PROBABILISTIC LITTLEWOOD-PALEY THEORY

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Littlewood-Paley functions are used to characterize some function spaces such as Hardy space, Sobolev space and Lipschitz space. In the last 30 years, Brownian motion has been widely used to give such characterizations in terms of $\mathbf{L}_p$-norm. Recently, there has been an increasing interest in discontinuous processes, particularly in stable processes. An interesting question is if there is an analogue of the $\mathbf{L}_p$ characterization in the case of discontinuous processes. In this talk, first I will discuss the Dirichlet problem which forms the core of this problem and then I will talk about its solution, corresponding L-P functions, and my recent results in this topic.