

EXPLICIT POLYNOMIAL PRESENTATIONS OF THE REDUCED EMERTON-GEE STACKS

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Time: Friday, October 16th, 16:00-17:00

Venue: Room 102, SCMS

Abstract:

In this talk, I will introduce my program that seeks to (efficiently) compute the reduced Emerton-Gee stacks in non-generic and high dimension situations. I will explain its arithmetic implications such as a speculative Herzig-type Serre weight recipe for non-semisimple, non-generic residual Galois representations and a speculative classification of weight entailment phenomenon. This talk is based on my recent preprint arXiv:2608.01567 (the "twisted" Borel case) and the joint work in progress with Min Yu (the reductive case). The resolved twisted Borel cases already imply the existence of crystalline lifts and the qualitative Breuil-Mezard conjecture for most reductive groups (without assumptions on the residual Galois representation).

To orient the audience, I will start with an exposition of the precursor of the Emerton-Gee stacks -- the moduli of potentially Barsotti-Tate rank 2 Breuil-Kisin modules with tame descent data, and explain how it acquires (twisted) Springer-Schubert geometry. Then I will analyze the non-generic geometry by introducing a mod p ($p \neq l$) version of Weil-Deligne representations.