Harmonic Analysis and Geometric Measure Theory
L'analyse harmonique et la théorie géométrique de la mesure
(Org: **Juyoung Lee**, **Nikou Lei** and/et **Blanca Radillo–Murguia** (University of British Columbia))

MENGMENG DOU, University of British Columbia
Regularity of multi-parameter Fourier integral operators

We investigate a new class of Fourier integral operators $\mathbf{F}$ defined in $\mathbb{R}^{\mathbf{N}}$. Their symbols are allowed to satisfy a differential inequality with certain multi-parameter characteristic. We prove these operators of order $-\frac{\mathbf{N}-1}{2}$ bounded from the classical, atom decomposable H^1-Hardy space to $L^1(\mathbb{R}^{\mathbf{N}})$. As a result, we obtain a sharp L^p-estimate.

Simultaneously, a generalized Sobolev L^p-space is introduced. We establish the Sobolev L^p-norm inequality for convolutions with a distribution having singularity on the unit sphere. As an application, we give new a priori estimate for the solution of wave equations by requiring less regularity on the source term and initial data.

MARCO FRACCAROLI, University of Massachusetts Lowell

ROBERT FRASER, Wichita State University

KAIYI HUANG, University of Wisconsin Madison

KAIWEN JIN, University of Wisconsin-Madison
Fourier restriction to hyperbolic rectangles and an application

In this talk, we study the Lebesgue space inequalities for extension operators associated with hyperbolic surfaces in $\mathbb{R}^3$ over rectangular regions. In the polynomial-method range, we characterize the corresponding operator norms in terms of the side-lengths. As an application, we present new restriction estimates for a class of hypersurfaces with additive structure.

JORIS ROOS, University of Massachusetts Lowell

HRIT ROY, University of Jyväskylä

IGNACIO URIARTE-TUERO, University of Toronto