ON EXPONENTIAL SUMS WITH REDUCIBLE POLYNOMIALS

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ABSTRACT: Hooley proved that if $f \in \mathbb{Z}[X]$ is irreducible and $h \in \mathbb{Z}$, $h \neq 0$, then

$$\sum_{n \leq x} \sum_{\substack{r \bmod n \\ f(r) \equiv 0 \bmod n}} \exp\left(2i\pi \frac{hr}{n}\right) = o(x) \quad (x \to \infty).$$

By Weyl's criterion this implies that the fractions r/n, with $0 < r < n$ and $f(r) \equiv 0 \pmod{n}$, are well distributed in $]0, 1[$.

In this talk, we consider such exponential sums with reducible polynomials of degree 2 and 3. This is a joint work with Greg Martin.

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