

# Curriculum Vitae

## Personal Information

- Jääsaari, Jesse, born in 1992 in Helsinki, Finland.
- Finnish citizen
- E-mail: jesse.jaasaari@gmail.com
- Date of this document: January 28, 2019
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## Education

- January 2014–September 2018. Doctoral student at the Department of Mathematics and Statistics, University of Helsinki. Supervised by Dr. Anne-Maria Ernvall-Hytönen, Thesis defence June 15, 2018, **passed with distinction** (thesis approved September 4, 2018).
  - Title of the Doctoral dissertation: Exponential Sums Related to Maass Cusp Forms.
- Master of Science, University of Helsinki, September 2011–December 2013.
  - Major subject: Mathematics (Study line: Mathematical Analysis), GPA: 5/5.
  - Title of the Master's Thesis: *A Pretentious Approach to Estimating Character Sums*, Grade: **Eximia cum laude approbatur** (5/5). Supervised by Dr. Anne-Maria Ernvall-Hytönen.
- Bachelor of Science, University of Helsinki, September 2011–December 2013.
  - Major subject: Mathematics, GPA: 5/5.
  - Title of the Bachelor's Thesis: *Hölderin Lause* (in Finnish for *Hölder's Theorem*), Grade: 5/5. Supervised by Prof. Eero Saksman.
  - Minor subject: Theoretical Physics.
- High school graduate, Ressu Upper Secondary School, June 2011.

## Research Interests

I am an analytic number theorist interested in automorphic forms, automorphic representations and  $L$ -functions related to those objects. I am also very interested in group actions, representation theory and spectral theory in number theoretic contexts. In my doctoral thesis I studied exponential sums weighted by the Fourier coefficients of cusp forms. In particular, I worked with higher rank automorphic forms, more specifically Maass cusp forms for the general linear group  $GL(n, \mathbb{R})$ .

## List of publications

### Research articles:

1. On Short Sums Involving Fourier Coefficients of Maass Forms. Preprint available at arXiv:1804.09702, 29 pages. Submitted.
2. (with E. V. Vesalainen) On Sums Involving Fourier Coefficients of Maass Forms for  $SL(3, \mathbb{Z})$ . *Functiones & Approximatio Commentarii Mathematici*, vol. 57, No 2 (2017), pp. 255 – 275.
3. (with E. V. Vesalainen) *Exponential Sums Related to Maass Forms*. Preprint available at arXiv:1409.7235, 58 pages. To appear in *Acta Arithmetica*.
4. (with A.-M. Ernvall-Hytönen and E. V. Vesalainen) *Resonances and  $\Omega$ -Results for Exponential Sums Related to Maass Forms for  $SL(n, \mathbb{Z})$* . *Journal of Number Theory*, 153 (2015), pp. 135 – 157.

### Popular texts:

1. Peter Scholzen perfektoidit avaruudet (in Finnish for *Peter Scholze's Perfectoid Spaces*). 1 page. To appear in *Arkhimedes*.
2. Akshay Venkatesh ja  $L$ -funktoiden alikonveksisuus (in Finnish for *Akshay Venkatesh and Subconvexity of  $L$ -functions*). 1 page. To appear in *Arkhimedes*.
3. *Arvioita karakterisummille: Pólya–Vinogradovin epäyhtälö ja sen vahvennuksia* (in Finnish for *Estimates for Character Sums: The Pólya–Vinogradov Inequality and Its Strengthenings*). *Solmu* 2/2015, pp. 28–33.

### Theses:

1. Exponential Sums Related to Maass Cusp Forms. Doctoral dissertation, University of Helsinki, 2018. Available at <https://helda.helsinki.fi/handle/10138/235368>.
2. A Pretentious Approach to Estimating Character Sums. Master's thesis, University of Helsinki, 2013. Available at <https://helda.helsinki.fi/handle/10138/42216>.
3. Hölderin lause. Bachelor's thesis, University of Helsinki, 2013.

## Work Experience

- September 1, 2013– January 13, 2014. Research assistant, Number Theory Finland-project. Funded by the Academy of Finland (co-ordinated by the University of Oulu).

## Teaching experience

- I have marked exams for the following courses: Calculus I (fall 2016, 2017), Introduction to logic (fall 2016), Introduction to university mathematics (spring 2016), Algebra I (spring 2016), and Complex analysis I (fall 2014).
- Teaching assistant for the undergraduate level mathematics course *An Introduction to Number Theory*, fall 2015, University of Helsinki.
- Teaching assistant for the graduate level mathematics course *Kompleksianalyysin erikoiskurssi (A Special Course in Complex Analysis)*, spring 2015, University of Helsinki.

- Instructor in *Ratkomo*, spring 2015, University of Helsinki [Ratkomo is a room in the department of mathematics and statistics where an instructor is available for answering students questions concerning exercises of basically any course offered by the department].
- Teaching assistant for the graduate level mathematics course *An Introduction to Analytic Number Theory*, fall 2014, University of Helsinki.
- Teaching assistant for the undergraduate level mathematics course *Kompleksianalyysi I (Complex Analysis I)*, fall 2014, University of Helsinki.
- Teaching assistant for the undergraduate level mathematics course *Kryptografian alkeet (Elements of Cryptography)*, spring 2014, University of Helsinki.

### Other Teaching

- One of the organizers of the weekly problem solving mathematics club Tekijäryhmä. at the University of Helsinki. September 2014-May 2015.

### Pedagogical Studies

- *Yliopistopedagogiikka I (University pedagogics I)*, 5 cr, University of Helsinki, fall 2014.
- *Yliopistopedagogiikka II (University pedagogics II)*, 5 cr, University of Helsinki, fall 2014.

### Talks and Presentations

#### Research talks:

#### Invited talks:

- University of Turku Number Theory Seminar, *On short sums involving Fourier coefficients of cusp forms*, Turku, Finland, April 10, 2018.
- KTH Royal Institute of Technology Number Theory Seminar, *On the distribution of exponential sums related to automorphic forms*, Stockholm, Sweden, April 26, 2017.
- University of Copenhagen Number Theory Seminar, *On exponential sums involving Fourier coefficients of automorphic forms*, Copenhagen, Denmark, October 14, 2016.

#### Contributed talks:

- Finnish Mathematical Days 2018, *On short sums involving Fourier coefficients of cusp forms*, Joensuu, Finland, January 5, 2018.
- Journées Arithmétiques 2017, *On the distribution of exponential sums related to automorphic forms*, Caen, France, July 4, 2017.
- Finnish Number Theory Days 2017, *On the distribution of exponential sums related to automorphic forms*, Tampere, Finland, June 6, 2017.
- University of Turku Number Theory Seminar, *On the distribution of exponential sums related to automorphic forms*, Turku, Finland, December 14, 2016.

- University of Turku Number Theory seminar, *On Sums Involving Fourier Coefficients of Maass Forms for  $SL(3, \mathbb{Z})$* , Turku, Finland, December 7, 2015.
- Finnish Number Theory Days, Espoo, Finland, *Exponential sums related to Maass forms*, May 28, 2015.
- Analytic Number Theory Workshop, Turku, Finland, *A Resonance Estimate and Related  $\Omega$ -Result*, Turku, Finland, May 27, 2014.

*Expository talks:*

- University of Helsinki Graduate Student Seminar, *Reciprocity laws*, April 14, 2016.
- Aalto University Langlands learning seminar, *Representation theory of  $GL(n, \mathbb{R})$* , February 2, 2016.
- Aalto University Langlands learning seminar, *Tate's Thesis*, January 21, 2016.
- University of Turku Number theory seminar, *Automorphic forms and Galois representations*, November 9, 2015.
- University of Helsinki Automorphic forms learning seminar, *Automorphic representations for  $GL(1, \mathbb{A}_{\mathbb{Q}})$* , October 8, 2014.
- University of Helsinki Automorphic forms learning seminar, *Fourier Analysis on  $\mathbb{A}_{\mathbb{Q}}$* , September 24, 2014.
- University of Helsinki Graduate Student Seminar, *Modular forms*, April 17, 2014.

**Visits to universities**

- February 1-April 30, 2017: Visiting graduate student at Kungliga Tekniska Högskolan (KTH), Stockholm, Sweden. Host: Pär Kurlberg.
- October 10–15, 2016: Visit to University of Copenhagen, Copenhagen, Denmark. Host: Ian Kiming.

**Participation in conferences and similar events**

See [www.jessejaasaari.com/conferences](http://www.jessejaasaari.com/conferences)

**Awards, honours and grants**

- Outstanding Doctoral Dissertation Award, Doctoral School of Natural Sciences, University of Helsinki, November 2018.
- Several travel scholarships from the Doctoral Programme in Mathematics and Statistics of the University of Helsinki.
- Travel scholarship of Magnus Ehrnrooth Foundation. Granted in March 2017.
- Funded position in Doctoral Programme in Mathematics and Statistics at University of Helsinki starting in January 2017. Granted in November 2016.
- Scholarship of the Finnish Cultural Foundation. Granted in February 2015.
- Scholarship of Vilho, Yrjö and Kalle Väisälä Foundation. Granted in November 2014. Declined due to the position in the Doctoral programme in mathematics.

- Funded position in Doctoral Programme in Mathematics and Statistics at University of Helsinki starting in January 2015. Granted in November 2014.
- Special award for an exceptional fast and successful completion of Master's degree, Awarded by the Faculty of Science, University of Helsinki, December 2013.
- Lydia and Karl G. Lindberg allowance for mathematical studies in Ressu Upper Secondary school, May 2011.

### Language Skills

- Finnish: Native Language, English: Fluent, German: Conversational, Swedish: Conversational.

### IT-skills

- Matlab, Sage, L<sup>A</sup>T<sub>E</sub>X, Python, LibreOffice, Linux, Geogebra.

### Mathematical Competitions

As a contestant:

- Represented Finland at the 52<sup>nd</sup> International Mathematical Olympiad (IMO) in Amsterdam, the Netherlands, July 2011.
- Represented Finland at the Nordic Mathematical Competition in 2010 and 2011.
- Finnish National High School Mathematical Competition: 6<sup>th</sup> place in 2011 and 9<sup>th</sup> place in 2010.

As a trainer and a team leader:

- Trainer of the Finnish team for the International Mathematical Olympiad (IMO) since December 2011.
- Deputy Leader of the Finnish Team at the Second European Girls' Mathematical Olympiad (EGMO) in Luxembourg, April 2013.
- Deputy Leader of the Finnish Team at the 24<sup>th</sup> Baltic Way Mathematical Competition in Riga, Latvia, November 2013.
- Grader at the final of National Regional Mathematical Competition for 7<sup>th</sup> graders, Helsinki, Finland, March 2014.
- Leader of the team from University of Helsinki at the 21<sup>st</sup> International Mathematics Competition (IMC). Blagoevgrad, Bulgaria, July 29 - August 4, 2014.
- Deputy leader of the Finnish Team at the 57<sup>th</sup> International Mathematical Olympiad (IMO) in Hong Kong, July 2016.
- Coordinator at the Baltic Way team competition, Oulu, Finland, November 2016.