Curriculum Vitae

Emilia L.K. Blåsten

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Personal information

Name	**Blåsten**, Emilia Lavie Kyllikki
Date of birth	June 23, 1987 (age: 37)
Place of birth	Helsinki, Finland
Nationality	Finnish
Mother tongue	Finnish
Other languages	English (C2 proficient user, self-assessed) French (C1 proficient user, self-assessed) Spanish (A2 basic user, self-assessed) Mandarin Chinese (HSK level 3)

Titles

Docent	(Topic: Inverse Problems in Partial Differential Equations), LUT University, School of Engineering Science, 1 March 2024 – 28 February 2029
Doctor of Philosophy	University of Helsinki, Applied Mathematics, Helsinki, Finland, 19 June 2013, verification contact: registrar@helsinki.fi
Licentiate of Philosophy	University of Helsinki, Applied Mathematics, Helsinki, Finland, 24 June 2010
Master of Science	University of Helsinki, Applied Mathematics, Helsinki, Finland, 17 October 2008
Bachelor of Science	University of Helsinki, Mathematics, Helsinki, Finland, 17 October 2008
Highschool	Helsingin Matematiikkalukio, Helsinki, Finland, 3 June 2006
Primary School	Helsingin ranskalais-suomalainen koulu, Helsinki, Finland, 2003

Working experience

- Faculty 2022 onwards. Research in partial differential equations and teaching large scale introductory mathematics courses.
  - Associate professor (tutkijaopettaja) under Tapio Helin, Computational Engineering, LUT School of Engineering Sciences, LUT University, 2.5.2022 – (current)
- Postdoctoral research 2013–2022. Topics in partial differential equations and applications:
  - Post-doctoral researcher under Prof. Nuutti Hyvönen, Department of Mathematics and Systems Analysis, Aalto University, 1.1.2021 – 30.4.2022
  - Part-time researcher under Prof. Lassi Päivärinta, Division of Mathematics, Department of Cybernetics, Tallinn University of Technology, 1.7.2020 – (ongoing)
  - Post-doctoral researcher under Prof. Matti Lassas, Department of Mathematics and Statistics, University of Helsinki, 28.3.2019 – 31.12.2020

  - Break for health reasons (7 months): 1.9.2018 – 27.3.2019
  - Working on the *Smart Urban Water Supply Systems* project with Prof. Mohamed Ghidaoui, HKUST Department of Civil and Environmental Engineering, 15.5.2016 – 31.8.2018
  - IAS Postdoctoral Fellow under Prof. Gunther Uhlmann, HKUST Jockey Club Institute for Advanced Study, 1.9.2015 – 31.8.2018
  - Research scientist under Prof. Lassi Päivärinta, Department of Mathematics, Tallinn University of Technology, 5.1.2015 – 31.7.2015
  - Post-doctoral researcher under Profs. Lassi Päivärinta and Gunther Uhlmann, Department of Mathematics and Statistics, University of Helsinki, 1.9.2013 – 31.12.2014
- Pre-PhD research 2007–2013:
  - Doctoral student under Prof. Lassi Päivärinta, Department of Mathematics and Statistics, University of Helsinki, 1.1.2009 – 31.8.2013
  - Research assistant under Prof. Lassi Päivärinta, Department of Mathematics and Statistics, University of Helsinki, 1.9.2007 – 31.12.2008
- Work in industry 2006–2007:
  - Assistant in a EU-wide research project about insurance companies' solvency and developing computer software, working under Pasi Laaksonen, Pohjola Insurance Company, 1.6.2007 – 31.8.2007
  - Assistant in a EU-wide research project about insurance companies' solvency, working under Pasi Laaksonen, Pohjola Insurance Company, 1.6.2006 – 31.7.2006
  - Part-time assistant in writing MS Excel code related to measuring productivity, working under Olli Haltia, Savcor Indufor Oy, 1.11.2005 – 28.2.2006
- Interim work:
  - TET student, Stockmann One Way, 2 weeks in May 2003
  - Assistant supervisor at the Bengtsår summer camp, City of Helsinki, 1 week in August 2003

Teaching merits

Pedagogical training:

- University Pedagogy, Basic Module, part 2, 5 ECTS credits, LUT University, May 2024.
- University Pedagogy, Basic Module, part 1, 5 ECTS credits, LUT University, January 2024.
- Supervising doctoral studies and dissertation, 3 ECTS credits, LUT University, December 2022.

Other training:

- Mielenterveyden Ensiapu 1 (mental health first aid 1), MIELI Mental Health Finland, October 2023.

Concrete university-level teaching events:

- Primary lecturer for BM20A9300 Statistical Mathematics with around 100 active students, LUT University, 2023.
- Primary lecturer for BM20A9200 Mathematics A with around 100 active students, LUT University, 2022.
- Primary lecturer for MS-A0502 Todennäköisyyslaskennan ja tilastotieteen peruskurssi (First Course in Probability and Statistics) with around 300 active students, Aalto University, 2021.
- Primary lecturer for the second half of Johdatus Yliopistomatematiikkaan (Introduction to University Mathematics) with around 500 active students, University of Helsinki, 2019.

- Teaching assistant at the University of Helsinki: Number Theory (2008), Number Theory (2009), Partial Differential Equations (2011), Functional Analysis (2020).

Informal university level teaching:

- Coaching for polytechnic university entrace exams and first year courses about mathemathics and physics, Helsinki, ≈ 40 hours in total, 2019–2020.
- Teaching fundamentals of partial differential equations, integral equations, Tikhonov regularization, unique continuation to a civil engineering PhD student, Hong Kong University of Science and Technology, ≈ 40 hours in total, 2015–2018.
- Organizing, problem selection and team selection for the Nordic university-level mathematics team-competition 2011.

Awards

- China Top Cited Paper Awayd 2023 in Mathematical Sciences, IOP Publishing, fall 2023.
- Aalto University Department of Mathematics and Systems Analysis biannual teaching prize, fall 2021
- Rolf Nevanlinna Research Foundation's award for the best thesis in mathematics in Finland in 2013
- Doctoral thesis approved with distinction
- Full score in the mathematics exam at matriculation, stipend by The Federation of Finnish Technology Industries

Other academic merits

- Erdős number: 3 (checked 2023: Masahiro Yamamoto → Vilmos Komornik → Paul Erdős)
- Refereeing (21 total): Communications in Mathematical Research (1 time), Communications in Partial Differential Equations (1 time), Communications on Pure and Applied Mathematics (1 time), Inverse Problems (1 time), Inverse Problems and Imaging (8 times), Inverse Problems in Science & Engineering (1 time), Journal of Mathematical Analysis and Applications (1 time), Mathematische Zeitschrift (1 time), Notices of the AMS (1 time), Research in the Mathematical Sciences (1 time), SIAM Journal on Applied Mathematics (1 time), SIAM Journal on Mathematical Analysis (2 times), SIAM Journal on Scientific Computing (1 time).
- MathSciNet reviews (4 total): MR4165478, MR4197330, MR4375651, MR4542446.
- Editor for Communications on Analysis and Computation (since 2023).
- Associate Editor for Mathematica Scandinavica (since 2024).
- Working as a local organizer for several large conferences:
  - Organizer, Inverse Days, (LUT-University, 11–15 December 2023).
  - Local organizer, Function spaces, Differential Operators and Nonlinear Analysis (University of Helsinki, 25–29 August 2008),
  - Local organizer, Trilateral workshop on Inverse Problems (University of Helsinki, 4–5 March 2010),
  - Local organizer, Inverse Days 2011 and Finnish-Japanese-Korean workshop on inverse problems (University of Helsinki, 13–16 December 2011).

Scientific and societal impact

- Main developer of the FAME Flagship's event Code of Conduct (2024).

Conference, workshop and external seminar talks

28. *Inverse spectral problem on discrete graphs*, Seminars on Inverse Problems, Theory and Applications; Organized by Dr. F. Ayça Çetinkaya; (remote talk), 10 September 2024, https://www.youtube.com/@inverseproblemseminars/videos.

27. *Determining the shape of a flat scattering screen with one measurement*, Partial Differential Equations & Applied Mathematics Seminar; Drexel University, Philadelphia, USA, 7 June 2024.

26. *Scattering from corners and other singularities*, Finnish Mathematical Days 2024; Aalto University, Espoo, Finland, 5 January 2024.

25. *Scattering from corners and other singularities*, International Zoom Inverse Problems Seminar; UC Irvine (remote talk), 16 November 2023, at 9:00 am PST.

24. *Scattering from corners and other singularities* and *Imaging water supply pipes using pressure waves*, Applied Inverse Problems Conference 2023; University of Göttingen, Göttingen, Germany, 4 and 7 September 2023.

23. *Imaging water supply networks and vocal tracts*, Inverse Days 2022; University of Eastern Finland, Tahko, Kuopio, Finland, 14 December 2022.

22. *Imaging water supply pipes using pressure waves*, COPE–INAR workshop; LUT University, Lahti, Finland, 17 November 2022.

21. *Scattering from corners and other singularities*, Inverse problems in analysis and geometry; University of Helsinki, Helsinki, Finland, 4 August 2022.

20. *Inverse spectral problem on discrete graphs*, SIAM 2022 Conference on Imaging Science; Virtual Conference (remote talk), 25 March 2022.

19. *Inverse spectral problem on discrete graphs*, Congreso Bienal de la Real Sociedad Matemática Española 2022; Ciudad Real, Spain (remote talk), 17 January 2022.

18. *Detecting blockages in water supply networks using boundary control*, Inverse Days 2019; University of Jyväskylä, Finland, 17 December 2019.

17. *Inverse problems with one measurement*, Inverse Days 2018; Aalto University, Finland, 12 December 2018.

16. *Inverse problems with one measurement*, Inverse problems, PDE and geometry; University of Jyväskylä, Finland, 22 August 2018.

15. *Inverse problems with one measurement*, 9th International Conference on Inverse Problems and Related Topics; National University of Singapore, Singapore, 15 August 2018.

14. *Inverse backscattering with point-source waves*, 3$^{\text{rd}}$ East Asia Section of IPIA, Young Scholars Symposium; Hong Kong Baptist University, Hong Kong, 17 March 2018.

13. *Applications of corner scattering: intrinsic properties of transmission eigenfunctions and single wave probing*, Seminar; School of Mathematical Sciences, Fudan University, China, 5 December 2017.

12. *Planar inverse boundary value problem for L^p potentials with $p > 4/3$*, Analysis Seminar; Department of Mathematics and Statistics, University of Jyväskylä, Finland, 23 August 2017.

11. *Inverse backscattering with point-source waves*, Inverse Problems Seminar; Department of Mathematics and Statistics, University of Helsinki, Finland, 17 August 2017.

10. *Corners always scatter — quantitative results*, Applied Inverse Problems Conference 2017; Zhejiang University, Hangzhou, China, 31 May 2017.

9. *Transmission eigenfunction localization*, Annual meeting of the Hong Kong Mathematical Society; The Hong Kong University of Science and Technology, Hong Kong, 20 May 2017.

8. *Topics in Corner Scattering: Non-Scattering Waves, Potential Probing with a Single Incident Wave, and the Interior Transmission Problem*, NCTS PDE and Analysis Seminar; National Center for Theoretical Sciences, National Taiwan University, Taipei, Taiwan, 9 March 2017.

7. *Inverse scattering using a single incident wave*, 2nd East Asia Section of IPIA, Young Scholars Symposium; National Center for Theoretical Sciences, National Taiwan University, Taipei, Taiwan, 5 November 2016.

6. *Non-scattering energies, new resolvent estimates and other projects*, 1st East Asia Symposium of IPIA; South University of Science and Technology, Shenzhen, China, 29 February 2016.

5. *Non-scattering energies and interior transmission eigenvalues*, Workshop on Inverse Problems and Related Topics; Zhejiang University, Hangzhou, China, 9 December 2015.

4. *A new viewpoint to scattering theory à la Hörmander*, Spectral and Analytic Inverse Problems, Thematic Programme on Inverse Problems; Institut Henri Poincaré, Paris, France, 4 May 2015.

3. *Solving the Inverse Problem for the 2D Schrödinger Equation with Lp-potential*, 17th Annual Workshop on Applications and generalizations of complex analysis; University of Aveiro, Aveiro, Portugal, 21 March 2015.

2. *Solving the Inverse Problem for the 2D Schrödinger Equation with Lp-potential*, The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications; Instituto de Ciencias Matemáticas (ICMAT) and the Universidad Autónoma de Madrid (UAM), Madrid, Spain, 9 July 2014

1. *Completeness of the generalized transmission eigenstates*, International Conference on Novel Directions in Inverse Scattering; University of Delaware, Delaware, USA, 29 July 2013.

Academic visits

- Rutgers University, *visiting F. Cakoni*, New Jersey, USA, 10.–14.6.2024
- Drexel University, *visiting J. Xiao*, Philadelphia, USA, 3.–7.6.2024
- University of Delaware, *visiting Rakesh*, Newark, USA, 28.–31.5.2024
- Fudan University, *visiting S. Lu*, Fudan, China, 3.–9.12.2017
- University of Jyväskylä, *visiting M. Salo*, Jyväskylä, Finland, 21.–25.8.2017
- University of Helsinki, *visiting M. Lassas and S. Siltanen*, Helsinki, Finland, 17.–18.8.2017
- NCTS, National Taiwan University, *visiting J.N. Wang*, Taipei, Taiwan, 3.3.–12.3.2017
- University of Washington, *visiting G. Uhlmann*, Seattle, Washington, USA, 3.5.–17.5.2016
- École normale supérieure, *visiting G. Uhlmann*, Paris, France, 9.5.–9.7.2014
- University of Washington, *visiting J. Sylvester*, Seattle, Washington, USA, 28.2.–1.5.2014
- University of Tokyo, *visiting M. Yamamoto*, Tokyo, Japan, 11.2.–18.2.2014
- Mittag-Leffler Institute, *Inverse Problems and Applications*, Stockholm, Sweden, 14.1.–14.3.2013
- Isaac Newton Institute for Mathematical Sciences, *Inverse Problems*, University of Cambridge, Cambridge, United Kingdom, 24.7.–27.8.2011
- Universidad Autónoma de Madrid, *Special Trimester on Inverse Problems: Theoretical and Numerical Aspects of Inverse Problems and Scattering Theory*, Madrid, Spain, 15.5.–11.6.2011
- Mathematical Sciences Research Institute, *Inverse Problems and Applications*, Berkeley, California, USA, 1.11.–30.11.2010

Participation in mathematical competitions

- Mathematical Contest in Modeling MCM 2008, COMAP
- Nordic university-level mathematics team-competition 2007
- Mathematical Contest in Modeling MCM 2007, COMAP
- **Honourable mention**, International Mathematical Olympiad 2006, Slovenia
- Pythagoraan Polku – mathematics team competition 2006
- Nordic Mathematical Contest 2006
- **Meritorious Winner**, Mathematical Contest in Modeling MCM 2006, COMAP
- **3$^{\text{rd}}$ place, finals**, Finnish national highschool mathematics competition 2005–2006, MAOL
- **2$^{\text{nd}}$ place**, Baltic Way – mathematics team competition 2005
- International Mathematical Olympiad 2005, Mexico
- Nordic Mathematical Contest 2005
- Mathematical Contest in Modeling MCM 2005, COMAP
- Finnish national highschool mathematics competition 2004–2005, MAOL
- Viksu science competition 2005, The Academy of Finland
- Pythagoraan Polku – mathematics team competition 2004
- Nordic Mathematical Contest 2004
- Finnish national highschool mathematics competition 2003–2004, MAOL
- **2$^{\text{nd}}$ place, finals, 9$^{\text{th}}$ grade series**, Eesti matemaatikaolümpiaad 2002–2003, Estonia
- **1$^{\text{st}}$ place, finals**, Finnish national primary school mathematics competition 2002–2003, MAOL