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Functional central limit theorems for non-symmetric random walks on nilpotent covering graphs

The long time asymptotics for random walks on infinite graphs is a principal topic for both geometers and probabilistic. A covering graph of a finite graph with a nilpotent covering transformation group is called a nilpotent covering graph, regarded as a generalization of a crystal lattice or the Cayley graph of a finite generated group of polynomial growth.

In this talk, we discuss non-symmetric random walks on nilpotent covering graphs from a view point of the theory of discrete geometric analysis developed by Kotani and Sunada, and give functional central limit theorems for them. We also mention a relationship between the limiting diffusions and (the Lyons lift of) distorted Brownian rough paths

This talk is based on joint work (EJP, '20 and Potential Analysis, '21+) with Satoshi Ishiwata (Yamagata University) and Ryuya Namba (Ritsumeikan University).

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