

Small gaps between primes

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Abstract

The *twin prime conjecture* states that there are infinitely many pairs of distinct primes which differ by 2. Until recently this conjecture had seemed to be out of reach with current techniques. However, in 2013, the author proved that there are infinitely many pairs of distinct primes which differ by no more than B with $B = 7 \cdot 10^7$. The value of B has been considerably improved by *Polymath8* (a cooperative team) and Maynard.

In this talk we shall describe the basic ideas which lead to the proofs of the above results. In particular, a breakthrough on the distribution of primes in arithmetic progressions will be introduced.