

## $\mathbb{Z}/2$ -Godeaux surfaces

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The existence of surfaces of general type with the lowest possible values of the invariants, namely holomorphic Euler characteristic  $\chi = 1$  and self-intersection of a canonical divisor  $K^2 = 1$ , are known to exist since Godeaux's construction in 1931. It has been shown that their torsion group can only be  $\mathbb{Z}/n$  with  $n = 1, \dots, 5$ . Reid constructed the moduli space for the cases  $n = 5, 4, 3$ , showing that it is irreducible of dimension 8. In this talk I will report the classification of the case  $n = 2$ , where we compute explicit equations for all  $\mathbb{Z}/2$ -Godeaux surfaces and show that their moduli space is rational of dimension 8.

This is joint work with Eduardo Dias.

**Invited Algebraic Geometry Session**