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Congruence relations for class numbers of real quadratic fields

In 1951, Ankeny, Artin, and Chowla released a short note containing four congruence relations involving the arithmetic invariants of $\mathbb{Q}(\sqrt{d})$ for $d = 1 \bmod 4$. They proved three of these relations the following year, in a paper published in the Annals of Mathematics. Their proof uses a combination of p-adic and group ring theoretic methods. In this talk I will indicate how p-adic L-functions can be used to obtain congruence relations involving the arithmetic invariants of $\mathbb{Q}(\sqrt{d})$ for an arbitrary squarefree integer $d > 2$. Specialization of the main result will yield the congruences of Ankeny, Artin, and Chowla as well as a stronger version of a theorem of Mordell.