



**Institut de Matemàtica
de la Universitat de Barcelona**

MINI COURSE:
FRACTIONAL INTEGRALS AND FOURIER TRANSFORMS
Prof. Viktor Kolyada (Karlstad University)

The course is mainly devoted to the basics of the theory of fractional integrals. We study also some estimates of Fourier transforms. The main contents of the course are the following topics:

- Convolutions. Young's inequality. Sharp constants.
 - O'Neil's rearrangement inequality.
 - Riesz potentials. The Hardy-Littlewood-Sobolev theorem and its refinement.
 - Fractional maximal functions. Estimates of rearrangements.
 - Bessel potentials. Fractional Sobolev spaces.
 - Limiting embeddings.
 - Anisotropic spaces. Embedding theorems.
 - Fourier transforms. The Hausdorff-Young inequality.
 - The Hardy-Littlewood-Paley inequality.
 - Estimates of rearrangements of Fourier transforms.
 - Bernstein-type theorems. Estimates of Fourier transforms in terms of moduli of continuity and in terms of derivatives.
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Dates: Monday 27 and Wednesday 29, October 2014
Time: 17:00 - 19:00.
Where: Classroom B1.

Students taking this course will receive a certificate of attendance.