

GRADIENT ESTIMATES OF DIRICHLET HEAT KERNELS FOR UNIMODAL LÉVY PROCESSES

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Let $X(t)$ be an isotropic and unimodal Lévy process on \mathbb{R}^d . That is, its transition density (*heat kernel*) $p_t(x)$ is assumed to be radial and decreasing function of the space variable, which is equivalent to the fact that its Lévy measure has radial and unimodal density.

In this talk we consider isotropic unimodal Lévy processes satisfying weak type scaling properties, which are expressed in terms of the characteristic exponent ψ of the process.

Recently there have been a lot of studies regarding estimates of the transition density of the process $X(t)$ killed upon leaving an open set D . We continue this line of research and study the gradient of the transition density $p_D(t, x, y)$ of the killed process (*Dirichlet heat kernel*).

The aim of this talk is to present gradient estimates of Dirichlet heat kernels for unimodal Lévy processes whose symbols satisfy some scaling conditions and Lévy measures satisfy some regularity conditions.

The talk presents results obtained jointly with Tadeusz Kulczycki (Wrocław University of Science and Technology).

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