

QUADRUPLE GALOIS CANONICAL COVERS AND ITS BICANONICAL MAPS

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ABSTRACT. Canonical covers of surfaces of minimal degree have a ubiquitous presence in the geometry of surfaces and threefolds. For example they appear in the classification of surfaces of general type with small $c_1/2$, as shown in the work of Horikawa, and play an important role in mapping the geography of surfaces of general type. Among them, quadruple Galois canonical covers are especially interesting as they present a behavior which is quite different from that of covers of other degrees. For instance, they are the only covers that admit families with unbounded geometric genus and families with unbounded irregularity.

In this talk I will focus on quadruple Galois canonical covers X of surfaces of minimal degree and, in particular, on their bicanonical maps. As we will see, the bicanonical map φ_2 also exhibits a very interesting behavior, depending on the type of X , showing the many complexities that are possible for a bicanonical map of surfaces of general type. There are cases in which φ_2 is an embedding, and if so happens, φ_2 embeds X as a projectively normal variety, and cases in which φ_2 is not an embedding. If the latter, φ_2 is finite of degree 1, 2 or 4.

This is a joint work with B.P. Purnaprajna.