# CASTS TALKS

# The 7th East Asia Number Theory Conference

*MOD p local-global compatibility for $GL_n$ ($Q_p$) in the ordinary case*

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15:00 - 15:50

101, Mathematics Research Center Building (ori. New Math. Bldg.)

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Let $K$ be a finite extension of $Q_p$. It is believed that one can attach a smooth $F_p$-representation of $GL_n$ ($K$) (or a packet of such representations) to a continuous Galois representation $\mathrm{Gal}(Q_p/K) \to GL_n$ ($F_p$) in a natural way, that is called modp Langlands program for $GL_n$ ($K$).

This conjecture is known only for $GL_2$ ($Q_p$) : one of the main difficulties is that there is no classification of such smooth representations of $GL_n$ ($K$) unless $K = Q_p$ and $n = 2$.

However, for a given continuous Galois representation $\rho_0 : \mathrm{Gal}(Q_p/Q_p) \to GL_n$ ($F_p$), one can define a smooth $F_p$-representation $\Pi_0$ of $GL_n$ ($Q_p$) by a space of mod p automorphic forms on a compact unitary group, which is believed to be a candidate on the automorphic side corresponding to $\rho_0$ for modp Langlands correspondence in the spirit of Emerton.

The structure of $\Pi_0$ is very mysterious as a representation of $GLn$ ($Q_p$), but it is conjectured that $\Pi_0$ determine $\rho_0$.

In this talk, we discuss that $\Pi_0$ determines $\rho_0$, provided that $\rho_0$ is ordinary and generic. More precisely, we prove that the tamely ramified part of $\rho_0$ is determined by the Serre weights a ttached to $\rho_0$, and the wildly ramified part of $\rho_0$ is obtained in terms of refined Hecke actions on $\Pi_0$.

This is a joint work with Zicheng Qian.

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