

Special subgroups of the Cremona group via Calabi-Yau pairs

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The Cremona group in dimension n is the subgroup of birational transformation of the projective space \mathbb{P}^n . Describing the structure of the Cremona group is a major problem in modern algebraic geometry. While the theory is well developed in dimension 2, little is known in dimension ≥ 3 . A natural problem is to construct special subgroups of the Cremona group. In 2013, Blanc described the subgroup of the Cremona group of the plane that preserves the meromorphic volume form $\omega = \frac{dx}{x} \wedge \frac{dy}{y}$. The form ω has simple poles exactly along the 3 coordinate lines. The pair (\mathbb{P}^2, ω) is an example of a Calabi-Yau pair: a pair (X, D) where X is a Fano variety and D is the divisor associated to a meromorphic volume form on X . Calabi-Yau pairs appear naturally in the context of the Mori Program, and have been much investigated. In this talk, I will explain how one can explore the birational geometry of Calabi-Yau pairs to construct interesting subgroups of the Cremona group in dimension ≥ 3 . This is joint work with Alessio Corti (London, UK) and Alex Massarenti (Ferrara, Italy).