

Eero Hakavuori

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Current position

Oct 2019– **Postdoc**, *SISSA*.

Education

Aug 2019 **PhD, Mathematics**, *University of Jyväskylä*, Advisor: Enrico Le Donne, Topic: Sub-Riemannian geodesics.

Mar 2015 **Master of Science, Mathematics**, *University of Jyväskylä*.

Jun 2013 **Bachelor of Science, Mathematics**, *University of Jyväskylä*.

Journal Articles

- [1] Eero Hakavuori, *ODE trajectories as abnormal curves in Carnot groups*, J. Differential Equations **300** (2021), 458–486. MR 4300982
- [2] Eero Hakavuori, *Infinite Geodesics and Isometric Embeddings in Carnot Groups of Step 2*, SIAM J. Control Optim. **58** (2020), no. 1, 447–461. MR 4062792
- [3] Eero Hakavuori and Enrico Le Donne, *Non-minimality of corners in subriemannian geometry*, Invent. Math. **206** (2016), no. 3, 693–704. MR 3573971

Preprints

- [4] Andrei Ardentov and Eero Hakavuori, *Cut time in the sub-Riemannian problem on the Cartan group*, arXiv e-prints (2021), arXiv:2107.06730.
- [5] Eero Hakavuori, Ville Kivioja, Terhi Moisala, and Francesca Tripaldi, *Gradings for nilpotent Lie algebras*, arXiv e-prints (2021), arXiv:2011.06871.
- [6] Eero Hakavuori and Enrico Le Donne, *Blowups and blowdowns of geodesics in Carnot groups*, arXiv e-prints (2018), arXiv:1806.09375.

Mathematical software

- [7] Eero Hakavuori, Ville Kivioja, Terhi Moisala, and Francesca Tripaldi, *ehaka/lie-algebra-gradings: v1.1*, June 2021, <https://doi.org/10.5281/zenodo.5040282>.
- [8] Eero Hakavuori, *ehaka/ode-abnormals: v1.0*, Zenodo, June 2020, <https://doi.org/10.5281/zenodo.3898324>.

Talks

Conference talks

22.02.2018 **Tangent and asymptotic cones of geodesics in Carnot groups**, *SubRiemannian Geometry and Beyond*, Jyväskylä, Finland.

12.05.2016 **Non-minimality of corners in subriemannian geometry**, *Geometric Analysis in Control and Vision Theory*, Voss, Norway.

[Seminars](#)

03.11.2020 **Carnot groups and abnormal dynamics**, *SISSA Geometric structures seminar*, online.

25.02.2020 **Infinite geodesics in Carnot groups**, *Séminaire de Géométrie et Analyse Sous-riemannienne*, Paris, France.

15.10.2019 **A metric viewpoint to sub-Riemannian optimal control**, *Geometry&Control seminar*, Trieste, Italy.

13.05.2019 **Isometric embeddings in Carnot groups of step 2**, *Jyväskylä Geometry Seminar*, Jyväskylä, Finland.

06.02.2019 **Necessary conditions for length-minimality in sub-Riemannian geometry**, *Jyväskylä Geometry Seminar*, Jyväskylä, Finland.

18.10.2018 **A metric tangent approach to regularity of geodesics in sub-Riemannian manifolds**, *Séminaire Théorie Spectrale et Géométrie*, Grenoble, France.

24.04.2018 **Non-minimality of corners in subriemannian geometry**, *Padova Differential Equations and Applications seminar*, Padova, Italy.

03.05.2016 **Non-minimality of corners in subriemannian geometry**, *Jyväskylä Geometry Seminar*, Jyväskylä, Finland.

[Other talks](#)

09.11.2018 **Regularity from quantified flatness**, *Graduate student seminar*, Jyväskylä, Finland.

23.10.2017 **Quasiregular ellipticity**, *Seminar on Analysis in Metric Spaces*, Jyväskylä, Finland.

17.02.2017 **Fiber bundles**, *Graduate student seminar*, Jyväskylä, Finland.

18.11.2016 **Milnor's exotic structures**, *Graduate student seminar course*, Jyväskylä, Finland.

26.02.2016 **The search for non-smooth geodesics in subriemannian geometry**, *Graduate student seminar*, Jyväskylä, Finland.

Teaching

[Courses](#)

2018 **MATS132 Linear Lie groups**, *University of Jyväskylä*.

[Teaching assistant](#)

2019 **MATS199 Advanced differential geometry**, *University of Jyväskylä*.

2016 **MATA114 Differential equations**, *University of Jyväskylä*.

2014 **MATP170 Approbatur 3**, *University of Jyväskylä*.

2013 **MATP121 Linear algebra 1**, *University of Jyväskylä*.

2013 **MATY010 Preliminary mathematics course**, *University of Jyväskylä*.

[Other](#)

2015 – 2016 **Pedagogical studies 60 ECTS (Mathematics subject teacher)**, *University of Jyväskylä*.
Teaching mathematics in elementary school, high school and JAMK university of applied sciences.

Grants

- 2017 **The Vilho, Yrjö and Kalle Väisälä Foundation grant**, *Finnish Academy of Science and Letters*, funding period Aug 2018 – Jul 2019, personal grant for PhD studies.
- 2016 **The Vilho, Yrjö and Kalle Väisälä Foundation grant**, *Finnish Academy of Science and Letters*, funding period Aug 2017 – Jul 2018, personal grant for PhD studies.
- 2015 **The Vilho, Yrjö and Kalle Väisälä Foundation grant**, *Finnish Academy of Science and Letters*, funding period Aug 2016 – Jul 2017, personal grant for PhD studies.

Academic activities

Attended conferences and workshops

- 06.–07.09.2021 **Padua Paris Sub-Riemannian seminar**, *Padova, Italy*.
- 16.–17.01.2020 **Geometric Measure Theory in Padova**, *Padova, Italy*.
- 24.–28.06.2019 **11th School on Analysis and Geometry in Metric Spaces**, *Levico Terme, Italy*.
- 18.–22.02.2019 **SubRiemannian Geometry and Beyond.II**, *Jyväskylä, Finland*.
- 16.–17.10.2018 **Journées sous-Riemanniennes 2018**, *Grenoble, France*.
- 12.–15.09.2018 **Dynamics, Control, and Geometry**, *Warsaw, Poland*.
- 04.–08.06.2018 **Geometric measure theory and its connections**, *Helsinki, Finland*.
- 11.–15.06.2018 **Geometric Measure Theory in Verona**, *Verona, Italy*.
- 19.–23.02.2018 **SubRiemannian Geometry and Beyond**, *Jyväskylä, Finland*.
- 20.–24.11.2017 **Géométrie et Topologie**, *Bordeaux, France*.
- 03.–14.07.2017 **Cortona School in Neurogeometry**, *Cortona, Italy*.
- 26.–30.06.2017 **10th School on Analysis and Geometry in Metric Spaces**, *Levico Terme, Italy*.
- 15.–17.12.2016 **Around Analysis, Domains and Mappings**, *Jyväskylä, Finland*.
- 09.–13.05.2016 **Geometric Analysis in Control and Vision Theory**, *Voss, Norway*.
- 10.–13.12.2015 **Quasiweekend II - Ten years after**, *Helsinki, Finland*.
- 06.–10.07.2015 **9th School on Analysis and Geometry in Metric Spaces**, *Levico Terme, Italy*.

Research visits

- 09.–27.04.2018 **Università degli Studi di Padova**, *Padova, Italy*.
- 06.11.–15.12.2017 **Université Nice Sophia Antipolis**, *Nice, France*.

Miscellaneous

- 2018– **SageMath developer**.
Contributed to implement nilpotent Lie algebras, ideals and quotients of finite dimensional Lie algebras, and nilpotent Lie groups to the SageMath computer algebra system