

Sphere Packings, Rational Curves, and Coxeter Graphs

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If a curve on a surface has negative self intersection, then it can be thought of as representing a hyperplane in a hyperbolic space. In the Poincaré upper half space model, the intersection of a hyperplane with the boundary is a hypersphere in Euclidean space. In this way, a set of rational curves on the surface induces a configuration of hyperspheres in a Euclidean space. We investigate some configurations (particularly in small dimensions), discuss how it reflects the geometry of the surface, and show how pictures in two dimensions help us understand objects in higher dimensions.