Number Theory Seminar

Brun's sieve

By

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Abstract:

Last time in this mini seminar series on sieves we discussed the classical sieve of Eratosthenes-Legendre, obtained by combinatorics - applying Inclusion-Exclusion to sets of multiples of primes. Although initially looking promising, this sieve (in its first basic form) couldn't be used to get primes because of an accumulation of error terms.

Brun was the first to show the sieve approach can get results. He did this by stopping the Inclusion-Exclusion process at a certain point, and with this he proved his famous theorem that the series of reciprocals of prime *twins*

$$\sum_{prime\ twins} \frac{1}{p}$$

converges.

(We actually showed last time this followed from Eratosthenes-Legendre if we apply it more carefully).

This week we'll discuss Brun's sieve.

Date: Friday, April 25, 2025
Time: 19:00
Place: SB-Z11