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Effective equidistribution

We will discuss a generalization of the famous inequality of Erdös and Turán. This general, all-purpose equidistribution theorem has many diverse applications. In particular, we will look at effective equidistribution of eigenvalues of Hecke operators acting on spaces of cusp forms. This enables us to study the factorization of Jacobians of modular curves into simple Abelian varieties. Our effective equidistribution theorem can also be applied to study the eigenvalues of Frobenius acting on a family of curves over a fixed finite field as well as the eigenvalue distribution of adjacency matrices of families of regular graphs.

This is joint work with M. Ram Murty.