

# ALGEBRAIC GEOMETRY AND NUMBER THEORY SEMINAR

3:30 PM, WEDNESDAY, November 19, 2014, Martin  
M-102

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## Sieve methods and applications

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The problem of counting primes in the interval  $[1, 2, \dots, N]$  can be attacked using prime sieves. The earliest such sieve is that of Eratosthenes – cross out all multiples of 2, all multiples of 3, all multiples of 5, and so on. Legendre made this method rigorous and studied the enormous error term that arises.

In this talk, we'll study why the sieve of Eratosthenes-Legendre is not helpful in practice and discuss alternative combinatorial sieves constructed by Brun and Selberg. Brun's sieve was used to prove that the sum of reciprocals of twin primes converges, and Selberg's sieve can prove a slightly weak form of the Brun-Titchmarsh theorem on primes in arithmetic progressions. We'll conclude with a look at the GPY sieve, which was recently modified by Yitang Zhang in his work toward the twin prime conjecture.

**All welcome.** Research students in particular are encouraged to attend.

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For further information, contact Jim Brown, [jimlb@clemson.edu](mailto:jimlb@clemson.edu), Long 111.

**Online:** <http://www.math.clemson.edu/~jimlb/NumberTheoryGroup/NTSeminar.html/>