# Séminaire d'algèbre, topologie et géométrie
# Jeudi 15 décembre à 14h
# Salle de conférences


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*A smooth surface birational to an Enriques surface, with infinitely many real forms*


Let X be a complex projective surface. A real form of X is a real projective variety W, from which, when taking the Cartesian product with Spec $\mathbf{C}$ over Spec $\mathbf{R}$, one recovers X. Two real forms are considered isomorphic if they are isomorphic over Spec $\mathbf{R}$. A natural question is to ask how many non-isomorphic real forms can be attributed to a fixed complex projective variety X : in particular, are there finitely many ?

As soon as X admits at least one real form, this question boils down to counting non-conjugate involutions in a group naturally associated to X. In this talk, we emphasize two aspects of this counting problem : we first explain why varieties satisfying the Cone Conjecture (such as K3 surfaces, Enriques surfaces, abelian surfaces) have finitely many real forms ; we then describe a smooth blow-up of an Enriques surface, which has infinitely many non-conjugate involutions in its automorphism group, and which is therefore endowed with infinitely many real forms.

This is joint work with Tien-Cuong Dinh, Hsueh-Yung Lin, Keiji Oguiso, Long Wang and Xun Yu.