

Florentin Münch - Curriculum Vitae

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Personal information

Date of birth: January 31, 1990

Country of Citizenship: Germany

Education

PhD studies in mathematics, Friedrich Schiller University Jena and University Potsdam, Germany, since November 2014

Master in Mathematics, Friedrich Schiller University Jena, Germany, *Li-Yau Inequalities on Finite Graphs*, Reviewer: Daniel Lenz and Matthias Keller, October 2014

Bachelor in Mathematics, Friedrich Schiller University Jena, Germany, *Ultrametric Cantor sets and boundaries of trees*, Reviewer: Daniel Lenz and Matthias Keller, September 2012

Research interests

Discrete analysis, Heat equation and Metric geometry with a focus on Ricci-curvature

Publications and Preprints

MICHEL BONNEFONT, SYLVAIN GOLÉNIA, MATTHIAS KELLER, SHIPING LIU, AND FLORENTIN MÜNCH. Magnetic sparseness and Schrödinger operators on graphs. *arXiv preprint arXiv:1711.10418*, 2017.

DAVID BOURNE, DAVID CUSHING, SHIPING LIU, FLORENTIN MÜNCH, AND NORBERT PEYERIMHOFF. Ollivier-Ricci idleness functions of graphs. *arXiv preprint arXiv:1704.04398*, 2017.

MICHELA EGIDI, SHIPING LIU, FLORENTIN MÜNCH, AND NORBERT PEYERIMHOFF. Ricci curvature and eigenvalue estimates for the magnetic Laplacian on manifolds. *arXiv preprint arXiv:1608.01955*, 2016.

BOBO HUA AND FLORENTIN MÜNCH. Ricci curvature on birth-death processes. *arXiv preprint arXiv:1712.01494*, 2017.

MATTHIAS KELLER, DANIEL LENZ, FLORENTIN MÜNCH, MARCEL SCHMIDT, AND ANDRÁS TELCS. Note on short-time behavior of semigroups associated to self-adjoint operators. *Bulletin of the London Mathematical Society*, 48(6):935–944, 2016.

MATTHIAS KELLER, FLORENTIN MÜNCH, AND FELIX POGORZELSKI. Geometry and spectrum of rapidly branching graphs. *Mathematische Nachrichten*, 289(13):1636–1647, 2016.

MARK KEMPTON, FLORENTIN MÜNCH, AND SHING-TUNG YAU. Relationships between cycles spaces, gain graphs, graph coverings, path homology, and graph curvature. *arXiv preprint arXiv:1710.01264*, 2017.

SHIPING LIU, FLORENTIN MÜNCH, AND NORBERT PEYERIMHOFF. Curvature and higher order Buser inequalities for the graph connection Laplacian. *arXiv preprint arXiv:1512.08134*, 2015.

SHIPING LIU, FLORENTIN MÜNCH, AND NORBERT PEYERIMHOFF. Bakry-Emery curvature and diameter bounds on graphs. *arXiv preprint arXiv:1608.07778*, 2016.

SHIPING LIU, FLORENTIN MÜNCH, AND NORBERT PEYERIMHOFF. Rigidity properties of the hypercube via Bakry-Emery curvature. *arXiv preprint arXiv:1705.06789*, 2017.

SHIPING LIU, FLORENTIN MÜNCH, NORBERT PEYERIMHOFF, AND CHRISTIAN ROSE. Distance bounds for graphs with some negative Bakry-Emery curvature. *arXiv preprint arXiv:1705.08119*, 2017.

FLORENTIN MÜNCH. Li-Yau inequality on finite graphs via non-linear curvature dimension conditions. *arXiv preprint arXiv:1412.3340*, 2014.

FLORENTIN MÜNCH. Remarks on curvature dimension conditions on graphs. *Calculus of Variations and Partial Differential Equations*, 56(1):11, 2017.

FLORENTIN MÜNCH AND RADOSŁAW K. WOJCIECHOWSKI. Ollivier Ricci curvature for general graph Laplacians: Heat equation, Laplacian comparison, non-explosion and diameter bounds. *arXiv preprint arXiv:1712.00875*, 2017.

Awards and Honors

Doctoral scholarship of the Studienstiftung des deutschen Volkes since 2016

Main award at the Student's conference of the German Mathematical Society (DMV) 2015

Exams prize of the University Jena 2015

Study scholarship of the Studienstiftung des deutschen Volkes 2009 – 2014

International Mathematical Olympiad: Bronze Medal 2008

German Mathematical Olympiad: Gold Medal 2008, 2006, 2005; Silver Medal 2004; Bronze Medal 2007

Teaching

Student's day, seminar on *Infiniteness*, 2016, University Potsdam

Student's day, seminar on *Sectional curvature of planar graphs*, 2015, University Potsdam

Tutorial *Analysis II for teachers*, Winter semester 2013/2014, Friedrich Schiller University Jena

Tutorial *Higher Analysis II*, Summer semester 2013, Friedrich Schiller University Jena

Tutorial *Higher Analysis I*, Summer semester 2012, Friedrich Schiller University Jena

Tutorial *Analysis III for mathematicians*, Winter semester 2011/2012, Friedrich Schiller University Jena

Conferences, Research stays and Seminars

February to December 2017: Research stay at Harvard University under advison of S.-T. Yau

November 2017, Harvard University, members' seminar of the Center of Mathematical Sciences and Applications, talk on *Ricci curvature on infinite graphs and stochastic completeness*

October 2017, Research stay at Bielefeld University, talk on *Ricci curvature on infinite graphs and stochastic completeness*

September 2017, MPI Bonn, Intense Activity Period on Metric Measure Spaces and Ricci Curvature, talk on *Relations between Ollivier and Bakry Emery curvature on graphs*

August 2017, University Potsdam, Conference on Analysis and Geometry on Graphs and Manifolds, talk on *Relations between Ricci curvature, coverings, path homology, homotopy groups and cycle bases on graphs*

March 2017, City University of New York Graduate Center, Geometric Analysis Seminar, talk on *Rigidity properties of the hypercube via discrete Ricci curvature*

March 2017, Fudan University, Geometry seminar, talk on *Rigidity properties of the hypercube via discrete Ricci curvature*

March 2017, Tsinghua University, Yau Mathematical Sciences Center, Curvature of Graphs, Simplicial Complexes and Metric Spaces Workshop, talk on *Rigidity properties of the hypercube via discrete Ricci curvature*

March 2017, Harvard University, members' seminar of the Center of Mathematical Sciences and Applications, talk on *Rigidity properties of the hypercube via Bakry Emery curvature*

February 2017, University Bielefeld, Fifth Annual Bielefeld-SNU Workshop on Mathematics, talk on *Rigidity properties of the hypercube via Bakry Emery curvature*

September 2016, Max-Planck-Institut Leipzig, Germany, Seminar on geometry, talk on *Bakry-Emery curvature on graphs and diameter-bounds*

August 2016, Fudan University Shanghai, China, Workshop on Discrete Analysis, talk on *Li-Yau-inequality and diameter bounds via discrete Bakry-Emery curvature*

July 2016, University Potsdam, Germany, PhD Seminar, talk on *Diffusion, Harnack inequality and Ricci-curvature*

October 2015, Hamburg, Germany 2015, Student's conference of the German Mathematical Society (DMV), talk on *Li-Yau inequalities on finite graphs*

July 2015, Friedrich Schiller University Jena, Germany, PhD Seminar, talk on *Li-Yau inequality on finite graphs via non-linear curvature dimension conditions*

May 2015, Institut Henri Poincaré, Paris, France, Spring school on Discrete Ricci curvature

February 2015, Durham University, UK, two-week research stay, talk on *Li-Yau inequalities on finite graphs*

September 2014, Berlin University of Technology, Germany, SFB seminar, talk on *Li-Yau inequalities on finite graphs*

(Co-) Supervision

KATJA OHDE, *Geometry of rapidly branching graphs*, Bachelor 2016