Fermat's Last Theorem
over small real quadratic fields

Let K be a real quadratic field and O_K its ring of integers. Let p be a prime. The equation $x^p + y^p = z^p$, where $x, y, z \in O_K$ is called the Fermat equation over K with exponent p.

In joint work with Siksek we have shown that for 5/6 of the real quadratic fields K, there is a constant B_K (depending only on K) such that if $p > B_K$ then all solutions to the Fermat equation satisfy $xyz = 0$. It is natural to ask what can be said about the constant B_K. In this talk, I will discuss how we can prove that $B_K = 4$ for several small real quadratic fields.