

On smooth cubic hypersurfaces

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Abstract

The smooth cubic hypersurfaces X_n of the complex projective space $\mathbb{P}_{n+1}(\mathbb{C})$ are a classical subject. For $n \geq 2$ its group of regular automorphisms, denoted by $\text{Aut}(X_n)$, is a finite group. In the case $n = 2$ they correspond to the classical cubic surfaces, Segre in 1942, using the geometry of the 27 lines and their degenerations produced a list of cubic hypersurfaces admitting non-trivial groups of automorphisms.

In this talk we will review and present some results on $\text{Aut}(X_n)$ in the case $n \geq 3$. In the case $n = 3$ and $n = 5$ we show some relations between $\text{Aut}(X_n)$ and the singular locus of the moduli spaces of principally polarized abelian varieties of dimension 5 and 21. In the cases $n = 3$ and $n = 4$ we give some relations between $\text{Aut}(X_n)$ and the automorphisms of some $K3$ surfaces.

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