





Barcelona Analysis Seminar

Date: Thursday June 26, 2025Time: 15:00 CETRoom: UB iA (Universitat de Barcelona)

Endpoint estimates for Fourier multipliers with Zygmund singularities

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The Hilbert transform maps L^1 functions into $L^{1,\infty}$ ones. In fact, this estimate holds true for any operator T_m defined by a Fourier multiplier m with singularity only in the origin. Tao and Wright identified the space replacing L^1 in the endpoint estimate for T_m when m has singularities in a lacunary set of frequencies, in the sense of the Hörmander-Mihlin condition.

In this talk we will quantify how the endpoint estimate for T_m for any arbitrary m is characterized by the lack of additivity of its set of singularities $\Xi(m)$. This property of $\Xi(m)$ is expressed in terms of a Zygmund-type inequality. The main ingredient in the proof of the estimate is a multi-frequency projection lemma based on Gabor expansion playing the role of Calderón-Zygmund decomposition.

The talk is based on joint work with Bakas, Ciccone, Di Plinio, Parissis, and Vitturi.

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