Surfaces uniformized by the bidisk

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Surfaces uniformized by the bidisk provide many interesting examples of algebraic surfaces of general type, and of properties of their moduli spaces. Among these are the surfaces whose universal covering is the bidisk. These divide into two types, surfaces isogenous to a product of curves and those where the action is irreducible. I will illustrate how both types are very useful, for instance for the construction of surfaces with low invariants (work with Bauer and Grunewald) and, for instance, for providing negative answers to the QED question (Kuga-Shavel-Grunewald surfaces). I will concentrate in my talk to a characterization of these surfaces in terms of the existence of a nonzero tensor in $H0(Sym2(\Omega1(-K_)) \otimes \eta)$, where η is an element of order at most 2 in Pic(S). The latter is joint work with Marco Franciosi. I will then comment on related results , by Yau and Beauville, in higher dimensions.