九大代数学セミナー

※「通常と日時が異なります」

日時 2025 年 10 月 24 日 (金) 15:00-16:00

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 Eknath Ghate 氏 (Tata Institute)

題目 **Zig-zag holds for Galois representations**

概要 It is an open problem to describe the shape of the reductions of local Galois representations attached to cusp forms at primes away from the level, or more generally, the shape of the reductions of two-dimensional crystalline representations. Partial results go back to Deligne, Fontaine and Edixhoven. One folklore conjecture (attributed to Breuil, Buzzard and Emerton) is that if the weight is even and the slope is fractional, then the reduction is always irreducible.

In this talk we shall state and prove our zig-zag conjecture which deals with large exceptional weights and half-integral slopes. These weights fall squarely outside the scope of the above conjecture. The conjecture states that the reduction in these cases is given by an alternating sequence of irreducible and reducible representations depending on the size of two auxiliary parameters. Special cases of zig-zag have been proved over the years by various authors using Langlands correspondences.

The present general proof uses the reverse of a recent limiting argument due to Chitrao-Ghate-Yasuda in the Colmez-Chenevier rigid analytic blow up space of trianguline representations to reduce the study of the reduction of crystalline representations to results on the reductions of semi-stable representations due to Breuil-Mezard, Guerberoff-Park and most recently Chitrao-Ghate.

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