Probability Theory, Stochastic Process

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I am studying Stochastic processes associated with moving particles such as dusts in the air and stock prices. Especially I am interested in diffusion processes corresponding to the particles which are moving in tubes and balls, and so on. I treat limit theorems for the time changed skew product diffusion processes of one-dimensional diffusion processes and a spherical Brownian motion. The limit process is corresponding to Dirichlet form of non-local type according to degeneracy of the limit measure of underlying ones. I am also interested in properties and Some examples of limit processes which lead us to Dirichlet forms with diffusion term, jump term and killing term.

Keywords : Diffusion process, limit theorem, skew product, harmonic transform, Dirichlet Form