

1116-11-936

Katherine E Stange* (kstange@math.colorado.edu). *Visualising the arithmetic of imaginary quadratic fields.*

Let K be an imaginary quadratic field with ring of integers \mathcal{O}_K . The Schmidt arrangement of K is the orbit of the extended real line in the extended complex plane under the Möbius transformation action of the Bianchi group $\mathrm{PSL}(2, \mathcal{O}_K)$. The arrangement takes the form of a dense collection of intricately nested circles. Aspects of the number theory of \mathcal{O}_K can be characterised by properties of this picture: for example, the arrangement is connected if and only if \mathcal{O}_K is Euclidean. I'll explore this structure and its connection to Apollonian circle packings. Specifically, the Schmidt arrangement for the Gaussian integers is a disjoint union of all primitive integral Apollonian circle packings. Generalizing this relationship to all imaginary quadratic K , the geometry naturally defines some new circle packings and thin groups of arithmetic interest. (Received September 15, 2015)