SINGULAR SPHERICAL MAXIMAL OPERATORS ON A CLASS OF TWO STEP NILPOTENT LIE GROUPS

Detlef Müller joint work with Andreas Seeger

Abstract. Let H^n be the Heisenberg group and let μ_t be the normalized surface measure for the sphere of radius t in $\mathbb{R}^{2n}$. Consider the maximal function defined by $Mf = \sup_{t>0} |f * \mu_t|$. We prove for $n \geq 2$ that M defines an operator bounded on $L^p(H^n)$ provided that $p > 2n/(2n-1)$. This improves an earlier result by Nevo and Thangavelu, and the range for L^p boundedness is optimal. We also extend the result to a more general setting of surfaces and to groups satisfying a nondegeneracy condition; these include the groups of Heisenberg type.

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