

A P-ADIC VERSION OF A THEOREM OF NARASIMHAN AND SESHADRI

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Consider a smooth projective curve C of genus $g \geq 1$ over a complete discrete valuation field of characteristic 0 and residue field $\overline{\mathbb{F}}_p$. Motivated by Narasimhan and Seshadri's theorem, Faltings asked whether all semistable vector bundles of degree 0 over $C_{\mathbb{C}_p}$ arise from \mathbb{C}_p -representations of the geometric fundamental group of C via the p -adic Simpson correspondence. We prove that if C has good reduction and $p > r(r-1)(g-1)$, a vector bundle of rank r and degree 0 with stable reduction is in the image of the p -adic Simpson correspondence if and only if it has strongly semistable reduction. In particular, we provide a negative answer to Faltings' question.