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Katherine E Stange* (kstange@math.colorado.edu), Department of Mathematics, Campus Box 395, University of Colorado Boulder, Boulder, CO 80309. *Visualising the arithmetic of quadratic imaginary fields*. Preliminary report.

We study the orbit of \mathbb{R} under the Bianchi group $\mathrm{PSL}_2(\mathcal{O}_K)$, where K is an imaginary quadratic field. The orbit, called a Schmidt arrangement \mathcal{S}_K , is a geometric realisation, as an intricate circle packing, of the arithmetic of K . This paper presents several examples of this phenomenon. First, we show that the curvatures of the circles are integer multiples of $\sqrt{-\Delta}$ and describe the curvatures of tangent circles in terms of the norm form of \mathcal{O}_K . Second, we show that the circles themselves are in bijection with certain ideal classes in orders of \mathcal{O}_K , the conductor being a certain multiple of the curvature. This allows us to count circles with class numbers. Third, we show that the arrangement of circles is connected if and only if \mathcal{O}_K is Euclidean if and only if the tangency graph contains loops. These results are meant as foundational for a study of a new class of thin groups generalising Apollonian groups. (Received September 15, 2014)