

The classification problem for surfaces on abelian 3-folds.

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Abstract: Many interesting results on irregular algebraic varieties, about Gauss mapping, vanishing, Fourier transform, moduli, intersections, etc., have been recently proved. In contrast with this, it seems that no new examples have been found. This is perhaps the main reason why the classification of irregular surfaces of general type remains a very difficult and outstanding topic.

The problem becomes clearer if we consider the (singular) surfaces contained in an abelian 3-fold, or similarly the surfaces having irregularity $q = 3$ (algebraic projective surfaces having first Betti $b_1 = 6$) and birational Albanese map. It seems very difficult, in general, to determine the other numerical invariants in this case (for instance K^2 and p_g).

We will discuss the case $p_g = q = 3$ and a method that allows to classify the simple basic case of the symmetric product of a genus 3 curve.