Minimal cohomology classes and intermediate jacobians

Andreas Höring

U. Bayreuth, Alemanya

Let X be a smooth cubic in $\mathbb{P}^4$. We can associate two objects to X: its intermediate jacobian J (which is an abelian variety of dimension five) and its Fano surface F that parametrises the lines contained in X. A theorem due to Clemens and Griffiths shows that we can embed the surface F in the intermediate jacobian J and that the image is a subvariety of minimal class (cf. definition during the talk). Olivier Debarre has conjectured that the Fano surface is the only subvariety of minimal class in J.

In this talk I will explain in detail the objects mentioned above and the general context of Debarre's conjecture. I will then describe a geometric approach to this problem and, if time permits, make the link with some recent results due to Pareschi and Popa.