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**Shannon versus Kullback-Leibler entropies in nonequilibrium random motion.** (English)

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Summary: We analyze dynamical properties of the Shannon information entropy of a continuous probability distribution, which is driven by a standard diffusion process. This entropy choice is confronted with another option, employing the conditional Kullback-Leibler entropy. Both entropies discriminate among various probability distributions, either statically or in the time domain. An asymptotic approach towards equilibrium is typically monotonic in terms of the Kullback entropy. The Shannon entropy time rate needs not to be positive and is a sensitive indicator of the power transfer processes (removal/supply) due to an active environment. In the case of Smoluchowski diffusions, the Kullback entropy time rate coincides with the Shannon entropy “production” rate.

**MSC:**

[82C03](#) Foundations of time-dependent statistical mechanics

[94A17](#) Measures of information, entropy

Cited in 1 Document

**Full Text:** [DOI](#)

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