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## Existence of good moduli spaces for A\_k-stable curves

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## (Submitted on 6 Jun 2012)

We prove a general criterion for an algebraic stack to admit a good moduli space. This result may be considered as a weak analog of the Keel-Mori theorem, which guarantees the existence of a coarse moduli space for a separated Deligne-Mumford stack. We apply our result to prove that the moduli stacks of A\_k and A\_k^+-stable curves admit good moduli spaces. In forthcoming work, we will prove that these moduli spaces are projective and use them to construct the second flip in the log minimal model program for M\_g.

Comments: 20 pages Subjects: Algebraic Geometry (math.AG) Cite as: arXiv:1206.1209 [math.AG] (or arXiv:1206.1209v1 [math.AG] for this version)

## **Submission history**

From: Jarod Alper [view email] [v1] Wed, 6 Jun 2012 13:10:02 GMT (20kb)

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