

1161-51-307

Sunrose Shrestha*, Wesleyan University. *The topology and geometry of random square-tiled surfaces.*

Square-tiled surfaces (STSs) are branched covers of the standard square torus with branching over exactly one point. They are concrete examples of translation surfaces which are an important class of singular flat metrics on 2-manifolds with applications in Teichmüller theory and polygonal billiards. In this talk we will consider a randomizing model for STSs based on permutation pairs and use it to compute the genus distribution. We also study holonomy vectors (Euclidean displacement vectors between cone points) on a random STS. Holonomy vectors of translation surfaces provide coordinates on the space of translation surfaces and their enumeration up to a fixed length has been studied by various authors such as Eskin and Masur. In this talk, we obtain finer information about the set of holonomy vectors, $\text{Hol}(S)$, of a random STS. In particular, we will see how often $\text{Hol}(S)$ contains the set of primitive integer vectors and find how often these sets are exactly equal. (Received August 19, 2020)