Programme Committee of Bachelor's Programme in Science and Technology, School of Science, Aalto University (January 2013 – February 2016 & September 2018 – December 2019). Deputy member (January 2017 – September 2018).

Deputy member of the Academic Affairs Committee, Aalto University (January 2018 onwards).

Deputy member of the Academic Committee for Science, School of Science, Aalto University (January 2014 onwards).

Member of the SCI Infrastructure Working Group, School of Science, Aalto University (September 2018 – December 2020).

## **Awards and grants**

Recognition of Outstanding Refereeing Performance, Inverse Problems, 2009.

Travel grant of 4000 EUR, Finnish Foundation for Technology Promotion, 2008.

Travel grant of 3000 EUR, Finnish Cultural Foundation, 2008.

Grant of 4000 EUR, Emil Aaltosen säätiö, 2004.

Finnish Inverse Prize (1600 EUR), Finnish Inverse Problems Society, 2003.

Grant of 2000 FIM, Student Union of Helsinki University of Technology, 1999.

## Supervision of thesis projects

Supervisor of the doctoral thesis of Lauri Harhanen (2013).  
Supervisor of the doctoral thesis of Otto Seiskari (2013).  
Supervisor of the doctoral thesis of Stratos Staboulis (2014).  
Supervisor of the doctoral thesis of Matti Leinonen (Harri Hakula as an instructor; 2015).  
Supervisor of the doctoral thesis of Helle Majander (2016).  
Supervisor of the doctoral thesis of Lauri Mustonen (2017).  
Supervisor of the doctoral thesis of Mikael Laaksonen (Harri Hakula as the instructor; 2018).  
Supervisor of the doctoral thesis of Valentina Candiani (an ongoing project).  
Supervisor of the doctoral thesis of Topi Kuutela (an ongoing project).  
Supervisor of the doctoral thesis of Juha-Pekka Puska (an ongoing project).  
Supervisor of the doctoral thesis of Pauliina Hirvi (an ongoing project).  
Supervisor of the master's thesis of Juha-Samuli Hellén (Ruth Kaila as the instructor, 2020)  
Supervisor of the master's thesis of Aapo Hanski (Yrjö Häme as the instructor; 2020)  
Supervisor of the master's thesis of Leo Norilo (Antti Solonen and Stratos Staboulis as the instructors; 2019)  
Supervisor of the master's thesis of Jyri Maanpää (Risto Kaijaluoto as the instructor; 2019)  
Supervisor of the master's thesis of Mikko Karjalainen (Janne Tamminen as the instructor; 2018).  
Supervisor of the master's thesis of Juha-Pekka Puska (Lauri Mustonen as the instructor; 2018).  
Supervisor of the master's thesis of Leo Tuhkanen (Antti Rasila as the instructor; 2018).  
Supervisor of the master's thesis of Jonatan Lehtonen (Harri Hakula as the instructor; 2015).  
Supervisor of the master's thesis of Lauri Mustonen (Matti Leinonen as the instructor; 2014)  
Instructor of the master's thesis of Jaakko Hujanen (2014).  
Instructor of the master's thesis of Matti Leinonen (2011).  
Instructor of the master's thesis of Otto Seiskari (2011). (The best master's thesis at the Aalto School of Science in 2011.)  
Instructor of the master's thesis of Stratos Staboulis (2010).  
Instructor of the master's thesis of Lauri Harhanen (Wacker Prize for the best mathematical master's thesis on an industrial project, European Consortium for Mathematics in Industry; 2008).

## Teaching experience (Helsinki University of Technology/Aalto University)

Lecturer: Computational (methods in) inverse problems (2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020), Factorization and source support methods for electrical impedance tomography (2010), Finite difference methods (2005, 2013, 2014), Computational methods for differential equations (2015, 2016, 2017, 2018, 2019), Basic course in mathematics L4 (2013; with Juha Kinnunen), Partial Differential Equations (2013; with Ioannis Parissis), Lineaarialgebra (2018), Matriisilaskenta ( $3 \times 2014$ ,  $3 \times 2015$ ,  $1 \times 2020$ ).

Course assistant: Basic course in mathematics P2 (2004), Non-linear functional analysis (2003), Applied functional analysis (2003), Integral equations (2003), Inverse theory (2002), Basic course in mathematics L2 (2000), Basic course in mathematics L1 (1999).

Exercise assistant: Basic courses in mathematics L1/L2/L3/L4/C2/P2.

## Research visits abroad

University of Delaware, Department of Mathematical Sciences, Newark, Delaware, USA, 12.–18.5.2012. Host: Prof. Fioralba Cakoni.

Seoul National University, Department of Mathematical Sciences, Seoul, Republic of Korea, 30.3.–6.4.2009. Host: Prof. Hyeonbae Kang.

University of Washington, Department of Mathematics, Seattle, USA, the year 2008. Host: Prof. John Sylvester.

Rensselaer Polytechnic Institute, Department of Mathematical Sciences, Troy, USA, 29.9.–4.10.2008. Host: Prof. David Isaacson.

National Technical University of Athens, Department of Mathematics, Athens, Greece, 23.–30.9.2007. Host: Prof. Drossos Gintides.

Johannes Gutenberg-Universität, Institut für Mathematik, Mainz, Germany, 26.2.–5.4.2007, 21.–30.8.2007 and 16.–20.3.2009. Host: Prof. Martin Hanke.

University of Tsukuba, Institute of Mathematics, Japan, 31.1.–14.2.2007. Host: Prof. Hiroshi Isozaki.

## Hosted research visits to Finland

Henrik Garde (eleven months as a visiting professor), 1.2.2019–31.12.2019.

Lucas Chesnel (eighteen months as a postdoctoral researcher), 1.3.2013–31.8.2014.

Jérémi Dardé (seventeen months as a postdoctoral researcher), 21.1.2011–30.6.2012.

Hari M. Varma (fifteen months as a postdoctoral researcher), 1.10.2010–31.12.2011.

Maia Lesosky (sixteen months as a postdoctoral researcher), 1.5.2009–31.8.2010.

## Organized conferences, summer schools and special sessions

*24th Inverse Days*, December 11–13, 2018, Helsinki, Finland. One of the four main organizers together with Tatiana Bubba, Valentina Candiani and Antti Hannukainen.

*Distinguished Lectures on Inverse problems*, August 4–8, 2014, Helsinki, Finland (member of the scientific organizing committee).

Uncertainty quantification in imaging (with Tapio Helin and Tanja Tarvainen). In *ICIAM 2019, Valencia, Spain, July 2019*.

Inverse scattering and electrical impedance tomography (with Roland Griesmaier). In *SIAM Conference on Imaging Sciences, Bologna, Italy, June 2017*.

Inverse problems and uncertainty quantification (with Tapio Helin). In *SIAM Conference on Uncertainty Quantification, Lausanne, Switzerland, April 2016*.

Inverse problems in PDE and probability (with Tapio Helin). In *ICIAM 2015, Beijing, China, August 2015*.

Efficient reconstruction methods for electrical impedance tomography and inverse scattering (with Roland Griesmaier). In *Applied Inverse Problems, Helsinki, Finland, May 2015*.

Recent progress in inverse scattering and electrical impedance tomography (with Roland Griesmaier). In *Applied Inverse Problems, Daejeon, Korea, July 2013*.

Deterministic and probabilistic methods for inverse scattering and impedance tomography (with Roland Griesmaier). In *SIAM Conference on Imaging Science, Philadelphia, Pennsylvania, USA, May 2012*.

Shape reconstruction in impedance tomography and inverse scattering (with Roland Griesmaier). In *Applied Inverse Problems, College Station, Texas, USA, May 2011*.

Summer school on computational solution of inverse problems (with Samuli Siltanen, Matti Määttä and Terhi Hautala), Helsinki, Finland, June 2010.

Electromagnetic imaging with limited data (with Roland Griesmaier). In *SIAM Conference on Imaging Science, Chicago, Illinois, USA, April 2010*.

Qualitative methods for imaging problems in electromagnetics (with Armin Lechleiter). In *SIAM Conference on Imaging Science, San Diego, California, USA, July 2008*.

Inverse problems arising from scattering phenomena (with Hanna Pikkarainen). In *Applied Inverse Problems, Cirencester, UK, June 2005*.

Statistical methods in EIT and X-ray tomography (with Hanna Pikkarainen). In *Applied Inverse Problems, Cirencester, UK, June 2005*.

### Talks at international conferences and workshops

Invited talks:

1. Logarithmic linearization for inverse elliptic boundary value problems In *Chemnitz Symposium on Inverse Problems 2019 (on Tour in Frankfurt), Frankfurt, Germany, October, 2019*.
2. Computational solution of inverse problems. In *Designs for Noise Reducing Materials and Structures (DE-NORMS) COST Action's fourth Workshop: Working Days on Design and Characterisation of Innovative Noise Reducing Materials and Structures, Kuopio, Finland, October 2018*.
3. Generalized linearization in electrical impedance tomography. In *Inverse Problems Network Meeting 3, University College London, UK, April 2018*.
4. Polynomial collocation for handling an inaccurately known measurement configuration in EIT. In *Theory and Numerics of Inverse Scattering Problems, Oberwolfach, Germany, September 2016*.
5. Polynomial collocation for handling an inaccurately known measurement configuration in electrical impedance tomography. *International Conference on Computational Mathematics and Inverse Problems, Michigan Tech, USA, August 2016*.
6. Simultaneous reconstruction of outer boundary shape and conductivity distribution in electrical impedance tomography. In *Advances in Uncertainty Quantification Methods, Algorithms and Applications (UQAW 2016), King Abdullah University of Science and Technology, Saudi Arabia, January 2016*.
7. Stochastic finite element method for electrical impedance tomography. In *Inverse Problems in Wave Propagation — IWaP 2015, Bremen, Germany, April 2015*.
8. Simultaneous reconstruction of body shape and conductivity in electrical impedance tomography. In *The Nineteenth Inverse Days, Inari, Finland, December 2013*.
9. Simultaneous reconstruction of body shape and conductivity in electrical impedance tomography. In *Biology and Mathematical Inverse Problems: A New Wedded couple?, Orleans, France, November 2013*.
10. Simultaneous reconstruction of outer boundary shape and conductivity distribution in electrical impedance tomography. In *Inverse Problems: Scattering, Tomography and Parameter Identification (Andreas Kirsch's 60th birthday), Bad Herrenalb, Germany, April 2013*.
11. Simultaneous reconstruction of outer boundary shape and conductivity distribution in electrical impedance tomography. In *Inverse problems and numerical methods in applications, Bremen, Germany, March, 2012*.
12. Electrical impedance tomography with two electrode. In *Inverse Problems for Partial Differential Equations, Oberwolfach, Germany, February, 2012*.
13. Electrical impedance tomography with two electrodes. In *Finnish–Japanese–Korean workshop on inverse problems, Helsinki, Finland, December 2011*.
14. A computational algorithm for locating inclusions with two electrodes of electrical impedance tomography. In *the annual general meeting of the Finnish Society of Computational Sciences (Sulatis), February 2011*.
15. The inverse backscatter problem in impedance tomography: unique identifiability and the backscattering support. In *Inverse Problems, Computation and Applications, CIRM Luminy, France, June 2010*.
16. Backscattering in electrical impedance tomography. In *MMNS Workshop on Inverse Problems for Waves: Methods and Applications, Paris, March 2010*.
17. Electrical impedance tomography: Backscattering and imaging of concrete. In *Trilateral workshop on inverse problem (China-Germany-Finland), Helsinki, March 2010*.
18. An inverse backscattering problem in electric impedance tomography. In *Finnish-Korean Symposium on Inverse Problems, Seoul, Republic of Korea, April 2009*.
19. Locating transparent cavities in optical absorption and scattering tomography. In *Inverse Problems in Wave Scattering, Oberwolfach, Germany, March 2007*.
20. Factorization method and weak inclusions in electrical impedance tomography. In *The 12th Annual Mathematical Analysis Seminar on Inverse Problems, Tsukuba, Japan, February 2007*.
21. Characterizing inclusions using a linear sampling method based on the complete electrode model of electrical impedance tomography. In *Workshop on Inverse Problems & Medical Imaging, Vancouver, Canada, August 2003*.

Invited talks in special sessions and minisymposia:

1. An inverse boundary value problem for the  $p$ -Laplacian: a linearization approach. In *Applied Inverse Problems 2019, Grenoble, France, July, 2019*.
2. Generalized linearization techniques and the smoothed complete electrode model. In *SIAM Conference on Imaging Science, Bologna, Italy, June 2018*.
3. Polynomial surrogates for electrical impedance tomography and thermal tomography. In *SIAM Conference on Imaging Science, Bologna, Italy, June 2018*.
4. Efficient inclusion of edge-promoting priors in quantitative photoacoustic tomography. In *SIAM Conference on Imaging Science, Bologna, Italy, June 2018*.
5. Inverse source problems arising from two-electrode measurements of electrical impedance tomography. In *Inverse Problems: Modeling and Simulation, Malta, May 2018*.
6. Experimental design in diffuse tomography. In *SIAM Conference in Uncertainty Quantification, Garden Grove, California, USA, May 2018*.
7. Polynomial surrogates for electrical impedance tomography. In *SIAM Annual Meeting, 2017, Pittsburgh, USA, July 2017*.
8. Efficient inclusion of edge-promoting priors in diffuse imaging. In *Applied Inverse Problems 2017, Hangzhou, China, June 2017*.
9. Polynomial surrogates for electrical impedance tomography. In *Applied Inverse Problems 2017, Hangzhou, China, May 2017*.
10. Optimal Electrode Positions in Electrical Impedance Tomography. In *SIAM Conference on Uncertainty Quantification, Lausanne, Switzerland, April 2016*.
11. Simultaneous reconstruction of outer boundary shape and conductivity distribution in electrical impedance tomography. In *27th Nordic Congress of Mathematicians, Stockholm, Sweden, March 2016*.
12. Optimization of electrode positions in electrical impedance tomography. In *Applied Inverse Problems, Helsinki, Finland, May 2015*.
13. Stochastic Galerkin finite element method for electrical impedance tomography. In *SIAM Conference on Imaging Science, Hong Kong, China, July 2014*.
14. Inverse conductivity problem in the plane: uniqueness by point measurements. In *International Conference on Inverse Problems and Related Topics, Nanjing, China, October 2012*.
15. Inverse conductivity problem in the plane: Uniqueness by point measurements. In *SIAM Conference on Imaging Science, Philadelphia, Pennsylvania, USA, May 2012*.
16. Detection of multiple inclusions from sweep data of electrical impedance tomography. In *Finnish Mathematics Days, Lappeenranta, Finland, January 2012*.
17. Electrical impedance tomography with two electrodes. In *ICIAM 2011, Vancouver, Canada, July 2011*.
18. Electrical impedance tomography with two electrodes. In *Fields–Mitacs Conference on Mathematics of Medical Imaging, Toronto, Canada, June 2011*.
19. Justification of a point electrode model in electrical impedance tomography. In *Applied Inverse Problems, College Station, Texas, USA, May 2011*.
20. Electrical impedance tomography with two electrodes. In *Applied Inverse Problems, College Station, Texas, USA, May 2011*.
21. Convex backscattering support in electrical impedance tomography. In *The 8th AIMS Conference on Dynamical Systems and Differential Equations, Dresden, Germany, May 2010*.
22. Backscattering in electrical impedance tomography. In *SIAM Conference on Imaging Science, Chicago, Illinois, USA, April 2010*.
23. An inverse backscattering problem in electric impedance tomography. In *Applied Inverse Problems, Vienna, Austria, July 2009*.
24. Approximating idealized measurement maps of electric impedance tomography by electrode data. In *Applied Inverse Problems, Vienna, Austria, July 2009*.
25. Convex source support and its application to electric impedance tomography. In *SIAM Conference on Imaging Science, San Diego, California, USA, July 2008*.
26. Convex source support and its application to electric impedance tomography. In *The 7th AIMS Conference on Dynamical Systems and Differential Equations, Arlington, Texas, USA, May 2008*.
27. An implementation of the factorization method within the complete electrode model of electrical impedance tomography. In *Applied Inverse Problems, Vancouver, Canada, June 2007*.
28. Locating transparent cavities in optical absorption and scattering tomography. In *Applied Inverse Prob-*



lems, Vancouver, Canada, June 2007.

29. Factorization method and weak inclusions in electrical impedance tomography. In *Inverse Problems: Modeling and Simulation*, Fethiye, Turkey, May 2006.
30. Factorisation method in optical tomography. In *Applied Inverse Problems*, Cirencester, UK, June 2005.
31. Characterizing inclusions using a linear sampling method based on the complete electrode model of impedance tomography. In *Applied Inverse Problems*, Lake Arrowhead, California, USA, June 2003.
32. Analysis of optical tomography with non-scattering regions. In *Applied Inverse Problems*, Montecatini Terme, Italy, June 2001.

Other talks:

1. Short history of Finnish mathematics. In *Fysikerfest 2017*, Kuopio, Finland, October 2017.
2. Inverse backscattering in electric impedance tomography. In *The Fifteenth Inverse Days*, Luosto, Finland, December 2009.
3. An output least squares algorithm for locating nonscattering regions in optical tomography. In *The Thirteenth Inverse Days*, Lappeenranta, Finland, December 2007.
4. An output least squares algorithm for locating nonscattering regions in optical tomography. In *The 8th International Workshop on Mathematical Methods in Scattering Theory and Biomedical Engineering*, Lefkada, Greece, September 2007.
5. An implementation of the factorization method within the complete electrode model of electrical impedance tomography. In *The Twelfth Inverse Days*, Tampere, Finland, December 2006.
6. Locating inclusions in electrical impedance tomography. In *BIT Numerical Mathematics Circus*, Stockholm, Sweden, August 2006.
7. Factorization method and purely absorbing inclusions in optical tomography. In *The Eleventh Inverse Days*, Sodankylä, Finland, December 2005.
8. Factorization method in optical tomography. In *The Ninth Inverse Days*, Pudasjärvi, Finland, December 2003.
9. Complete electrode model: approximation properties and characterization of inclusions. In *The Eighth Inverse Days*, Nilsjö, Finland, December 2002.
10. Analysis of optical tomography with non-scattering regions. In *The Sixth Inverse Days*, Savukoski, Finland, December 2000.

### **Non-academic positions of trust**

Member of Body of Representatives, Student Union of Helsinki University of Technology, 1998–2000.  
Board member (fuksikapteeni), Guild of Physics Students at Helsinki University of Technology, 1998.

### **Competitions**

Member of Finland's squad at the International Mathematical Olympiad in Bombay in 1996.  
Third place in the competition in mathematics for Finnish high school students in 1995.  
Fifth place in the competition in physics for Finnish high school students in 1995.

### **Conscription**

Nonmilitary service at the Department of Mathematics and Statistics at University of Helsinki, 2.8.2004–31.8.2005.