

1147-11-574

Daniel E. Martin* (daniel.e.martin@colorado.edu). *Continued fractions in imaginary quadratic fields*. Preliminary report.

In a Euclidean imaginary quadratic field, continued fractions have been used to give rational approximations to complex numbers since the late 19th century. A variety of algorithms have been proposed in the 130 years following their introduction, but none are applicable outside of the same five fields. We will overcome the non-Euclidean obstacle and produce continued fractions in any imaginary quadratic field. The algorithm is inspired by a fractal arrangement of circles arising from subsets of $GL_2(\mathbb{C})$ acting on the Riemann sphere. We will investigate the geometry of these arrangements with a focus on how it relates to the Euclidean algorithm, and in return it will point us toward a more general continued fraction. (Received January 26, 2019)