"Energies never before achieved... involves formidable mathematical challenges... in this compelling expansion... formidable technical machinery of QFT... fascinating circumstance... with overwhelming probability... is, most wonderfully... resembles fascinating problems... hugely demanding calculations... both in its grand challenge and, I believe, in its eventually to be comprehended great beauty." – David Broadhurst

The Trivial Notions Seminar
Proudly Announces

Prime Divisors as a Poisson Process

A talk by
Alexander Smith

Abstract

For n a positive integer, take $\omega(n)$ to be the number of distinct prime divisors of n. Take $S_r(N)$ to be the set of squarefree positive integers n with $n < N$ and $\omega(n) = r$. For $n \in S_r(N)$, take $p_1 < \cdots < p_r$ to be the distinct prime divisors of n. We will show that, over the set of $n \in S_r(N)$, the sequence

$$\log \log p_1, \ \log \log p_2, \ \ldots, \ \log \log p_r$$

is approximately distributed like a set of r points independently and uniformly selected from $[0, \log \log N]$. In particular, this implies that most integers $n \in S_r(N)$ satisfy

$$p_i \approx \exp\left(e^i\right) \quad \text{for } i \le r.$$

It also implies that most integers $n \in S_r(N)$ have some pair of adjacent prime factors p_i, p_{i+1} satisfying

$$p_{i+1} > p_i^{\log \log p_i \cdot \sqrt{\log \log \log N}}.$$

Thursday February 23th, at 12:00 pm
Science Center 232