1073-11-257   **Frank Thorne*** (`thornef@mailbox.sc.edu`). *Secondary terms in counting functions for cubic fields.*

The classical Davenport-Heilbronn theorem states that the number of cubic fields K with $0 < |\mathrm{Disc}(K)| < X$ is asymptotic to $\frac{1}{3\zeta(3)}X$. However, subsequent computations revealed the theorem to be a poor match to the data. Based on these, Roberts conjectured the existence of a secondary term of order $X^{5/6}$.

We will discuss our proof of Roberts' conjecture using the analytic theory of Shintani zeta functions. Our work is independent of another proof of the conjecture by Bhargava, Shankar, and Tsimerman using different methods. We will also discuss a variety of generalizations of our results, in particular to arithmetic progressions where a curious bias appears in the secondary term.

All of this is joint with Takashi Taniguchi, and some of the more recent work is also joint with Manjul Bhargava. (Received August 02, 2011)