

QUADRATIC DIFFERENTIALS AND RANDOM WALKS ON PANTS GRAPHS WITH SHORT GEODESICS

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Time: Fri, Apr. 3rd, 16:30 - 17:30

Venue: Room 106, SCMS

Abstract:

Let X be an infinite Riemann surface with an upper-bounded geodesic pants decomposition and a subsequence of cuffs whose lengths converge to zero.

The vertices of the corresponding pants graph \mathcal{G} are pairs of pants, and edges are cuffs with conductances equal to their lengths. We prove that the geodesic flow on X is ergodic if and only if the random walk on \mathcal{G} is recurrent. This yields explicit criteria for deciding, in terms of cuff-length growth, whether the geodesic flow is ergodic. We provide concrete and new families of Riemann surfaces with an explicit understanding of the phase transitions from recurrent to non-recurrent geodesic flows.

The above equivalence result uses a characterization of the measured geodesic laminations on X that arise as straightened horizontal foliations of finite-area holomorphic quadratic differentials. The conditions on the measured laminations are translated into the conditions on the existence of a square summable flow function on \mathcal{G} .

This is a joint work with Charles Bordenave and Dragomir Šarić.