Shimura, Michio

Excursions in a cone for two-dimensional Brownian motion. (English) Zbl 0582.60048

J. Math. Kyoto Univ. 25, 433-443 (1985).

Let $\{B(t), 0 \leq t < \infty\}$ be the two-dimensional standard Brownian motion process with continuous paths on a probability space. A most significant property of the Brownian paths is known as the winding property: Let T be a finite Markov time of the two-dimensional Brownian motion process, then with probability one $\{B(t), T \leq t < T + \epsilon\}$ winds about B(T) and cuts itself for every $\epsilon > 0$. In this paper we will consider the contrary. Namely, when does occur a non-winding in the two-dimensional Brownian paths? We also determine the law of a non- winding part by giving the corresponding conditioned limit theorem for the Brownian motion.

MSC:

60G17 Sample path properties
60J65 Brownian motion
60F15 Strong limit theorems

Keywords:

winding property; non-winding in the two-dimensional Brownian; conditioned limit theorem

Full Text: DOI