Harmonic Analysis and Geometric Measure Theory Research Group

Harmonic Analysis provides the infrastructure linking all areas of analysis, from complex analysis to partial differential equations to probability and geometry.

-R. R. Coifman (Yale University), on the occasion of the Abel Prize 2017 award to Yves Meyer.

Harmonic Analysis is a branch of Mathematical Analysis that has grown around the investigation of classical Fourier series, but today encompasses various quite different topics involving the interplay of spatial and spectral information. Typical phenomena of interest are cancellations, orthogonality and oscillations. Often the essence of the problems is captured in estimates relating the size of an object and its transform. See the Technical survey by the Fields Medalist Terence Tao for a more detailed discussion of Harmonic Analysis in general, or our research page for the particular topics studied by our group.

Events

Conference Geometric measure theory and its connections in Helsinki, 4-8 June 2018

Sponsors

Our research is currently supported by:

- the Academy of Finland through
  - the Academy Project Frontiers of singular integrals (2018-2022)
  - Academy Research Fellow's project Geometric and dyadic harmonic analysis: general measures and rectifiability (2016-2021)
  - Academy Research Fellow's project Quantitative rectifiability in Euclidean and non-Euclidean spaces (2017-2022)
  - Postdoctoral Research Fellow's project Dyadic harmonic analysis at the frontiers: two-weight norm inequalities and their applications to PDEs, and median oscillation decompositions (2016-2019)
  - Postdoctoral Research Fellow's project Projections, densities and rectifiability: new settings for classical ideas

- University of Helsinki through
  - the three-year research grant Singular integrals and the geometry of measures (2018-2020)

In the past, we have also benefited from the support of:

- the European Union through the ERC Starting Grant Analytic-probabilistic methods for borderline singular integrals (2011-2016),
- the Academy of Finland through
  - the Academy Research Fellow's project LP methods of Harmonic Analysis (2009-2014)
  - the consortium Stochastic and Harmonic Analysis, interactions and Application (2010-2013)
  - the postdoctoral grant Multiparameter dyadic Harmonic Analysis and probabilistic methods (2013-2016)
- the Vilho, Yrjö and Kalle Väisälä Foundation