On the properness of the moduli space of stable surfaces over $\mathbb{Z}[1/30]$

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Abstract

We show the properness of the moduli stack of stable surfaces over $\mathbb{Z}[1/30]$, assuming the locally-stable reduction conjecture for stable surfaces. This relies on a local Kawamata–Viehweg vanishing theorem for 3-dimensional log canonical singularities at closed point of characteristic $p \neq 2, 3$ and 5 which are not log canonical centres.