Seminar on Tuesday 24 March by Eira Scourfield

Title: Exact divisors of polynomials with prime argument

Abstract:

For irreducible $f \in \mathbb{Z}[x]$ Paul Erdős (1952) showed that $\sum_{n \leq x} \#\{d : d | f(n)\}$ lies between two multiples of $x \log x$. An asymptotic formula has only been established for quadratic f, but more precise results have been derived when restrictions are put on d and when f is not necessarily irreducible.

An *exact divisor* d of k satisfies $d|k$ and $(d, k/d) = 1$ and is written $d \parallel k$. This talk concerns exact divisors of $f(p)$ for p prime when $f \in \mathbb{Z}[x]$ is not necessarily irreducible. We consider the problem of finding an asymptotic formula for $\sum_{M \leq y} \#\{p \leq x : M \parallel f(p)\}$ with $y = y(x)$ as large as possible.