## 九大代数学セミナー

※「通常と曜日が異なります」

日時 2025 年 4 月 8 日 (火) 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 Ilker Inam 氏 (Bilecik Seyh Edebali University)

題目 **Fast Computation of Half-Integral Weight Modular Forms and a Sato-Tate Like Problem**

概要 Modular forms continue to attract attention for decades with many different application areas. To study statistical properties of modular forms, including for instance Sato-Tate like problems, it is essential to be able to compute a large number of Fourier coefficients. In this talk, firstly, we will show that this can be achieved in level 4 for a large range of half-integral weights by making use of one of three explicit bases, the elements of which can be calculated via fast power series operations.

After having "many" Fourier coefficients, it is time to ask the following question: Can the distribution of normalised Fourier coefficients of half-integral weight level 4 Hecke eigenforms with bounded indices be approximated by a distribution? We will suggest that they follow the generalised Gaussian distribution and give some numerical evidence for that. Finally, we will see that the apparent symmetry around zero of the data lends strong evidence to the Bruinier- Kohnen Conjecture on the equidistribution of signs and even suggests the strengthening that signs and absolute values are distributed independently.

This is joint work with Gabor Wiese (Luxembourg), Zeynep Demirkol Ozkaya (Van) and Elif Tercan (Bilecik).

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