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Department of Theoretical Physics

THE QUANTUM SPACETIME SEMINAR SERIES

Percolation on Hyperbolic groups

Mahan Mj

(TIFR Mumbai)

Date: September 16, 2019

Time: 11.30 am

Venue: A-304, TIFR

We study first passage percolation (FPP) in a Gromov-hyperbolic group G with boundary equipped with the Patterson-Sullivan measure. We associate an i.i.d. collection of random passage times to each edge of a Cayley graph of G, and investigate classical questions about asymptotics of first passage time as well as the geometry of geodesics in the FPP metric. Under suitable conditions on the passage time distribution, we show that the 'velocity' exists in almost every direction, and is almost surely constant by ergodicity of the G-action on the boundary.

For every point on the boundary, we also show almost sure coalescence of any two geodesic rays directed towards the point. Finally, we show that the variance of the first passage time grows linearly with word distance along word geodesic rays in every fixed boundary direction.

This is joint work with Riddhipratim Basu.

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