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Gabino González-Diez* (gabino.gonzalez@uam.es) and **Andrei Jaikin-Zapirain**. *The effect of Galois action on the topology of complex algebraic varieties.*

A combination of Hodge theory and Serre's GAGA principle implies that many topological invariants of complex projective varieties, such as Betti numbers and Chern classes, remain invariant under Galois action. Nevertheless, in 1964 Serre constructed examples of projective varieties X and Galois elements $\sigma \in Gal(\overline{\mathbb{Q}}/\mathbb{Q})$ such that X and its conjugate variety X^σ have non-isomorphic fundamental groups, and so they are not homeomorphic. Further particular instances of this phenomenon have been discovered since them. The result I would like to present is the following:

For every $\sigma \in Gal(\overline{\mathbb{Q}}/\mathbb{Q})$ different from the identity or the complex conjugation there is a complex surface S defined over a number field such that the fundamental groups $\pi_1(S)$ and $\pi_1(S^\sigma)$ are non-isomorphic (although their profinite completions $\pi_1^{alg}(S)$ and $\pi_1^{alg}(S^\sigma)$ are).

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