

Marko Vauhkonen  
 University of Eastern Finland  
 Department of Applied Physics  
 P.O. Box 1627  
 FI-70211 Kuopio, Finland  
 Tel. +358 40 771 3737  
 E-mail: marko.vauhkonen@uef.fi  
<http://venda.uef.fi/inverse/FrontPage/People/Marko Vauhkonen>

CV

11.01.2017

### 1. Full name and date

- Vauhkonen Marko Johannes
- Male
- 11.01.2017

### 2. Date and place of birth, nationality, current residence

- Date and place of birth: 25.03.1970, Imatra, Finland
- Nationality: Finnish
- Current residence: Kuopio, Finland

### 3. Education and degrees awarded

- Adjunct professorship (docent): Physics, University of Kuopio, 02.11.2000
- Ph.D.: Physics, University of Kuopio, 30.05.1997, Thesis title: Electrical impedance tomography and prior information
- M.Sc.: Physics, University of Kuopio, 01.09.1994
- Matriculation: Varkaus, 31.05.1989

### 4. Linguistic skills

- Mother tongue: Finnish
- Other languages: English (fluent), Swedish (moderate), German (basics)

### 5. Current position

- Professor (Industrial Physics and Mathematics), Department of Applied Physics, Kuopio Campus, University of Eastern Finland, Finland

### 6. Previous work experience

University of Kuopio (UKU), Academy of Finland (AF), University of Eastern Finland (UEF)

- Research assistant/UKU, 01.09.1994-28.02.1995
- Assistant/UKU, 01.03.1995-31.12.1995
- Researcher/UKU, 01.01.1996-30.11.1997
- Senior assistant/UKU, 01.12.1997-30.11.1998
- Visiting scientist/Oxford Brookes Univ., 08.06.1998-08.10.1998
- Post-doc researcher/AF, 01.12.1998-31.07.1999
- Researcher/UKU, 01.08.1999-31.05.2000
- Post-doc researcher/AF, 01.06.2000-31.08.2001
- Research director/UKU, 01.09.2001-30.04.2008
- Marie Curie Research Fellow, Philips Research Europe, Aachen, Germany, 01.05.2006-30.4.2008

- Research director/UKU, 01.05.2008-31.5.2008
- CTO at Numcore Ltd., 01.06.2008- 31.5.2009
- CSO at Rocsole Ltd., (part time) 1.6.2012-

## 7. Research funding as well as leadership and supervision

- Major research funding
  - Professorship project funding, city of Kuopio, 1.1.2009-31.12.2014, 500 000 €
  - TEKES/EAKR project PROMO, "Online imaging technologies in industry", 1.1.2011-31.12.2012, 280 000€
  - TEKES/EAKR project KALMIT, "Measurement and image reconstruction techniques in electrical capacitance tomography", 1.1.2012-31.12.2013, 342 000 €
  - EAKR project "PROTECO Infrastructure", 1.8.2013-31.12.2014, 166 345 €
  - EAKR project "Kehittynyt vesien käsittelyn pilotointiympäristö, KEVEYS", 1.6.2014-30.4.2015, 63 720 €
  - EAKR project "Kaivosvesiosaamisen verkosto, KaivosVV", 1.1.2015-31.12.2017, 49 642 €
  - TEKES/EAKR project, VITOMIMO, 1.7.2015-30.6.2017, 302 000 €
  - Jenny and Antti Wihuri foundation, "Multiphase flow imaging in process industry", 1.1.2016-31.12.2016, 32 000 €
  - Jane and Aatos Erkko foundation, "Functional 4D imaging in fMRI and PET", 1.1.2017-31.12.2019, 434 000 €
- Role in the preparation of funding applications for a research group
  - Preparing all the funding applications mentioned above. Also other smaller funds applied since 2002
- Leadership in research work
  - PI of the research group since 2001
- Supervision of post-doc researchers
  - Lasse Heikkinen, graduated 2005, main supervisor
  - Antti Nissinen, graduated 2011, main supervisor
  - Kimmo Karhunen, graduated 2013, main supervisor
  - Ossi Lehtikangas, graduated 2014, main supervisor
- Experience as officially appointed supervisor to undergraduate and post-graduate students/doctoral students
  - Ph.D. Jorma Ollikainen, *Modelling and computational aspects in EEG inverse problems*, 2001
  - Ph.D. Ville Kolehmainen, *Novel approaches to image reconstruction in diffusion tomography*, 2001
  - Ph.D. Päivi Vauhkonen, *Image reconstruction in three-dimensional electrical impedance tomography*, 2004
  - Ph.D. Lasse Heikkinen, *Statistical estimation methods for electrical impedance tomography*, 2005
  - Ph.D. Aku Seppänen, *State estimation in process tomography*, 2005
  - Ph.D. Tanja Tarvainen, *Computational methods for light transport in optical tomography*, 2006

- Ph.D. Olli-Pekka Tossavainen, *Shape estimation in electrical impedance tomography*, 2007
- Ph.D. Eeva Boman, *Boltzmann transport equation in radiation therapy treatment planning*, 2007
- Ph.D. Janne Heikkilä, *Models for elastography-based monitoring of focused ultrasound surgery and diagnostics*, 2011
- Ph.D. Ville Rimpiläinen, *Electrical tomography imaging in pharmaceutical processes*, 2012
- Ph.D. Anssi Lehtikoinen, *Modeling uncertainties in process tomography and hydrogeophysics*, 2012
- Jari Kourunen, *Imaging of mixing in selected industrial processes using electrical resistance tomography*, 2014
- Ph.D. Tuomas Koivumäki, *The bioimpedance technique in respiratory- and dual-gated positron emission tomography imaging*, 2014
- Kimmo Laitinen, *Simulation and experimental verification of novel electrolytic coating processes*, ongoing
- Pekka Turpeinen, *Varantojen ja varastojen hallinta metsäteollisuusyhtiön puunhankinnan logistisessa ketjussa*, ongoing
- Gerardo del Muro Gonzalez, *Novel image reconstruction approaches in 3D multi frequency EIT*, ongoing
- Antti Voss, *Imaging of concrete using electrical capacitance and electrical impedance tomography*, ongoing
- Ville-Veikko Wettenhovi, *Functional 4D imaging in PET and fMRI*, ongoing
- Matti Hanhela, *Image reconstruction in low-dose computerized tomography (CT) imaging*, ongoing
- Several M.Sc. and B.Sc. students supervised since 1997

## 8. Merits in teaching and pedagogical competence

- Involvement in curriculum planning
  - Part of the curriculum planning group since 2009. Head of the degree program of Applied Physics since 1.1.2014
- Teaching experience
  - The following courses have been planned and lectured since 1997. Also lecture material written for most of the courses
    - Basics of physics, Introduction to applied physics studies, Physics laboratory course, Linear and matrix algebra, Mathematical methods in physics, Finite element methods, Estimation theory, Probability theory, Numerical methods
- Development of teaching methods
  - Member of the national network on Web-based courses in Mathematical modelling (<https://hlab.ee.tut.fi/mallinnus>). Web-based teaching technology has been developed in this project. Four web-based courses per year on Mathematical modelling given since 2003
- Doctoral program

- Head of an UEF doctoral program “Mathematical analysis and scientific computing” , 1.1.2013-31.12.2014

## 8. Awards, prizes and honours

- Young Scientist of the City of Kuopio, 1997

## 9. Other academic merits

- Service as a pre-examiner or as an opponent of a doctoral dissertation, as a member in dissertation committees
  - Jenni Heino, Ph.D. thesis review, 2005
  - Simo Särkkä, Ph.D. thesis review, 2006
  - Jimmy Kjaersgaard-Rasmussen (Denmark), Ph.D. thesis review and opponent, 2010
  - Roland Eichardt (Germany), Ph.D. thesis review, 2010
  - Hsin-Yu (Kent) Wei (UK), Ph.D. thesis review and opponent, 2012
  - Maomao Zhang, (UK), Ph.D. thesis review and opponent, 2016
- Member of international peer evaluation committees of funding applications
  - Reviewer of funding applications of The Austrian Science Fund (FWF)
- Memberships and positions of trust in scientific and scholarly societies
  - Member of board of the Finnish Centre of Excellence in Inverse Problems Research 1.1.2012-
  - Associate editor of the journal “Inverse Problems in Science and Engineering”, 16.12.2015-
- Referee for scientific and scholarly journals
  - Referee of more than 80 papers in the following journals: IEEE Transactions on Biomedical Engineering, Inverse Problems in Science and Engineering, Measurement Science and Technology, IEEE Transactions on Magnetics, IEEE Transactions on Medical Imaging, Inverse Problems, Physiological Measurement, Journal of Petroleum Technology and Alternative Fuels, Physics in Medicine and Biology, Transactions on Image Processing, Journal of Medical Engineering
- Invited keynote lectures abroad
  - Total of 15 invited talks in conferences, workshops and universities
- Organizing scientific conferences
  - As a member of scientific advisory board in several international scientific conferences. Reviewing abstracts and full papers for the conference proceedings

## 10. Scientific and societal impact of research

- Total number of publications
  - Scientific papers in peer reviewed journals: 88
  - Peer reviewed papers in conference proceedings: 51
- Invention disclosures and patents
  - Total of 10 invention disclosures at Philips, UEF, Numcore and Rocsole.
  - Total of 5 patents or patent applications
- Other commercialisation-related merits
  - Founder of two spin-off companies, Numcore Oy (2008, sold to Outotec Oy in 2012) and Rocsole Oy (2012-). Board member of Numcore (2008-2012) and Rocsole (2012-2014)

