SMALL BALL PROBLEMS FOR NON-CENTERED GAUSSIAN MEASURES

Wenbo V. Li
Werner Linde

Abstract: Let $X$ be a centered Gaussian random variable with values in a Hilbert space $H$. If $a \in H$, then we determine the asymptotic behaviour of $P\{\|X - a\| < \varepsilon\}$ as $\varepsilon \to 0$. This extends former results of G. N. Sytaya and V. M. Zolotarev in the centered case, i.e., for $a = 0$. More general, we describe the behaviour of $P\{\|X - f(t)a\| < R(t)\}$ as $t \to \infty$ for some $R^+\text{-valued functions} f$ and $R$. Basic tools are the Laplace transform and a modified saddle point method.

2000 AMS Mathematics Subject Classification: Primary: -; Secondary: -;

Key words and phrases: -