

Title: PRIMES IN TUPLES

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ABSTRACT:

I will describe my recent joint work with Janos Pintz and Cem Yildirim on small gaps between primes. One surprising result is that the level of distribution of primes in arithmetic progressions can have dramatic consequences for the local distribution of primes. It is known that the primes have level of distribution $1/2$, but if their level of distribution is any fixed number greater than $1/2$, then there are infinitely often pairs of primes a bounded distance apart. If the Elliott-Halberstam conjecture is true (level of distribution equal to 1), then there are infinitely many pairs of primes with difference 16 or less. Unconditionally we still prove that there are pairs of primes very close together, although this distance increases with the size of the primes, but much slower than the average distance between primes.