Weyl Sums with multiplicative coefficients and joint distribution

Cynthia Bortolotto[1]

[1] ETH

In 1964, Hooley proved that for an irreducible polynomial $p(x)$ in $\mathbb{Z}[x]$, the ratios v/n of v the roots of the polynomial p modulo n, are equidistributed modulo 1. We prove joint equidistribution of these roots of polynomial congruences and $f(n)$ polynomial values, for a polynomial f with an irrational coefficient. As part of the proof, we generalize a result of Montgomery and Vaughan regarding exponential sums with multiplicative coefficients to the setting of Weyl Sums. The talk is based on joint work with Bryce Kerr and Matteo Bordignon.