Du
13
MARS.
2023

15h10

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16h10

RENCONTRES DE THÉORIE ANALYTIQUE DES NOMBRES

Gaussian distribution of squarefree and B-free numbers in short intervals

Salle Grisvard, IHP, Paris

INSCRIPTION

It is a classical quest in analytic number theory to understand the fine-scale distribution of arithmetic sequences such as the primes. For a given length scale h, the number of elements of a "nice" sequence in a uniformly randomly selected interval $\left(x, x+h\right]$, $1 \leq x \leq X$, might be expected to follow the statistics of a normally distributed random variable (in suitable ranges of $1 \leq h \leq X$). Following the work of Montgomery and Soundararajan, this is known to be true for the primes, but only if we assume several deep and long-standing conjectures such as the Riemann Hypothesis. In fact, previously such distributional results had not been proven for any (non-trivial) sequence of number-theoretic interest, unconditionally.
As a model for the primes, in this talk I will address such statistical questions for the sequence of squarefree numbers, i.e., numbers not divisible by the square of any prime, among other related "sifted" sequences called B-free numbers.
I hope to further motivate and explain our main result that shows, unconditionally, that short interval counts of squarefree
numbers do satisfy Gaussian statistics, answering several old questions of R. R. Hall.

(Joint work with O. Gorodetsky and B. Rodgers.)

URL de la page : https://www.ihp.fr/fr/agenda/gaussian-distribution-squarefree-and-b-free-number short-intervals

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L'institut :
• lundi au vendredi de 8h30 à 18h,
• fermé les jours fériés.

Le musée - Maison Poincaré :
• lundi, mardi, jeudi et vendredi
de 9h30 à 17h30,
• samedi de 10h à 18h,
• fermé le mercredi et le dimanche.