Geometry of the Random Walk Range Conditioned on Survival Among Bernoulli Obstacles

SPEAKER: Ryoki Fukushima, Kyoto University
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(华东师范大学中山北路校区，地理楼264室)

ABSTRACT

We consider a discrete time simple symmetric random walk among Bernoulli obstacles on the d-dimensional integer lattice, where the walk is killed when it hits an obstacle. It is known that conditioned on survival up to time N, the random walk range is asymptotically contained in a ball of radius CN^{1/(d+2)}. For d=1, 2, it is also known that the range asymptotically covers a ball with slightly smaller radius, while the case d>2 remains open. I will talk about the extension of this covering result to any d, as well as a new result on the size of the boundary of range. This talk is based on a joint work with Jian Ding, Rongfeng Sun and Changji Xu.

BIOGRAPHY

Ryoki Fukushima is Associate Professor at Research Institute for Mathematical Sciences, Kyoto University. His main research area is stochastic process in random media, such as parabolic Anderson model, directed polymer in random environment, and random walk in random scenery.