

ANALYSIS OF RUMIN'S LAPLACIAN ON THE HEISENBERG GROUP

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ABSTRACT. In this talk we study Rumin's Laplacian Δ_R on the Heisenberg group H_n . We obtain a decomposition of the space of Rumin's forms with L^2 coefficients into invariant subspaces and describe the action of Δ_R restricted to these subspaces up to unitary equivalence. We prove that this decomposition leads to a strong L^p decomposition of the space of Rumin's forms with L^p coefficients, $1 < p < \infty$. We also prove a Mihlin-Hörmander multiplier theorem for Δ_R and show that the Riesz transforms defined by Δ_R are bounded on L^p .