R. Penney

Dept. of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN 47907, U.S.A.
`rcp@math.purdue.edu`

R. Urban

Institute of Mathematics, Wroclaw University, Plac Grunwaldzki 2/4, 50-384 Wroclaw, Poland
`urban@math.uni.wroc.pl`

Upper Bound for the Heat Kernel on Higher-Rank NA Groups

Let S be a semi-direct product $S = N \rtimes A$ where N is a connected and simply connected, non-abelian, nilpotent meta-abelian Lie group and A is isomorphic with $\mathbb{R}^k$, $k > 1$. We consider a class of second order left-invariant differential operators $\mathcal{L}_\alpha$, $\alpha \in \mathbb{R}^k$, on S. We obtain an upper bound for the heat kernel for $\mathcal{L}_\alpha$.