

Curriculum Vitae

Personal details and date of CV

- Surname: Ilmavirta
- First names: Joonas Jani Petteri
- ORCID: 0000-0002-2399-0911
- Date of CV: May 4, 2025
- More complete CV online: <http://users.jyu.fi/~jojapeil/?page=cv&lang=eng>

Degrees

- 2014, PhD, mathematics, U. of Jyväskylä, Finland
- 2012, MSc, theoretical physics, U. of Jyväskylä, Finland
- 2011, BSc, physics, U. of Jyväskylä, Finland
- Title of docent 2024, mathematics, Tampere U.
- Title of docent 2017, mathematics, U. of Jyväskylä
- Title of docent 2017, mathematics, U. of Helsinki

Current employment

- Sep 2024–: Associate professor, U. of Jyväskylä, mathematics
- Sep 2021–Aug 2025: Academy research fellow, U. of Jyväskylä, mathematics
- Aug 2020–: Senior lecturer, U. of Jyväskylä, mathematics (on leave)

Career stage: III

Previous work experience

- Sep 2021–Aug 2024: Assistant professor, U. of Jyväskylä, mathematics
- Sep 2020–Aug 2021: Academy research fellow, Tampere U., mathematics
- Sep 2020–Aug 2021: Assistant professor, Tampere U., applied mathematics
- Sep 2019–Jul 2020: Senior researcher, U. of Jyväskylä, mathematics
- Sep 2016–Aug 2019: Postdoc (Research Council of Finland), U. of Jyväskylä, mathematics
- Oct 2014–Aug 2016: Postdoc, U. of Jyväskylä, mathematics
- Jul 2012–Sep 2014: Graduate student, U. of Jyväskylä, mathematics

Visits lasting over a month:

- 2019: Rice University, Houston, Texas, US (2 months)
- 2018: University of Cambridge, UK (4 months)
- 2017: University of Washington, Seattle, Washington, US (2 months)
- 2015: Program on Inverse Problems, Institut Henri Poincaré, Paris, France (1 month)
- 2015: University of Washington, Seattle, Washington, US (1 month)
- 2013: Inverse Problems and Applications, Institut Mittag-Leffler, Sweden (1 month)

Career breaks

None.

Research funding and grants

- 2024–2027: advisor, doctoral pilot, Ministry of Education and Culture, 255 000 €
- 2024–2028: PI, Academy project, Research Council of Finland, Research Council of Finland, 596 990 € (#360434)

- 2024–2027(–2031): co-PI, “Flagship of Advanced Mathematics for Sensing, Imaging and Modelling (FAME)”, 716 667 € (#359208) (joint with Mikko Salo; PI: Tanja Tarvainen)
- 2024–2027: PI, Väisälä project grant, Finnish Academy of Science and Letters, 150 000 €
- 2023–2025: co-PI, “Centre of Excellence of Inverse Modelling and Imaging”, Research Council of Finland, 222 783 € (#353092) (PI: Matti Lassas)
- 2020–2025: PI, Academy research fellowship, Research Council of Finland, 838874 € (#332890, #351665, #336254, #351656, #358047)
- 2016–2019: PI, Postdoctoral research grant, Research Council of Finland, 259068 € (#295853)
- 2015: Encouragement grant (kannustusapuraha), Emil Aaltonen Foundation, 5000 €
- 2007: Grant for university studies, Finnish Cultural Foundation (Suomen kulttuurirahasto, Keski-Suomen rahasto, Oy Wilh. Schauman Ab:n rahasto), 1000 €

Research output

8 preprints, 40 published and peer reviewed articles, 1 conference paper, 1 book section, 2 lecture notes, and miscellaneous other publications. Over 70 talks in various seminars and conferences, including 12 invited plenary talks. See my homepage for details.

Research supervision and leadership experience

2 graduated and 3 current PhD students. 10 complete and 2 current supervised BSc and MSc theses. 3 current postdocs.

I am a co-PI in two major national funding consortia (Centre of Excellence and Flagship).

Teaching merits

Lecturer and TA on many courses in mathematics and physics at different universities. Formal pedagogical qualifications (60 ECTS). Latest teaching evaluation graded 4/5.

I have prepared two courses, including detailed lecture notes, on inverse problems and differential geometry, entitled “Analysis and X-ray tomography” and “Geometry of geodesics”. I have been invited to give a summer course on X-ray tomography at North Carolina State University in 2024.

Awards and honours

- EAIP Young Scientist Award of the year 2020 (the Eurasian Association on Inverse Problems)
- Primus Doctor, the highest-ranking doctor in the Conferment of Degrees Ceremony for all graduates from University of Jyväskylä from 2013 to 2016, held in August 2016
- International Stefan Banach Prize for a Doctoral Dissertation in the Mathematical Sciences of the year 2015 (the Polish Mathematical Society and Ericpol Telecom)
- The Finnish Inverse Prize of the year 2014, awarded by the Finnish Inverse Problems Society
- Best master’s thesis of the year 2012 at the department of physics, University of Jyväskylä (the Physical association of Jyväskylä)

Other key academic merits

Conferences

- Chair of the local organizing committee for the conference Inverse Days 2019
- Member of the organizing committee for Inverse Days 2021 and Inverse Days 2012
- Organizer of 4 sessions and minisymposia at various conferences

Administration

- 2024–: Professor in charge of national education development and member of board of governors, FAME flagship
- 2021–: Vice member of the faculty council, Faculty of Mathematics and Science, University of Jyväskylä
- 2018–2021 & 2021–2024: Vice member of the university collegium, University of Jyväskylä
- Member of various evaluation and development groups

Other

- 2021–: Member of the EAIP Young Scientist Award committee.
- 2021: Evaluator for The Finnish Cultural Foundation.
- 2021–2022: Vice member of the steering group of Juniversity, a university-wide outreach program at Tampere.
- 2019–2023: Member of Young Academy of Finland in the Finnish Academy of Science and Letters
- 2020–: Member of board and treasurer in the Finnish Inverse Problems Society
- 2011–present: Member of the Finnish International Physics Olympiad team training group

Scientific and societal impact

I have a dual background with a master's degree in theoretical physics and doctorate in mathematics. This combination is important for leading the project, as physical relevance of the mathematical problems is crucial. Most of my work so far concerns geometric inverse problems, both determination of a manifold from data and geodesic ray transforms of scalar and tensor fields. I have also worked on PDEs and mathematical modelling of physical problems. I have received national and international prizes for my work, and I have given invited plenary talks at conferences, including the high-profile annual Math+X workshop on inverse problems, geophysics, and related fields organized by Rice University and the Simons Foundation.

I am an active member of the Finnish inverse problems community: a board member in the Finnish Inverse Problems Society and a co-PI in the funding consortia (Centre of Excellence and Flagship). This, combined with my network abroad, provides me with access to a broad variety of experts in different aspects of inverse problems and related fields. This is an asset for research, recruitment, dissemination, and career opportunities for alumni.

Other

I have given invited lectures to broad audiences, ranging from high school students to pensioners.

I have attended every annual meeting of the Geo-Mathematical Imaging Group at its industrial partners at Rice University since 2019.

I am the coordinator of inverse problems courses at the Jyväskylä Summer School in 2022 and 2024.