On approximation of real numbers by algebraic numbers of bounded degree.

It has been conjectured that for any integer $n \geq 1$ and any real number $\xi$ which is not an algebraic number of degree $\leq n$, there exist infinitely many algebraic numbers $\alpha$ of degree $\leq n$ such that $|\xi - \alpha| \leq c(n, \xi)H(\alpha)^{-n-1}$, where $H(\alpha)$ is the height of $\alpha$. This is known to be true only for $n = 1$ (Dirichlet, 1842) and $n = 2$ (Davenport-Schmidt, 1967). The talk will discuss major results, applied methods and other unsolved problems. (Received October 04, 2004)