

We will discuss some results on the shifted convolution problem for the divisor function over function fields in the large degree limit, that is, the average value of $d(f)d(f+h)$ where f runs over monic polynomials of given degree in $\mathbb{F}_q[T]$, and h is a given monic polynomial. We prove an asymptotic formula in the range $\deg(h) < (2 - \epsilon)\deg(f)$. The central ingredient for this work is a Voronoi summation formula for the divisor function. The results also extend to various correlations of the convolution of 1 with a Dirichlet character mod ℓ , where ℓ is a monic irreducible polynomial. This is joint work with Alexandra Florea, Amita Malik, and Anurag Sahay.