INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

Number Theory Seminar

Date: March 13, 2024
Time: 02:15 PM

VENUE:

L-infinity
(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Large values of quadratic Dirichlet L-functions

SPEAKER:

Gopal Maiti
Max Planck Institute of Mathematics, Bonn

ABSTRACT:

We establish Ω-results for the family of quadratic Dirichlet L-functions. In particular, we prove under the Generalized Riemann Hypothesis (GRH) that for sufficiently large X, \[\max_{\substack{X<d\le 2X}}|L(1/2, \chi_{d})|\ge \exp\left(\left(\frac{\gamma}{2}-\ve \right)\sqrt{\frac{\log X \log\log\log X}{\log\log X}}\right) \] and \[\max_{\substack{|d|\le X}}|L(1, \chi_{d})|\geq e^{\gamma}\left(\log\log X +\log\log\log X+1-2\log 2-\epsilon\right) \] for every $\epsilon>0$, where γ is the Euler--Mascheroni constant. Assuming GRH, the initial result surpasses a bound established by Soundararajan and matches the magnitude observed in the works of Bondarenko-Seip. Meanwhile, the second result refines a bound by Granville-Soundararajan, nearly converging to their conjecture with a discrepancy limited to a constant under GRH. This is a joint work with Pranendu Darbar.

ALL ARE CORDIALLY INVITED