Seminar

Probabilistic and Statistical methods in number theory

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Abstract

This is a two-part student learning seminar on probabilistic/statistical methods in number theory. Number theorists in early 20th century, most notably Erdös, Kubilius and Elliot, initiated to study number theory from a statistical perspective. We will discuss one of the most celebrated result in this area: the Erdös-Kac Theorem. We will see how sieve method, statistical theorems and probabilistic models can be put nicely together to study the distribution of the number of prime factors of a natural number. Then we will explore how such knowledge affects the understanding of sieve methods.

In the second part of the seminar, we will talk about what are the predictions of Cramer's model (based on the Prime Number Theorem) on various problems of primes. We then focus on the techniques involved in the classical and modern aspects of (large) prime gaps, including the results of Erdös-Rankin back in 1930s and the results of Ford-Green-Konyagin-Tao in 2015 (resolving an Erdös $10,000 problem).

Date: 27 March 2017 (Monday) & 03 April 2017 (Monday)
Time: 4:00pm – 6:00pm
Venue: Room 219, Lady Shaw Building, The Chinese University of Hong Kong

The talk is self-contained and is of expository nature. No prerequisite required and everyone is welcome to join.

All are Welcome