

**ON THE UNIVERSAL DEFORMATION RING OF A
RESIDUAL GALOIS REPRESENTATION WITH THREE
JORDAN–HÖLDER FACTORS**

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ABSTRACT. In this paper, we study Fontaine–Laffaille, essentially self-dual deformations of a mod p non-semisimple Galois representation of dimension n with its Jordan–Hölder factors being three mutually non-isomorphic absolutely irreducible representations. We show that under some conditions regarding the orders of certain Selmer groups, the universal deformation ring is a discrete valuation ring. Given enough information on the Hecke side, we also prove an $R = T$ theorem. We then apply our results to abelian surfaces with cyclic rational isogenies and 6-dimensional representations arising from automorphic forms congruent to Ikeda lifts. Particularly, assuming Bloch-Kato conjecture, our result identifies the special values conditions for unique abelian surface isogeny class and an $R = T$ theorem.