

APRIL 1 - JULY 15

IMPAN, WARSAW

SIMONS SEMESTER

# GEOMETRIC AND ANALYTIC GROUP THEORY

SEMINAR

WEDNESDAY, 12.06.2019

14:00-14:50

ROOM 321

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*Limit behaviour of random walks on Schreier graphs*

Abstract: The Poisson boundary is a probability space that encodes the limit behaviour of random walks. It is known that a group is amenable if and only if there exists a non-degenerate measure such that the random walk on its Cayley graph has trivial Poisson boundary. When a group acts on a space, the Poisson boundary of the induced walk on the Schreier graph is a quotient of the Poisson boundary of the random walk on the Cayley graph. We discuss results around the non-triviality of the Poisson boundary of the induced walk on the Schreier graph under the hypothesis of a measure with finite first moment. We apply it to Thompson's group  $F$ , which extends a result by Kaimanovich about finitely supported measures. We also adapt a similar approach to prove non-triviality of Poisson boundary on subgroups that are not locally solvable of a group  $H(\mathbb{Z})$  of piecewise projective homeomorphisms. Monod studied the class of groups  $H(A)$  of piecewise projective homeomorphisms where  $A$  is a subring of the real numbers, and proved that for  $A \neq \mathbb{Z}$ ,  $H(A)$  is non-amenable without free subgroup.

