

1125-11-925

Jesse Thorner and **Asif Zaman*** (asif.ali.zaman@gmail.com). *Brun-Titchmarsh, Chebotarev, and Lang-Trotter.*

The classical Brun-Titchmarsh theorem provides an upper bound for the number of primes in an arithmetic progression in a far wider range than that afforded by the Prime Number Theorem for arithmetic progressions. This feature makes it a fundamental tool in many arguments. The Chebotarev density theorem, on the other hand, has few alternatives to adequately estimate the number of prime ideals with a prescribed splitting behaviour in a Galois extension of number fields. The first such result with appropriate field uniformity is due to Lagarias-Montgomery-Odlyzko in their influential 1979 paper and, as far as we are aware, there have not been any advances on this type of general bound. Unfortunately, the valid range of their estimate is inadequate for many applications. In fact, it does not specialize to the classical Brun-Titchmarsh for arithmetic progressions.

We will report on a new generalization of Brun-Titchmarsh associated to the Chebotarev density theorem which improves on the prior work of Lagarias-Mongtomery-Odlyzko. Our result has consequences for counting primes represented by certain binary quadratic forms and refining the best known unconditional bounds towards the Lang-Trotter conjectures for elliptic curves. This is joint work with Jesse Thorner. (Received September 13, 2016)