Deuschel, J. D.; **Stroock, D. W.**

A function space large deviation principle for certain stochastic integrals. (English)

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Probab. Theory Relat. Fields 83, No. 1, 279-307 (1989).

Let X(t) be a diffusion process on a compact manifold and

$$Y(t) = \int_0^t Y_0(X(s))ds + \sum_{k=1}^{d} \int_0^t Y_k(X(s)) \circ d\beta_k(s),$$

where $\beta_k(\cdot)$, $1 \leq k \leq d$, are independent Wiener processes. The authors prove large deviations principles for

$$\{N^{-1} \sum_{k=0}^{N-1} (Y(k+t) - Y(k)), \quad 0 \leq t \leq 1\}_{N=1,2,3,\ldots} \quad and \quad for \quad \{T^{-1}Y(tT), \quad 0 \leq t \leq 1\}_{T \geq 0}$$

and identify the corresponding rate functions on C([0,1],$\mathbb{R}$). An application to the asymptotics of the Lyapunov exponent of a homogeneous system is given.

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