

# Large deviation for a random walk on a group of polynomial growth

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## Abstract

We discuss a large deviation principle of a periodic random walk on a covering graph with its transformation group of polynomial volume growth in view of geometry. As we shall observe, the behavior of a random walk at infinity is closely related to the Gromov-Hausdorff limit of an infinite graph and in the case where the graph admits an action of a group of polynomial volume growth, the Carnot-Carathéodory metric shows up in its limit space.