

A combinatorial model for random square-tiled surfaces

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A square-tiled surface (STS) is a (finite, possibly branched) cover of the standard square-torus with possible branching over exactly 1 point. Alternately, STSs can be viewed as finitely many axis-parallel squares with sides glued in parallel pairs. This description allows us to encode an STS combinatorially by a pair of permutations – one of which encodes the gluing of the vertical edges and the other the gluing of the horizontal edges. In this talk I will use the combinatorial description of STSs to consider two models for random STSs. The first model will encompass all square-tiled surfaces while the second will encompass a horizontally restricted class of them. I will discuss topological and geometric properties of a random STS from each of these models.

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