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Journal of Lie Theory 23 (2013) 655–668

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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}_α , $\alpha \in \mathbb{R}^k$, on S . We obtain an upper bound for the heat kernel for \mathcal{L}_α .

Keywords: Heat kernel, left invariant differential operators, meta-abelian nilpotent Lie groups, solvable Lie groups, homogeneous groups, higher rank NA groups, Brownian motion, exponential functionals of Brownian motion.

MSC: 43A85, 31B05, 22E25, 22E30, 60J25, 60J60