

Sinai's condition for real valued Lévy processes
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In this work we prove that the upward ladder height subordinator H associated to a real valued Lévy process ξ has Laplace exponent φ that varies regularly at ∞ (resp. at 0) if and only if the underlying Lévy process ξ satisfies Sinai's condition at 0 (resp. at ∞). Sinai's condition for real valued Lévy processes is the continuous time analogue of Sinai's condition for random walks. We provide several criteria in terms of the characteristics of ξ to determine whether or not it satisfies Sinai's condition. Some of these criteria are deduced from tail estimates of the Lévy measure of H , here obtained, and which are analogous to the estimates of the tail distribution of the ladder height random variable of a random walk which are due to Veraverbeke and Grübel.

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