# BROWNIAN MOTIONS IN A RENORMALIZED POISSONIAN POTENTIALS

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**Abstract**: The model of Brownian motion in Poissonian potential describes a typical trajectory of a Brownian particle surviving from being attracted by the obstacles randomly located in the space (think about the stars in the universe). It also closely related to the study of Anderson models. In the existing literature, the random potential is defined as the convolution between a Poissonian field and a bounded and locally supported function.

According to the Newton's law of universal attraction and some other related laws in physics, the most natural way of constructing the random potential is to define it as the Riesz potential of the Poissonian field. On the other hand, the Riesz potential of the Poissonian field blows up.

In this talk, this problem will be fixed by the way of renormalization. In addition, some asymptotic patterns of our models will be established and more problems will be asked. Part of the talk is based on some collaborative works with Kulic.