

Geometry and spectrum of random hyperbolic surfaces

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The aim of this talk is to present recent progress in the spectral theory of hyperbolic surfaces, which was achieved by bringing a new probabilistic viewpoint to this classic field. Studying random hyperbolic surfaces allows to prove statements true for most surfaces rather than every single one of them, and hence to exclude some known pathological examples. I will present estimates on the density of eigenvalues of typical surfaces in the Weil--Petersson random setting, as well as work in progress on their spectral gap (with Nalini Anantharaman). These results are proven using the Selberg trace formula, together with geometric information on closed geodesics on random surfaces.