Loreno Heer

Dr. sc. nat.

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(Pronouns: he/him/his)
Citizenship: Swiss

Research interest

Analysis in metric spaces, in particular quasiconformal, quasi-symmetric and quasi-Möbius geometry. (Gromov-)hyperbolic geometry and geometric group theory. Furthermore geometric analysis in general and low-dimensional topology. Besides pure mathematics I am interested in mathematical physics, in particular the geometry of space-time and string theory. My current research centers on the study of the conformal horizon of de Sitter space in general relativity with a positive cosmological constant and in particular the study of gravitational waves in this setting.

Education

11/2015 – 01/2021	**PhD in Mathematics**, University of Zurich. Thesis: *The Boundary at Infinity of Gromov-Hyperbolic Spaces*, supervised by Prof. Dr. Viktor Schroeder, defended January 27, 2021.
09/2012 – 09/2015	**Master of Science ETH in Mathematics**, ETH Zurich. Thesis: *Undistortedness of Lipschitz n-connected closed subsets in quasi-convex metric spaces of finite Assouad-Nagata dimension*, supervised by Prof. Dr. Urs Lang.
09/2008 – 09/2012	**Bachelor of Science in Mathematics** (with minor Physics and Computer Science), University of Bern. Thesis: *Low-dimensional linear representations of mapping class groups and their triviality in certain cases*, supervised by Prof. Dr. Sebastian Baader.
09/2000 – 09/2004	**EFZ Computer Science**

Appointments

06/2022 –	**Postdoctoral Researcher, Astrophysics**, ETH Zurich, Institute for Theoretical Physics. Research group of Lavinia Heisenberg
11/2015 – 01/2021	**PhD Student and Teaching Assistant**, University of Zurich.
09/2004 – 06/2006	**Java Software-Engineer**, Swisscom IT-Services.
02/2003 – 02/2004	**Internship**, Swisscom IT-Services.
02/2002 – 07/2002	**Internship**, Swisscom IT-Services.

Publications and Preprints

[1] Loreno Heer. "Some Invariant Properties of Quasi-Möbius Maps". In: *Analysis and Geometry in Metric Spaces* 5.1 (28 Aug. 2017), pp. 69–77. DOI: https://doi.org/10.1515/agms-2017-0004. URL: https://www.degruyter.com/view/journals/agms/5/1/article-p69.xml.

[2] Loreno Heer. "The Boundary at Infinity of Gromov Hyperbolic Spaces". PhD thesis. University of Zurich, 2021. DOI: https://doi.org/10.5167/uzh-217863. URL: https://doi.org/10.5167/uzh-217863.

Workshops and Conferences

.*Reading Seminar: Teichmüller Theory*, University of Fribourg, Swizerland (Fall 2021).
.*going the MATH way (goMATH 2019)*, Symposium, Zurich, Swizerland (12 to 14 March 2019).
.*Groups, geometries, and spaces in honour of Alessandra Iozzi*, ETH Zurich, Switzerland (22 to 25 January 2019).
.*Young Geometric Group Theory VII*, Les Diablerets, Switzerland (12 to 16 March 2018).
.*23rd Rolf Nevanlinna Colloquium*, ETH Zurich, Switzerland (12 to 16 June 2017).

Talks given

10/2019 Geometric Analysis Seminar / Oberseminar Geometrie
Möbius maps and the boundary at infinity of metric spaces
University of Fribourg
09/2016 Informal Seminar on Topics of Möbius Geometry
University of Zürich

Professional memberships and refereeing

since 2022 Referee for Journal of Mathematical Analysis and Applications.
since 2021 American Mathematical Society.
since 2017 Reviewer for MathSciNet (Mathematical Reviews).
since 2014 Reviewer for zbMATH.
since 2014 Swiss Mathematical Society.

Teaching experience

As an assistant / teaching assistant at University of Zurich

(Responsible for discussion sections, grading, and partly for creating homework assignments, supervising projects.)

FS16	MAT151	Grundbegriffe der Mathematik
FS16	MAT153	Zahlentheorie
HS16	MAT101	Programming
FS17	MAT112	Lineare Algebra II
HS17	MAT101	Programming
FS18	MAT823	Introduction to Computability and Complexity Theory
HS18	MAT101	Programming
FS19	MAT184	Analysis für die Chemie
HS19	MAT101	Programming
FS20	MAT184	Analysis für die Chemie
HS20	MAT101	Programming

MSc Thesis Co-Advisor

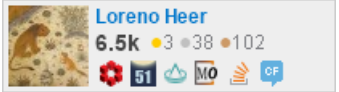
FS18 Andresen, Silke Berit Low-dimensional Boundaries of CAT(0) Spaces

Additional tasks

FS16 Correction MAT183
FS17 Correction MAT183
HS18 Correction MAT182

Other activities and outreach

Active on `mathoverflow.com` and `math.stackexchange.com` to help answer mathematics questions:



Solving puzzles on `https://projecteuler.net/` and similar websites.

Other skills

Languages	German / Swiss German (native). English (proficient). Persian (beginner).
Software	LaTeX, C, C++, Python, R, Linux, Bash, emacs, vim, PARI/GP, SageMath, Lean.
Leasure activities	Playing piano and church organ, in particular the works of Bach.

References

Prof. Dr. Viktor Schroeder
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Universität Zürich
Winterthurerstrasse 190
8057 Zürich - Switzerland
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Prof. Dr. Stefan Wenger
Department of Mathematics
Universität Freiburg
PER 11 bu. 2.103
Ch. du Musée 23
1700 Fribourg - Switzerland
stefan.wenger@unifr.ch

Prof. Dr. Urs Lang
Department of Mathematics
ETH Zurich, HG G 27.3
Rämistrasse 101
8092 Zurich - Switzerland
lang@math.ethz.ch

Prof. David Matthew Freeman, PhD
University of Cincinnati Blue Ash College
Muntz Hall 355C
9555 Plainfield Rd
Blue Ash, OH 45236 - USA
freemadd@ucmail.uc.edu

Reference concerning teaching:
Prof. Dr. Asieh Parsania
Berner Fachhochschule
School of Engineering and Computer Science
Abt MNG Allgemeinbildung
Pestalozzistrasse 20
3400 Burgdorf - Switzerland
asieh.parsania@gmail.com