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Title: L^p estimates for the wave equation associated to the Grushin operator

Abstract: Let $G := -\Delta - |x|^2 \partial_t^2$ be the Grushin operator on \mathbb{R}^{n+1} . We study the L^p boundedness of the solution of the wave equation defined as

$$\begin{aligned} \partial_s^2 u(x, t; s) + Gu(x, t; s) &= 0, s > 0 \\ u(x, t; 0) &= 0, \quad \partial_s u(x, t; 0) = f(x, t). \end{aligned}$$

By using the functional calculus of G , the solution of the above initial value problem is given by $u(x, t; s) = \sin s\sqrt{G}/\sqrt{G}f(x, t)$. We prove that the solution of the wave equation associated to the Grushin operator is bounded on $L^p(\mathbb{R}^{n+1})$ for $|1/p - 1/2| < 1/(n+2)$. This is a joint work with Prof. S. Thangavelu.