INSTITUTUL DE MATEMATICĂ "SIMION STOILOW" AL ACADEMIEI ROMÂNE **Conferința lunară**

The pointwise convergence of Fourier Series near L¹

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Abstract: In this talk we discuss some recent developments on the old question regarding the pointwise behavior of Fourier Series near L^1 . We start with several brief historical remarks on the subject, describing the context and the formulation of the main problem(s). We then present the evolution of the main negative and positive results from early 20th century to present day. In the main part of our talk we provide a near-complete classification of the Lorentz spaces for which the sequence $\{S_n\}_{n \in \mathbb{N}}$ of partial Fourier sums is almost everywhere convergent along lacunary subsequences. In particular, we resolve a conjecture stated by Konyagin in his 2006 ICM address.