Sinaĭ, Ya. G. [Sinaĭ, Yakov Grigor’evich] (1-PRIN); Khanin, K. M. [Khanin, Konstantin M.] (4-HWAT)

Hyperbolicity of minimizing trajectories for two-dimensional Hamiltonian systems with random forcing. (Russian)


A $C^1$ curve \( \{x(\tau), -\infty < \tau \leq t_0\} \) is called a minimizer if, for any finite interval \([t_1, t_2]\), \(-\infty < t_1 < t_2 < t_0\), and any $C^1$ curve \( \{\overline{x}(\tau), -\infty < \tau \leq t_0\} \) that coincides with \( x(\tau) \) outside the interval \((t_1, t_2)\), the inequality \( A_{t_1, t_2}(\overline{x}(\tau)) \geq A_{t_1, t_2}(x(\tau)) \) holds, where \( A \) is an action functional minimizing the trajectories of a two-dimensional Hamiltonian system with a random potential expressed in terms of independent standard Wiener processes. The authors state without proof some geometric properties of such minimizers as well as a theorem of Hadamard-Perron type on the existence of local unstable manifolds related to minimizers.

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