

[Asselah, Amine; Castell, Fabienne](#)

Large deviations for Brownian motion in a random scenery. (English) Zbl 1043.60018
[Probab. Theory Relat. Fields 126, No. 4, 497-527 \(2003\).](#)

The authors consider the large deviation principle for the Brownian occupation time in random scenery $\frac{1}{t} \int_0^t \xi(B_s) ds$. Here $\{B_s; s \geq 0\}$ is the Brownian motion in R^d and ξ is a random field on R^d independent from B . In the article ξ equals to a random constant on every unit cube from the partition of R^d on the unit cubes. It is supposed, that the values of ξ on the different cubes are i.i.d. bounded random variables with the zero mean. In order to get the large deviations the authors combine the large deviations principle for the family of random fields $\bar{\xi}_r(x) = \xi([rx])$, $r > 0$, and for the occupation measures for B . The large deviations are obtained in both quenched and annealed cases (i.e. when ξ is fixed and when the expectation is taken over both ξ and B).

Reviewer: [A. A. Dorogovtsev \(Kyiv\)](#)

MSC:

[60F10](#) Large deviations
[60K37](#) Processes in random environments
[60J55](#) Local time and additive functionals

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