

Martingale problem for integro-differential operators with path dependent coefficients

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The martingale problem associated with a second order elliptic differential operator has been introduced by Stroock and Varadhan. It has been extended by Stroock to the case of integro-differential operators. Such an operator is characterized by a diffusion coefficient a , a drift coefficient b and a measure M . These functions a , b and M are defined on $\mathbb{R}_+ \times \mathbb{R}^n$.

In this talk I present the study of the martingale problem associated with integro-differential operators whose coefficients are path dependent. This means that the functions a , b and M are defined on $\mathbb{R}_+ \times \Omega$ where Ω is the space of càdlàg paths with values in $\mathbb{R}^n$. The functions a, b, M are progressive that is, for given t , $a(t, \omega)$, $b(t, \omega)$ and $M(t, \omega)$ depend on the whole past of the trajectory ω up to time t . This leads us to introduce a new topological approach for progressive functions. The existence and the uniqueness of the solution to the path dependent martingale problem is then proved under some continuity property for the coefficients, a, b, M , and the ellipticity of a . This result extends to the path dependent case the previous results of Stroock and Varadhan.