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Mod $p$ representations of $p$-adic $\tilde{SL}_2$ via Hecke algebras

In characteristic 0, the genuine Iwahori Hecke algebra of $\tilde{SL}_2$ is isomorphic to the Iwahori Hecke algebra of the dual group $PGL_2$, giving a correspondence of irreducible representations with Iwahori-fixed vectors. In contrast, we show that these two algebras are not isomorphic in characteristic $p$. However, the respective spherical mod $p$ Hecke algebras are isomorphic, and after classifying the ordinary mod $p$ representations of $SL_2$-tilde, we show that this isomorphism gives a correspondence of unramified ordinary mod $p$ representations.