

Speaker: Yitang Zhang

Title: Distribution of primes in arithmetic progressions with application

Abstract: We discuss the recent developments on the distribution of primes in arithmetic progressions which are regarded as stronger versions of the Bombieri-Vinogradov theorem. First we explain why the arguments based on the dispersion method, Fourier analysis and Kloosterman sums make it possible to obtain mean value results for arithmetic progressions to moduli beyond $x^{\frac{1}{2}}$. In particular, stronger results can be derived if certain constraints on the moduli are imposed. We also describe how to apply these results to study the small gaps between consecutive primes.