日時 2024 年 12 月 13 日 (金) 16:00-17:00

場所 九州大学伊都キャンパス ウエスト 1 号館 5 階 C-513 中講義室,
および Zoom ミーティングによるオンライン開催

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講演者 翁 林 氏 (九州大学)

題目 **Murmurations and Sato-Tate Conjectures for High Rank Zetas of Elliptic Curves**

概要 For elliptic curves over rationals, there are a well-known conjecture of Sato-Tate and a new computational guided murmuration phenomenon, for which the abelian Hasse-Weil zeta functions are used. In this talk, we show that both the murmurations and the Sato-Tate conjecture stand equally well for non-abelian high rank zeta functions of elliptic curves over rationals. We establish our results by carefully examining the asymptotic behaviors of the p-reduction invariants $a_{E/\mathbb{F}_q}$ ($n \geq 1$), the rank n analogous of the rank one a-invariant $a_{E/\mathbb{F}_q} = 1 + q - N_{E/\mathbb{F}_q}$ of elliptic curve $E/\mathbb{F}_q$. Such asymptotic results are based on the counting miracle of the so-called $\alpha_{E/\mathbb{F}_q,n}$- and $\beta_{E/\mathbb{F}_q,n}$-invariants of $E/\mathbb{F}_q$ in rank n, and a remarkable recursive relation on the $\beta_{E/\mathbb{F}_q,n}$-invariants, established by Weng and Zagier, previously.

This is a joint work with Zhan Shi.

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