VII Encontro da Pós-Graduação em Matemática da UFBA
4 a 8 de novembro de 2019

THE SLOW BOND RANDOM WALK AND THE SNAPPING OUT BROWNIAN MOTION

Diogo Soares Dórea da Silva *

Abstract

We consider the continuous time symmetric random walk with a slow bond on $\mathbb{Z}$, which rates are equal to $1/2$ for all bonds, except for the bond of vertices $\{-1, 0\}$, which associated rate is given by $\alpha n^{-\beta}/2$, where $\alpha \geq 0$ and $\beta \in [0, \infty]$ are the parameters of the model. We prove here a functional central limit theorem for the random walk with a slow bond: if $\beta \in [0, 1)$, then it converges to the usual Brownian motion. If $\beta \in (1, \infty]$, then it converges to the reflected Brownian motion. And at the critical value $\beta = 1$, it converges to the *snapping out Brownian motion* (SNOB) of parameter $\kappa = 2\alpha$, which is a Brownian type-process recently constructed in [1]. We also provide Berry-Esseen estimates in the dual bounded Lipschitz metric for the weak convergence of one-dimensional distributions, which we believe to be sharp.

References

[1] A. Lejay. The snapping out Brownian motion. *Ann. Appl. Probab.*, 26(3):17271742, 2016.

[2] D. Erhard; T. Franco; D. S. Silva. The Slow Bond Random Walk and the Snapping Out Brownian Motion. 2019. (Submitted)

Tipo de Apresentação: APRESENTAÇÃO ORAL

*e-mail: dsdorea@gmail.com