HARMONIC ANALYSIS ON $SL(2,\mathbb{R})$ AND ON THE GROUP OF AUTOMORPHISMS OF HOMOGENEOUS TREES

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In this talk we survey some results concerning Harmonic Analysis on $SL(2,\mathbb{R})$ and its coset space $SL(2,\mathbb{R})/SO(2)$, and on their natural counterparts in the "discrete setting". In particular, we focus on convolution operators, maximal operators, eigenfunctions of invariant Laplacians and Riesz transforms.

Then we briefly discuss the natural problem of extending some of these results to non-homogeneous settings, i.e., we ask about their stability under perturbations of the space. Not much is known, and we believe that some of the problems arising in this setting might be object of future research, within a framework of collaboration between harmonic analysts and experts in differential geometry.

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