

## SMALL BALL PROBLEMS FOR NON-CENTERED GAUSSIAN MEASURES

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*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  $\varepsilon \rightarrow 0$ . 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  $t \rightarrow \infty$  for some  $R^+$ -valued functions  $f$  and  $R$ . Basic tools are the Laplace transform and a modified saddle point method.

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