

1125-11-2837

Renate Scheidler* (rscheidl@ucalgary.ca). *Fake Real Quadratic Orders.*

In an unpublished note from 2014, Henri Cohen coined the term *fake real quadratic order* for the localization of a maximal imaginary quadratic order at a split prime ideal. The name was motivated by the surprising fact that fake real quadratic orders behave very much like maximal orders of real quadratic fields; in particular, they have unit rank 1 and tend to have an enormously large fundamental unit and a very small class number. This invites the tantalizing question of whether certain well-known conjectures formulated for actual real quadratic orders also hold in fake real quadratic orders. Two such conjectures include the widely believed Cohen-Lenstra heuristic which asserts that approximately 75% of all real quadratic fields are expected to have class number one, and the more controversial Ankeny-Artin-Chowla conjecture which claims that if q is a prime congruent to 1 (mod 4) and $\epsilon = (t + u\sqrt{q})/2$ is the fundamental unit of $\mathbb{Q}(\sqrt{q})$, then $q \nmid u$. In this talk, we present extensive numerical data that speak to these two conjectures in the setting of fake real quadratic orders. This is joint work with Mike Jacobson and our jointly supervised graduate student Hongyan Wang. (Received September 20, 2016)