Seminar
Harmonic Analysis Seminar
A seminar of the Harmonic Analysis and Geometric Measure Theory Research Group. Previously, this was a joint seminar with the Nonlinear PDE group at the Aalto University, and was organized by Tuomas Hytönen and Rikki Korte. During the academic years 2018-2020 Henri Martikainen organizes the seminar. In 2019-2020 we meet irregularly on Fridays at Exactum C124, 12:15 - 14:00 (or 12:15-13:00).
Everyone is welcome!

Schedule

Spring 2020

- **10.1**: Kangwei Li (Tianjin University): Flow with $A_{\infty}(\mathbb{R})$ density and transport equation in BMO
- **17.1**: Emiel Lorist (Delft University of Technology): Singular stochastic integral operators: The vector-valued and the mixed-norm approach
- **31.1** (50 min talk; 13:10-14:00): Katrin Fässler (Jyväskylä): Singular integrals on regular curves in the Heisenberg group
- **6.3** (60min talk; 13:00-14:00): Marti Prats (Aalto): The two-phase problem for harmonic measure in VMO
- **27.3**: Michele Villa (Helsinki): TBA
- **3.4**: Stefano Lap Link (Helsinki): Dyadic representation theorem using smooth wavelets with compact support

The seminar is cancelled until further notice.

Fall 2019

- **25.10**: Tuomas Oikari (Helsinki): Iterated commutators under a joint condition on the tuple of multiplying functions
- **1.11**: Emil Airta (Helsinki): Two-weight commutator estimates

Spring 2019

- **1.2**: Tuomas Hytönen (Helsinki): Commutators and Jacobians
- **15.2**: Giovanna Citti (University of Bologna): Schauder estimates at the boundary in Carnot groups; Joint seminar with the Geometric and Functional Analysis seminar.
- **1.3**: Tuomas Orponen (Helsinki): Basics of uniform rectifiability in the Heisenberg group
- **22.3**: Marta de León-Contreras (Madrid): The semigroup method as a general technique in analysis and PDEs
- **17.5**: Luis Alias (Universidad de Murcia): Trapped submanifolds in de Sitter spacetime; Joint seminar with the Geometric and Functional Analysis seminar.
- **24.5**: Enrico Le Donne (University of Jyväskylä and University of Pisa): Mathematical appearances of sub-Riemannian geometries; Joint seminar with the Geometric and Functional Analysis seminar.

Fall 2018

- **5.10**: Ivan Yaroslavtsev (Delft/Jyväskylä): The Hilbert transform and orthogonal martingales in Banach spaces
- **19.10**: Olli Tapiola (Jyväskylä): Carleson measures, rectifiability and extensions of functions
- **21.11**: Stefan Sturm (Universität Salzburg): Regularity of weak solutions and supersolutions to the porous medium equation
- **2.12**: David Bate (Helsinki): TBA - CANCELLED
- **23.11**: Tuomo Kuusi (Helsinki): Vectorial Nonlinear Potential Theory

Past schedule

Spring 2018

- **26.1. @ Otaniemi M3**:
  - **14-15**: Paolo Marcellini (Università di Firenze): Elliptic and parabolic equations under general and p,q growth conditions
  - **15-16**: Stefan Sturm (Universität Salzburg): Regularity of weak solutions and supersolutions to the porous medium equation

- **23.2. @ Kumpula C124**:
  - **14-15**: Nick Lindemulder (TU Delft): A randomized difference norm for vector-valued Bessel potential spaces
  - **15-16**: Pekka Lehtelä (Aalto): Obstacle problem for the porous medium equation

- **23.3. @ Otaniemi M3**:
  - **14-15**: Henri Martikainen (Helsinki): Boundedness properties of bilinear bi-parameter singular integrals
  - **15-16**: Antti Vähäkangas (Jyväskylä): Self-improvement results for two-measure Poincaré inequalities

- **20.4. @ Kumpula C124**:
  - **14-15**: Matias Vestberg (Aalto): Local boundedness of shallow water
  - **15-16**: Changsun Choi (Helsinki): On the Lebesgue space of vector measures
Autumn 2017
(The regular three-weekly seminar in bold; additional activities in italic)

• 29.9. @ Kumpula C124:
  • 15-16: Timo Hämmänen (Helsinki): Two-weight $L^p$-$L^q$ bounds for positive dyadic operators in the case $0<q<p<1$
• 11.10. (Wednesday) @ Otaniemi M3 (note exceptional time!):
  • 12:05-13: Galia Dalni (Concordia University, Canada): Local BMO and Van Schaftingen spaces
• 20.10. @ Otaniemi M3:
  • 14-15: Tuomas Hytönen (Helsinki): The matrix-weighted frontier of sharp norm inequalities
  • 15-16: Jia Huiluan (Aalto / Xián Jiaotong University): Global regularity of elliptic p-Laplace equation on convex domain
• 27.10. @ Kumpula C124:
  • 14-16: Tuomas Sahisten (Manchester): Spectral transfer for radial integral operators and thermodynamics of Laplace eigenfunctions
• 10.11. @ Kumpula C124:
  • 14-15: Matias Vestberg (Aalto): An excursion in shallow water (abstract)
  • 15-16: Emil Vuorinen (Helsinki): A representation theorem for bilinear singular integrals
• 1.12. @ Otaniemi M3:
  • 14-15: Ella Tamir (Helsinki): Constructing the Green function for a non-coercive PDE
  • 15-16: Casimir Lindfors (Aalto): On the degenerate two-phase Stefan problem
• 18.12. @ Kumpula C124: (Monday, special time!)
  • 10-12: Olli Tapiola (University of Missouri, Columbia): Uniform rectifiability, Carleson measures and -approximability of harmonic functions in $L^p$

Winter 2017
(The joint seminar was on hold for this period, and there was an internal reading group instead, meeting Wednesdays at 13-15 in DK117.)

• 1.3.: Ella Tamir, LS implies BWGL, II
• 22.2. (13:00-14:00): Ella Tamir, LS implies BWGL, I
• 15.2.: Olli Tapiola, (C2) implies LS
• 8.2.: Henri Martikainen, A characterization of chord-arc domains
• 1.2.: Ella Tamir, WHSA implies UR / BAUP
• 25.1.: Olli Tapiola, Epsilon-approximability etc., IV
• 18.1.: Olli Tapiola, Epsilon-approximability etc., III
• 11.1. (12:15-14:00) @ K123: Olli Tapiola, Epsilon-approximability etc., II
• 10.1. (12:00-13:30) @ K123: Olli Tapiola, Epsilon-approximability, Carleson measures, harmonic functions and uniform rectifiability, I

Autumn 2016

• 2.12. @ Otaniemi M3: Henri Martikainen (University of Helsinki), Adapted Collar type inequalities
• 25.11. @ Kumpula C123: Pekka Lehtelä (Aalto University), Unbounded supersolutions of the porous medium equation
• 18.11. @ Otaniemi, Janne Korvenpää (Aalto University), doctoral defence
• 11.11. @ Kumpula C123: Casimir Lindfors (Aalto University), On the Cauchy-Dirichlet problem for a general class of parabolic equations
• 4.11. @ Otaniemi M3: Emil Vuorinen (University of Helsinki), Characterizations of two-weight inequalities in $L^p$
• 14.10. @ Otaniemi M3: Wendolin Dimian González (University of Helsinki), Weighted compactness of bilinear commutators
• 7.10. @ Kumpula C123: Christopher Hopper (Aalto University), Regularity Aspects of Manifold-Constrained Minimisers in the Calculus of Variations
• 30.9. @ Otaniemi M3: Kangwei Li (University of Helsinki), Sparse domination theorem and weighted norm inequalities
• 16.9. @ Kumpula C123: José Madrid Padilla (Aalto University), Endpoint Sobolev and BV Continuity for Maximal Operators

Spring 2016

• 9.5. (Monday) @ Kumpula D123 (exceptional room): Second afternoon in Banach spaces – 3 talks of 30 min each:
  • 14:15-14:45 Lutz Weis (Karlsruhe Institute of Technology): A new criteron for the H calculus and the Stokes operator on Lipschitz domains
  • 14:45-15:15 Mark Veraar (Technische Universität Delft): Stochastic maximal regularity for equations with adapted drift
  • 15:30-16:00 Jan van Neerven (Technische Universität Delft): On the Hodge-Dirac operator associated with a class of non-symmetric Ornstein-Uhlenbeck operators
• 29.4. @ Kumpula C123: Alexander Olevskii (Tel Aviv University), Fourier quasicrystals, IV (last lecture of a minicourse on 25.-29.4.)
• 22.4. @ Otaniemi M3: Stephan Fackler (Universität Ulm), Non-autonomous maximal regularity
• 15.4. @ Kumpula C123: Casimir Lindfors (Aalto University), Boundedness of solutions to parabolic equations with general growth.
• 8.4. @ Otaniemi M3: Tuomas Hytönen (University of Helsinki), Weighted inequalities and commutators
• 1.4. @ Kumpula C123: Pekka Lehtelä (Aalto University), A weak Harnack estimate for supersolutions to the porous medium equation.

Winter 2016

• 4.3. @ Kumpula C123: Janne Korvenpää (Aalto University), Superharmonic functions for the fractional p-Laplace equation.
• 26.2. @ Otaniemi M3: Henri Martikainen (University of Helsinki), Rectifiability: current topics.
• 19.2. @ Kumpula C123: Tuomo Kuusi (Aalto University), The additive structure of elliptic homogenization. (arXiv:1602.00512)
• 12.2. @ Otaniemi M3: Antti Vähäkangas (University of Jyväskylä), Local Hardy inequalities and self-improvement of uniform fatness.
• 5.2. @ Kumpula C123: Wendolin Dimian González (University of Helsinki), Domination theorems for bilinear Calderón-Zygmund operators.
• 29.1. @ Otaniemi M3: José Ramón Madrid Padilla (IMPA, Brazil), On derivative bounds for maximal functions.
• 22.1. @ Kumpula C123: Olli Saari (Aalto University), On exceptional sets for the p-parabolic equation.
• 15.1. @ Otaniemi M3: Emil Vuorinen (University of Helsinki), A new approach to local Tb theorems via the good lambda method.