

Hobson, David G.; Werner, Wendelin

Non-colliding Brownian motions on the circle. (English) Zbl 0853.60060

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The aim of this paper is to calculate the probability transition density for n Brownian motions on the unit circle killed when any pair collide, and to investigate some related questions such as the computation of eigenvalues/eigenfunctions of the Laplacian with Dirichlet boundary conditions in certain domains of \mathbb{R}^n . Precise expressions for these non-collision transition densities are found using reflection techniques and re-expressed in terms of an eigenfunction expansion. This makes it easy to read off the asymptotic behaviour of the Brownian motions and the asymptotic probability to leading order that there have been no collisions. There are parallels with Brownian motion models of random unitary matrices.

Reviewer: [D.G.Hobson \(Bath\)](#)

MSC:

[60J65](#) Brownian motion

[47N30](#) Applications of operator theory in probability theory and statistics

Cited in **11** Documents

Keywords:

[reflection principle](#); [probability transition density](#); [Laplacian](#); [eigenfunction expansion](#); [Brownian motions](#); [asymptotic probability](#)

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