Personal details and date of CV

- Ursin (né Seppänen)
- Aku Olavi
- ORCID: https://orcid.org/0000-0002-4042-2254
- Date: May 29th, 2025

Degrees

- Ph.D, University of Kuopio (UKU), Physics, February 14th, 2006,
- M.Sc, University of Kuopio (UKU), Physics, May 11th, 2000
- Matriculation Examination, Kallavesi High School, Kuopio, Finland, June 4th, 1994
- Title of Docent: Applied Inverse Problems, University of Eastern Finland (UEF), Oct 1st, 2011.

Current employment

- Professor, UEF, Dept. of Applied Physics, 1.1.2022 – (Stage of academic research career: IV)

Previous work experience

- Associate Professor (tenure track), UEF, Dept. of Applied Physics, 1.1.2018-31.12.2021
- Academy Research Fellow, UEF, Dept. of Applied Physics, 1.9.2013 – 31.12.2017
- Senior/University researcher, UEF, Dept. of Physics and Mathematics, 1.1.2010 – 31.8.2013
- Researcher (half time), University of Tampere, 1.10.-31.12.2010
- Researcher, UKU, Department of Physics, 5.6.2006 – 31.12.2009
- Special education teacher, Paloaho Special School, Kuopio, 1.9.2005 – 31.5.2006
- Researcher, UKU, Department of Physics, 1.7.1999 – 31.8.2005
- Part-time teacher, UKU, Department of Mathematics and Computer Sciences, 1999
- Trainee, UKU, Department of Physics, 1.6.-31.7.1998, 1.6.-30.6.1999

Research funding and grants

I have been the PI in the following projects:

- Academy postdoctoral project, 2011-2013, Academy of Finland, 304 k€
- Academy Research Fellow project, 2013-2018, Academy of Finland, 425 k€
- Research Fellow, additional funding, 2013-2016, Academy of Finland, 210 k€
- Four-dimensional Airborne Laser Scanning, 2016-2017, Academy of Finland, 177 k€
- Research Fellow, additional funding, 2016-2018, Academy of Finland, 140 k€
- Horizon 2020: Science for Clean Energy, 2017-2020, European Commission, UEF share: 498 k€
- Centre of Excellence of Inverse Modelling and Imaging, 2018-2020, Academy of Finland, 175 k€
- Centre of Excellence of Inverse Modelling and Imaging, 2020-2022, Academy of Finland, 95 k€
- Horizon 2020, Science for Clean Energy, Additional funding 2020, European Commission, 17 k€
- Co-funded research project, 2021, UK Research and Innovation, 17 k€
- React-EU: Tomography in the field, 2021-2023, Regional Council of Pohjois-Savo, 310 k€
- Centre of Excellence of Inverse Modelling and Imaging, 2023-2025, Academy of Finland, 200 k€
- EU Marie Curie, 2023-2027, European Research Executive Agency, 101 k€
- The Innovation and Skills in Finland 2021–2027 programme: Added value from data streams in bioeconomics research, 2024-2026, Regional Council of Pohjois-Savo, 51 k€
- JTF project, 2024-2026, Regional Council of Pohjois-Savo, 415 k€
- Co-funded research project, 2024-2025, MIRICO Ltd, 25 k€

Research output

- **Publications: 74** peer-reviewed journal articles, **39** full papers in conference proceedings, **3** book chapters.

Research supervision and leadership experience

Supervision of post-doc researchers:

- Christina Brandt, PhD (graduated 2012), Primary supervisor from Sept 2015 to Feb 2017
- Teemu Luostari, PhD (graduated 2013), Primary supervisor from Feb 2016 to Dec 2017
- Anna Kaasinen, PhD (graduated 2013), Primary supervisor from Aug 2017 to Sept 2020
- Antti Voss, PhD (graduated 2020), Primary supervisor Feb-Dec 2020 and Sept 2024-Feb 2025
- Matti Niskanen, PhD (graduated 2022), Secondary supervisor since Apr 2022
- Petri Varvia, PhD (graduated 2018), Primary supervisor since Jan 2025

Supervision of under- and post-graduate students:

- Currently supervising: 7 PhD (6 as principal) and 2 MSc students (both as principal supervisor)
- Completed theses: 9 PhD (6 as principal supervisor), 14 MSc (11 as principal supervisor), 8 BSc (5 as principal supervisor), 1 BEng (as co-supervisor)

Supervision of visiting scholars:

- Danny Smyl, MSc, Fulbright, from North Carolina State University, Aug 2016 – May 2017.
- Laura Dalton, MSc, Fulbright, from North Carolina State University, Jan – Sept 2021.

Teaching merits

- *Lectured courses in UKU/UEF 2002-2024:* Transport phenomena (undergraduate course), Inverse problems 2 (postgraduate course), Statistical inverse problems (postgraduate course), Modeling 2 (undergraduate course), Electromagnetic field theory (undergraduate course), Mathematical methods in physics (undergraduate course). **Total**: 452 hours.
- *Lecturing in other universities:* 24th international Jyväskylä Summer School, August 2014, MA4: Statistical and Computational Inverse Problems with Applications (10 h lectures + home work) and 9th International Conference on Inverse Problems in Engineering (ICIPE), Waterloo, Canada, May 23-26, 2017, Minicourse on “Inverse Problems in the Bayesian Framework” (6 h)
- *Tutoring in UKU/UEF:* Physics laboratory courses, Differential equations, Data analysis, Transport phenomena, Mechanics, Elementary physics, Mathematical methods in physics, Inverse problems, Statistical inverse problems, Electromagnetic field theory. **Total**: 720 hours

Awards and honours

- The Finnish Inverse Prize (10000 FIM) granted by Finnish Inverse Problems Society, 2000.
- Best oral presentation award in Physics Days 2010, XLIV Annual Conference of the Finnish Physical Society, Jyväskylä, Finland, March 11 – 13.

Other key academic merits

- Number of PhD thesis pre-examinations: 4
- Number of times being Opponent in PhD defense: 3
- Number of times being External Committee member in PhD examination (USA): 3
- Number of times being Examiner of a PhD thesis (Denmark): 2
- Peer review of funding applications (2009-2024): South Africa’s National Research Foundation, Israel Science Foundation (2 times), Austrian Academy of Sciences.
- Coordinator of the reform of the physics undergraduate lab courses, UKU, 2006-2009
- Coordinator of the week of Computational Physics in Introduction Course for the first-year students, Department of Applied Physics, UEF, 2013
- Member of Kuopio Inverse problems group board, UKU/UEF, 2008 – present
- Coordination of department seminar series, UEF, 2010-2011, 2018-2022

- Member of Applied Physics Communications group, UEF, since 2021
- Person in charge for marketing applied physics studies in UEF, since 2021
- Follow-up group member: PhD work of Mari Lehti-Polojärvi, Tampere University of Technology, 2017-2023.
- One of the PIs in the FAME Flagship (started in 2023), and the person in charge for Impact theme 6: Society.
- Number of invited lectures in conferences/universities during 2000-2024: 25.
- Acted as a reviewer in over 20 journals during 2000-2025.
- Organized 6 conferences/workshops/summerschools and 3 minisymposiums

Scientific and societal impact

Research dissemination:

- Wide recognition of my research on 'sensing skin' for nondestructive testing of concrete; at least 80 reports, e.g., phys.org, NASA Tech Briefs, wn.com, Science Newsline, ScienceDaily, Durability+Design, materialstoday, theEngineer, World Industrial Reporter and Capitalista.
- Press release on multi-layer sensing skin for detection of cracks and chemicals in concrete in October 2016. At least 20 reports, e.g., American Laboratory, Business Standard, EurekAlert! and theEngineer.
- Press release on tracking water in concrete, November 2016. At least 12 reports, e.g., theEngineer, EurekAlert!, EngineersGarage, TechXplore.
- Science Week, Tampere, Finland, October 2012: Public lecture 'Tomographic imaging' and demonstrations of electrical tomography for groups of high school students.
- Science Break, Oulun normaalikoulu, Finland, September 30, 2019. Two lectures for high school students on Computational physics and inverse problems.
- Breaking Lab – virtual tour at UEF tomography laboratory, Inverse Days, Online (https://www.youtube.com/watch?v=0b8cnYdvY3A&t=2s), December 14–18, 2020.

Open data:

- A. Hauptmann, V. Kolehmainen, N. Minh Mach, T. Savolainen, A. Seppänen, S. Siltanen: "2D electrical impedance tomography dataset", zenodo.org/record/1203914#.WrTZFJeYOUl, Documentation: arXiv:1704.01178v1 [physics.med-ph], 4 Apr 2017.
- M. Räsänen, P. Kuusela, J. Jauhiainen, M. Arif, K. Scheel, T. Savolainen, A. Seppänen: Kuopio Tomography Challenge 2023 open electrical impedance tomographic dataset (KTC 2023), 2023, 10.5281/zenodo.8252370

Other

International scientific visits:

- University of Dortmund (2001, 3 months), University of California in Berkeley (2007-2008, 2 months), University of Auckland (2009, 2019, 2 months), Fudan University (2010, 1 week), Lanzhou University (2010, 1 week), University of Rome (2011, 1 week), École Polytechnique Fédérale de Lausanne (EPFL), (2012, 1 week), North Carolina State University, Raleigh, NC, USA, (2012-2017, 3 months), University of São Paulo (2013, 2 weeks), University of Edinburgh, The School of Engineering (2014, 1 week), Imperial College London (2018-2019, 2 weeks), St.Galler Stadtwerke, St. Gallen, Switzerland (2019, 2 weeks), Institute of Electronics and Computer Science, Riga, Latvia (2024, 2 weeks)