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Colloquium

Diophantine Approximation on M_0-sets with restricted denominators

Professor Sanju Velani

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Abstract

Let $F \subseteq [0,1]$ be a set that supports a probability measure μ with the property that $|\widehat{\mu}(t)| \ll (\log|t|)^{-A}$ for some constant $A > 0$. Let $\mathcal{A} = (q_n)_{n\in\mathbb{N}}$ be a sequence of natural numbers. If $\mathcal{A}$ is lacunary and $A > 2$, we establish a quantitative inhomogeneous Khintchine-type theorem in which (i) the points of interest are restricted to F and (ii) the denominators of the 'shifted' rationals are restricted to $\mathcal{A}$. The theorem can be viewed as a natural strengthening of the fact that the sequence $(q_n x \bmod 1)_{n\in\mathbb{N}}$ is uniformly distributed for μ almost all $x \in F$. Beyond lacunary, our main theorem implies the analogous quantitative result for sequences $\mathcal{A}$ for which the prime divisors are restricted to a finite set of k primes and $A > 2k$.

Date: 25 June 2019 (Tuesday)
Time: 2:30pm – 3:30pm
Venue: Room 222, Lady Shaw Building,
The Chinese University of Hong Kong, Shatin

All are Welcome