



Number Theory Seminar

Stationary Phase Analysis for Analytic Newvectors and Applications to Subconvexity Problems

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Abstract

In this talk, I will discuss an extension of results of Michel-Venkatesh and Hu-Michel-Nelson, establishing upper bounds for triple product and Rankin-Selberg L -functions of the form

$$L(\pi_1 \otimes \pi_2 \otimes \pi_3, \frac{1}{2}) \ll_{\pi_3, \varepsilon} C(\pi_1 \otimes \pi_2)^{\frac{1}{2} + \varepsilon} \left(\frac{C(\pi_1 \otimes \pi_2)}{C(\pi_1)C(\pi_2)} \right)^{-\delta}$$

in the spectral aspect, allowing conductor dropping. In particular, this yields a subconvexity bound when $\pi_1 \otimes \pi_2$ stays uniformly away from QUE-type cases.

The main new ingredient is a stationary phase analysis of analytic newvectors, introduced by Jana and Nelson, for both $\mathrm{PGL}_2(\mathbb{R})$ and $\mathrm{PGL}_2(\mathbb{C})$. This analysis is applied to a test vector conjecture for local triple product period integrals.

Date: January 20, 2026 (Tuesday)
Time: 4:00 pm – 5:00 pm
Venue: Room 210, Run Run Shaw Building, HKU

All are welcome