

# Singular Quotients with Big Cotangent Bundle

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The study of the positivity of the cotangent bundle in projective algebraic varieties has attracted a lot of attention because of its many geometric consequences. For instance, for varieties with big cotangent bundle, i.e., having many symmetric tensors, we can obtain valuable information which can be useful in approaching some difficult problems as the Lang or the Green-Griffiths-Lang conjectures. In two dimensions, Bogomolov proved that surfaces of general type with positive second Segre number  $s_2 := c_1^2 - c_2$  have big cotangent bundle and as a consequence that they contain finitely many rational and elliptic curves. These results were extended later by McQuillan in his proof of the algebraic degeneracy of entire curves on such surfaces.

In this talk, we are interested in a particular case of Shimura varieties, namely, in quotients of products of curves of genus  $\geq 2$  by the action of a finite group. These varieties have been subject of recent intensive work, among others, since they have been a fruitful method to construct interesting surfaces of general type. We will present some criteria to prove the bigness of the cotangent bundle for some of these varieties. As consequence, we will give effective versions of Lang's and Green-Griffiths-Lang's conjectures for some surfaces with non positive second Segre number.