Small Gaps Between Primes in Arithmetic Progressins

Deniz KAPTAN

MTA Alfréd Rényi Institute of Mathematics

We implement the Maynard-Tao method of detecting primes in tuples to investigate small gaps between primes in arithmetic progressions, with bounds that are uniform in the moduli. We are able to find primes congruent to a (mod Q) that lie in $[X, 2X]$, differing by at most a bounded multiple of Q, for almost all $Q \leq X^{5/12-\varepsilon}$ and all a (mod Q). The key ingredient of the proof is a suitable variant of the Bombieri-Vinogradov Theorem.