

Speed of a deterministic walk among independent spin flips

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Abstract.

We study the asymptotic speed of a walker on a dynamic environment consisting of independent spin flips on \mathbb{Z} . This walker moves deterministically given the environment, with infinite speed to the right when on particles and to the left when on holes. This can be seen as the limiting behavior of a nearest-neighbor random walk that has very high (respec. low) rates to move to the right (respec. left) when on particles, and inverted rates on holes. We obtain existence and equality of the speed for all initial configurations, positivity for density bigger than $1/2$, and speed zero for density equal to $1/2$.