MATILDE LALIN, Université de Montréal

Variances of prime independent multiplicative functions over function fields

We consider the family of multiplicative functions of $\mathbb{F}_q[T]$ with the property that the value at a power of an irreducible polynomial depends only on the exponent, but does not depend on the polynomial or its degree. We study variances of such functions in different regimes, relating them to variances of the divisor function $d_k(f)$. We consider some settings that can be related to distributions over the ensemble of unitary matrices and others related to distributions over the ensemble of unitary symplectic matrices. While most questions give very similar answers as the distributions of the divisor function, some of the symplectic problems, dealing with quadratic characters, are different and vary according to the values of the function at the square of the primes. This is joint work with Olha Zhur (Taras Shevchenko National University of Kyiv).