Constructing Galois Representations with Very Large Image

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Abstract. Starting with a 2-dimensional mod $p$ Galois representation, we construct a deformation to a power series ring in infinitely many variables over the $p$-adics. The image of this representation is full in the sense that it contains $SL_2$ of this power series ring. Furthermore, all $\mathbb{Z}_p$ specializations of this deformation are potentially semistable at $p$. 

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