

Products of random walks on finite groups

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Abstract: Concerning the qualitative behavior of Markov chains, mixing times are useful to quantify their convergence, while cutoffs are important in describing the phase transit of mixing times. Since Aldous and Diaconis introduced both concepts in early 1980s, many scholars are engaged in exploring their behaviors for miscellaneous models. The total variation is one of the frequently used measurements but only few works provide efficient bounds on its mixing time and conditions on its cutoff.

In this talk, we consider products of random walks on finite groups with moderate growth and discuss their total variation cutoffs. Through a series of comparison techniques, the total variation cutoff of discrete time Markov chains can be identified with the Hellinger distance cutoff of corresponding continuous time chains. This provides a new scheme to study the total variation mixing of products of random walks. The talk is based on a work joint with Takashi Kumagai.