

Abstract Submitted
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Driven classical diffusion with strong correlated disorder¹ JING-XIAN LIN, LEONID PRYADKO, UC, Riverside — We analyze one-dimensional motion of an overdamped classical particle in the presence of external disorder potential and an arbitrary driving force F . In thermodynamical limit the effective force-dependent mobility $\mu(F)$ is self-averaging, although the required system size may be exponentially large for strong disorder. The transport in the system is linear (mobility is finite) in the limits of very small and very large F . For a strong disorder potential with power-law correlations at large distances, $\langle V(x)V(y) \rangle \sim |x - y|^{-n}$, $n > 0$, we identify a wide intermediate regime with a power-law dependence of the logarithm of $\mu(F)$ on the driving force.

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