Robet Hines* (robert.hines@colorado.edu). Badly approximable numbers over imaginary quadratic fields. Preliminary report.

We recall the notion of nearest integer continued fractions over the Euclidean imaginary quadratic fields $K$ and characterize the “badly approximable” numbers, ($z$ such that there is a $C = C(z) > 0$ with $|z - p/q| \geq C/|q|^2$ for all $p/q \in K$), by boundedness of the partial quotients in the continued fraction expansion of $z$. Applying this algorithm to “tagged” indefinite integral binary Hermitian forms demonstrates the existence of entire circles in $\mathbb{C}$ whose points are badly approximable over $K$, with effective constants.

By other methods (the Dani correspondence), we prove the existence of circles of badly approximable numbers over any imaginary quadratic field. Among these badly approximable numbers are algebraic numbers of every even degree over $\mathbb{Q}$, which we characterize. All of the examples we consider are associated with cocompact Fuchsian subgroups of the Bianchi groups $SL_2(\mathcal{O})$, where $\mathcal{O}$ is the ring of integers in an imaginary quadratic field. (Received September 14, 2018)