Dipartimento di Matematica

# Seminari di Geometria (per Alberto Albano)

**Data**
20/10/2026 - 14:30

**Aula**
Aula 4

**Categoria**
Seminari di Algebra e Geometria Algebrica

**Sede**
Palazzo Campana

**Descrizione**

Programma

14.30 Gian Pietro Pirola (Università di Pavia) "On The Xiao Problem"

**Abstract:** Given a fibered surface f : S → B, where S is a smooth complex projective algebraic surface, B is a smooth curve of genus b, and f is a surjective morphism with connected fibers. Let g be the genus of the general fiber C of f.

Xiao's problem is to find an upper bound for the irregularity q of S (recall that 2q is the first Betti number of S) in terms of b and g. The problem is particularly interesting in the non-isotrivial case, that is, when the complex structure of the smooth fibers is not constant.

Although at first glance this topic may seem rather specialized, it lies at the intersection of several important areas of algebraic geometry, including the theory of algebraic surfaces, moduli spaces of curves, abelian varieties, and algebraic cycles.

We will review the history of the problem, starting with Xiao's famous conjecture for non isotrivial fibration:

$2(q - b) \leq g + 1,$

which was proved by Xiao in the case $b = 0$. We will then discuss the counterexamples that we constructed with Alberto Albano, and conclude by mentioning a very recent work of Olivier Martin, which provides important new insights into the problem.

15.45 Bert van Geemen (Università di Milano)

"An introduction to the Hodge conjecture for abelian varieties (Part 2)"

**Abstract:** This is a continuation of my talk, with the same title, given at the Second C.I.M.E. Session in Torino in 1993, organized by Alberto Albano and Fabio Bardelli. We will briefly review recent results of Markman on the Hodge conjecture, in particular for abelian varieties of Weil type. We present some details of a recent construction, by Antonio Rapagnetta and the speaker, of algebraic cycles on abelian fourfolds of Weil type with trivial discriminant.

*Al termine dei seminari alle ore 17.00 ci sarà un rinfresco per salutare Alberto in Sala professori*