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**Krzysztof Bogdan** and **Bartłomiej Siudeja\*** (siudeja@uoregon.edu). *Transition densities and trace estimates for a broad class of Lévy processes.*

Transition density of a stochastic process allows one to quantify the dynamics of the process. Yet, except for Brownian motion and a very few special cases, there is no closed formula for the density, which is usually defined via a characteristic function. The problem is exacerbated for killed processes (confined to bounded domains), where even the Brownian case is not explicit.

We will discuss recent progress on bounding the transition probabilities of a class of killed Lévy processes using geometric properties of their domains. We will use these to estimate their traces, the quantities revealing so-called heat invariants. In the classical, Brownian case, the first two invariants are the volume and the surface area of the domain. Surprisingly, we will find the same simple quantities in traces of very general Lévy processes. (Received February 01, 2016)