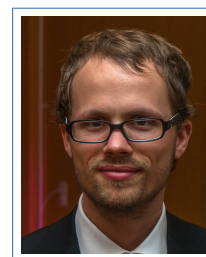


# Paul-Henry Leemann

Researcher in Pure Mathematics

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## Personal Information

Date of Birth April 12, 1987

Citizenship Switzerland

## Main areas of research

My research interests lie in geometric and combinatorial group theory and in graph theory. I am particularly interested in groups acting on rooted trees and their (weakly) maximal subgroups, limits and coverings of (Schreier) graphs and rigidity phenomenon in Cayley and Schreier graphs.

## Employment

Since 2018 **ENS-Lyon**, *Post-Doc*, in Unité de Mathématiques Pures et Appliquées, with Mikael de la Salle.

*Post-Doc Labex MILYON*

2016–2018 **ENS-Lyon**, *Post-Doc*, in Unité de Mathématiques Pures et Appliquées, with Mikael de la Salle.

*Early Postdoc.Mobility grant supported by the Swiss National Science Foundation*

## Education

2011–2016 **Université de Genève**, *Ph.D. in Mathematics*, “On Subgroups and Schreier Graphs of Finitely Generated Groups”, advisor: Tatiana Smirnova-Nagnibeda.  
Mention très bien

2013–2015 **Université de Genève**, *Basic Certificate of Didactic in Mathematics and in Educational Science*.

2009–2011 **Université de Genève**, *M. Sc. in Mathematics*, Master-thesis: “Caractères irréductibles des groupes de Coxeter finis”, advisors: Pierre de la Harpe and Tatiana Smirnova-Nagnibeda.  
grades: 6/6 (Master-thesis) and 5.7/6 (courses)

2006–2009 **Université de Genève**, *B. Sc. in Mathematics*.

## Publications and Preprints

1. *Weakly maximal subgroups of branch groups*. (2019). Preprint: <https://arxiv.org/abs/1910.06399>
2. *Cayley graphs with few automorphisms*, with M. de la Salle. Accepted in Journal of Algebraic Combinatorics. Preprint: <https://arxiv.org/abs/1812.02199>

3. *Schreier graphs: Transitivity and Coverings*. Internat. J. Algebra Comput., Vol. 26, Issue 1 (2016). [www.worldscientific.com/doi/abs/10.1142/S021819671650003X](http://www.worldscientific.com/doi/abs/10.1142/S021819671650003X)
4. *Weakly maximal subgroups in regular branch groups*, with K. Bou-Rabee and T. Nagnibeda. Journal of Algebra, Vol. 455 (2016). [www.sciencedirect.com/science/article/abs/pii/S0021869316001046](http://www.sciencedirect.com/science/article/abs/pii/S0021869316001046)
5. *Lamplighter groups, de Bruijn graphs, spider-web graphs and their spectra*, with R. Grigorchuk and T. Nagnibeda. Journal of Physics A: Mathematical and Theoretical, Vol. 49, Number 20 (2016). <https://iopscience.iop.org/article/10.1088/1751-8113/49/20/205004>

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## Prizes, Grants and Scientific Visits

- 2016 Vacheron Constantin prize for the best thesis in mathematics, Université de Genève
- 07-12 2015 Semester “Analytic and Geometric Aspects of Probability on Graphs”, EPFL, Switzerland
- 01-04 2014 IHP Semester “Marches aléatoires et géométrie asymptotique des groupes”, CIRM and IHP, France
- 04 2011 Topology and Geometric Group Theory, Columbus, Ohio, USA

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## Conference organisation

- 03 2013 Co-organizer of the Kervaire seminar “Géométrie des groupes 2013”, 10-15 march, Les Diablerets, Switzerland

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## Talks (selected)

### Conferences:

- June 2018 Trees Dynamics and Locally Compact Groups, Heinrich Heine University, Düsseldorf, Germany
- November 2014 Paroles aux jeunes chercheurs en géométrie et dynamique, GDR Platon, Université de Bordeaux, France
- June 2014 “Workshop in Algebra and Geometry”, University of Bern, Switzerland

### Seminars:

- March 2020 Séminaire Groupes et Géométrie, Université de Genève, Switzerland. Slides : [www.leemann.website/slides/weaklymaximal.pdf](http://www.leemann.website/slides/weaklymaximal.pdf)
- July 2019 Séminaire Darboux, Montpellier, France
- January 2017 Rencontre AGIRA, Sète, France
- May 2015 Ergodic and Geometric Group Theory Seminar, EPFL, Lausanne, Switzerland

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## Teaching Experiences

- Since 2016 In ENS Lyon:
- Teaching assistant of “Coverings and fundamental groups” (master)
  - Teacher of “Introduction to L<sup>A</sup>T<sub>E</sub>X” (3rd year class)
- 2011–2016 Teaching assistant at the University of Genève:
- Advanced course on Combinatorics (master)

- Algebra II: groups, rings, fields, Galois theory (2nd year class)
- Algebra I: linear algebra (1st year class)
- Analysis I: basics of logic and set theory, real analysis (1st year class)
- General mathematics: 1st year class for students of other departments
- Tutoring for first year students

2006–2011 Private tutor in mathematics for high school students

## Scientific popularization

- 2017 MATHαLYON: interactive workshop in Junior High School, Lyon, France
- 2014-2016 Mentor in the “boussole” curriculum (one week of immersion in the mathematics’ department, for High School’s students), Genève, Switzerland
- 2012-2016 Facilitator at the University “Open Day”, Genève, Switzerland
- 2011-2016 Mathematics’ facilitator in Junior High School and High School classes, Genève, Switzerland
- 2015 Facilitator at the “Science’s night”, Genève, Switzerland

## Languages

French native  
 English fluent  
 German basics

## Others

- Computer skills  $\LaTeX$  and , HTML/CSS, GAP
- Summer camps I have been organizing and running summer camps for children. I have taken part in over thirty camps.
- Civil duty 6 months in the physiotherapy’s unit of HUG
- Sports Telemark skiing (including ski touring), rock climbing, hiking