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Scaling identity for crossing Brownian motion in a Poissonian potential. (English)

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Consider d -dimensional ($d \geq 2$) Brownian motion in a truncated Poissonian potential. If Brownian motion starts at the origin and ends in the closed ball with center y and radius 1, then the transverse fluctuation of the path is expected to be of order $|y|^\xi$, whereas the distance fluctuation is of order $|y|^\chi$. Physics literature tells us that ξ and χ should satisfy a scaling identity $2\xi - 1 = \chi$. The author studies mathematically the conjecture and presents a result which is quite close to the conjecture.

Reviewer: [Chen Mu-fa \(Beijing\)](#)

MSC:

60K35 Interacting random processes; statistical mechanics type models; percolation theory

Cited in **6** Documents

Keywords:

[coupling](#); [measurability](#); [Dobrushin-Shlosman uniqueness theorem](#)

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