

# Iwahori-Hecke model for supersingular representation for $\mathrm{GL}_2(\mathbb{Q}_p)$ .

## **Abstract**

We first recall the fundamental work of Barthel, Livne and Breuil on the mod  $p$  representation theory of  $\mathrm{GL}_2(\mathbb{Q}_p)$  and then present a variant of their approach in which a supersingular representation of  $\mathrm{GL}_2(\mathbb{Q}_p)$  is realized as a quotient of a representation induced from the Iwahori subgroup, instead of the maximal compact subgroup. Certain computations appear to be easier to execute via this model. We briefly illustrate an instance of this by obtaining the K-socle filtration of a supersingular representation. This latter result is originally due to Stefano Morra. We will also quickly see some results on self-extensions of supersingular representation in Iwahori-Hecke model. This is a joint work with U. K. Anandavardhanan.