

HITTING TIMES WITH TABOO FOR A RANDOM WALK

E. Vl. Bulinskaya

For a symmetric homogeneous and irreducible random walk on the d -dimensional integer lattice, which have a finite variance of jumps, we study passage times (taking values in $[0, \infty]$) determined by a starting point x , a hitting state y , and a taboo state z . We find the probability that these passage times are finite, and study the distribution tail. In particular, it turns out that, for the above-mentioned random walks on \mathbb{Z}^d except for a simple random walk on \mathbb{Z} , the order of the distribution tail decrease is specified by dimension d only. In contrast, for a simple random walk on \mathbb{Z} , the asymptotic properties of hitting times with taboo essentially depend on mutual location of the points x , y , and z . These problems originated in recent study of a branching random walk on \mathbb{Z}^d with a single source of branching.

Key words and phrases: random walk on integer lattice, hitting time, taboo probability, branching random walk.

Bulinskaya Ekaterina Vladimirovna

Lomonosov Moscow State University,
Moscow, 119991 Russia.
E-mail: bulinskaya@yandex.ru

Received

December 1, 2011

Translated into English:

Siberian Advances in Mathematics, V. 22, N 4, 227–242 (2012).

DOI: 10.3103/S1055134412040013