

Moment identities for Skorohod integrals on the Wiener space and applications

Nicolas Privault, *City University of Hong Kong*

Abstract

We prove a moment identity on the Wiener space that extends the Skorohod isometry to arbitrary powers of the Skorohod integral on the Wiener space. As simple consequences of this identity we obtain sufficient conditions for the Gaussianity of the law of the Skorohod integral and a recurrence relation for the moments of second order Wiener integrals. We also recover and extend the sufficient conditions for the invariance of the Wiener measure under random rotations given in A. S. Üstünel and M. Zakai *Prob. Th. Rel. Fields* 103 (1995), 409-429.

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