Algebra & Number Theory Seminar

Tuesday, January 10th, 2017

11:00 am in Hume 331

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Explicit results in prime number theory

ABSTRACT

The prime number theorem, proven in 1896, is one of the first major theorems in analytic number theory. It provides estimates for prime counting functions. In 1962, Rosser and Schoenfeld gave a method to estimate the error term in the approximation of the prime counting function $\psi(x)$. Since then, progress on the numerical verification of the Riemann Hypothesis and widening the zero-free region of the Riemann zeta function have allowed numerical improvements of these bounds. In this talk, we present various new explicit methods such as introducing some smooth weights and establishing some zero density estimates for the Riemann zeta function. We also present new results for primes in short intervals and for primes in arithmetic progressions.