Limiting Behavior of Edge-Reinforced Random Walks on the Half-Line

SPEAKER: Masato Takei, Yokohama National University
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ABSTRACT
We study the limiting behavior of edge-reinforced random walks on the half-line with heterogeneous initial weights. Takeshima (2001) proved that the initial transience is preserved under reinforcement. For linear reinforcement, Takeshima (2000) showed that the initial recurrence is also preserved. We give new proofs of those facts. On the other hand, the result of Davis (1989) shows that the initial recurrence is not necessarily preserved under reinforcement. We consider the situation where each edge weight can be updated only when the edge is traversed from right to left, and provide a description of phase transitions that arise as trade-offs between the strength of the reinforcement and that of the initial weights. The latter part is based on a joint work with Jiro Akahori and Andrea Collevecchio.

BIOGRAPHY
Masato Takei is an Associate Professor at Yokohama National University. He received his Ph.D from Kobe University in 2005. His research areas include percolation theory and self-interacting random walks.