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TITLE: **Non homeomorphic conjugate Beauville surfaces**

ABSTRACT: It is known that although general field automorphisms of $\mathbb{C}$ are highly discontinuous, the Betti numbers of a complex projective variety X are the same as those of the variety X^σ obtained by transforming the points of X by an arbitrary field automorphism σ. In dimension 1 this is enough to ensure that X and X^σ are homeomorphic. However in 1964 Serre gave an example of two Galois conjugate but not homeomorphic varieties and several other examples followed afterwards.

Recently Catanese has introduced a class of rigid surfaces (Beauville surfaces) defined over the field of algebraic numbers $\overline{\mathbb{Q}}$ that should provide a fertile source of examples of this phenomenon.

In this talk I will present an explicit construction of such a surface which has the property that its orbit under the action of the absolute Galois group $\mathrm{Gal}(\overline{\mathbb{Q}}/\mathbb{Q})$ consists of two surfaces with non isomorphic fundamental groups. This surface turns out to be "the minimum" Beauville surface for which this phenomenon occurs.

I will also outline an alternative proof of Catanese's rigidity results in the framework of Fuchsian group theory.

(joint work with Gabino González-Diez)