Séminaire méditerranéen de géométrie algébrique

29 et 30 septembre 2022
Salle de conférences, LJAD

Jeudi 29 septembre

— **14h30-15h20 : Frédéric Mangolte, Birational involutions of the real projective plane**
Abstract : We classify conjugacy classes of elements of order 2 in the real Cremona group $Bir_{\mathbb{R}}(\mathbb{P}^2)$. In contrast with an analogous classification over the complex numbers (due to E. Bertini, G. Castelnuovo, F. Enriques, L. Bayle and A. Beauville), which includes 4 different classes of involutions, there are 12 different classes over the reals. In this talk, we will explain in particular how to classify birational involutions that fix (pointwise) an irrational curve. This is a joint work with Ivan Cheltsov, Egor Yasinsky and Susanna Zimmermann. See https ://arxiv.org/abs/2208.00217

— **15h20-15h50 : Coffee break**

— **15h50-16h40 : Laurent Manivel, A birational involution for K3 surfaces of genus 10**
Abstract : According to Mukai, a general K3 surface S of genus 10 is a linear section of the G2-Grassmannian, a Fano fivefold with a transitive action of the exceptional group G2. I will use this model to describe a birational involution of the punctual Hilbert scheme $S^{[3]}$, whose existence had been predicted by Beri and Cattaneo.

— **17h00-17h50 : Junyan Cao, Log ddbar lemma and some applications**
Abstract : We present an analytic approach to solve the log dbar-equation for line bundles with semipositive curvatures. We will also discuss some applications in algebraic geometry. It is a joint work with Mihai Paun.

Vendredi 30 septembre

— **9h15-10h05 : Joao Pedro Dos Santos, Connexions relatives sur un schéma complexe**
Soit R un quotient de $\mathbb{C}[[t_1, \ldots, t_r]]$ et X/R un schéma lisse à fibres connexes. En admettant que X possède une compactification relative lisse, on montre que les connexions algébriques singulières–regulières sur X correspondent aux représentations R-linéaires du groupe fondamental de sa fibre fermée. Ceci permettra de montrer que des schémas en groupes assez exotiques sur R, maintenant supposé un AVD, apparaissent comme des groupes de Galois différentiels de connexions raisonnablement simples. Il s'agit d'un travail en collaboration avec P. H. Hai.
— **10h05-10h30 : Coffee break**
— **10h30-11h20 : Eleonora Romano, $\mathbb{C}^*$-actions and Mori Dream Spaces**

Abstract : In this talk we give an overview on recent results about $\mathbb{C}^*$-actions on complex smooth projective varieties, most of which are Fano. We then focus on small modifications of Mori Dream Spaces arising from $\mathbb{C}^*$-actions, by relating them to their GIT quotients. We review these results by discussing the cases of actions of small criticality. Joint work with L. Barban, G. Occhetta, L. Sola Conde and J. Wisniewski.

— **11h30 - 12h20 : Simone Marchesi, On stability of logarithmic sheaves and the Torelli problem**
Abstract : Since the introduction of logarithmic sheaves, it has been natural to study either their freeness or their stability. In particular, we will focus in this last property, which allows us to describe their moduli space, especially whenever the logarithmic sheaf $\Omega_X^1(\log D)$ unambiguously determines the original divisor D. In this situation, we say that the divisor satisfies the Torelli property.

In this talk, I will present some recent results in this direction, a joint work with S. Huh, J. Pons-Llopis and J. Vallès.