

Dynamics of units and packing constants of ideals

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The field $\mathbb{Q}(\sqrt{5})$ contains the periodic continued fractions $[1,4,2,3]$, $[1,1,4,2,1,3]$, $[1,1,1,4,2,1,1,3]$, ... and similar patterns can be found in any real quadratic field. We will explain these patterns and relate them to class numbers, packing constants of ideals, thin semigroups, and conjectures of Littlewood, Cassels--Swinnerton-Dyer, and Zaremba.