UNIVERSITÀ DEGLI STUDI DI TRENTO
Dipartimento di Matematica

Thursday 20th July at 15:00

Seminar Room "-1" – Department of Mathematics

Fabrizio Catanese
(Università di Bayreuth-Germany)

" GROUP REPRESENTATIONS AND CANONICAL SURFACES OF VERY HIGH DEGREE"

ABSTRACT:

Given a surface S of general type, we denote by d the degree of the canonical image. d is bounded by the canonical volume K^2, and by the Bogomolov-Miyaoka-Yau inequality we have $d \leq 9\chi$.

In practice, what is the maximum d for $p_g = 4, 5, 6$? Up to now, the best lower bound is quite low (in joint work with Ingrid Bauer we achieved ball quotients with $p_g = 4$, $K^2 = 45$, but the record d for $p_g = 4$ is still 28).

For $p_g = 6$, where one expects to have surfaces whose canonical map is an embedding, there are interesting ties with methods and questions of homological algebra (Walter's bundle Pfaffians), which led to the question whether 18 would be the upper bound (I answered by getting degree 24).

I recently constructed several connected components of the moduli space,of surfaces S of general type with $p_g = 5{,}6$ whose canonical map has image Σ of very high degree, d=48 for $p_g = 5$, $d = 56$ for $p_g = 6$.

The surfaces we consider are SIP's , surfaces isogenous to a product of curves $(C_1 \times C_2)/G$.

Representation theory then enters the picture in several ways, the easiest one being: when does a submodule of the group algebra $\mathbb{C}[G]$ yield a projective embedding of G?

Contact person: Roberto Pignatelli

STAFF DIPARTIMENTO DI MATEMATICA
Università degli Studi Trento
Via Sommarive, 14- 38123 Povo (TN)
Tel +39 0461/281508-1625-1701 Fax+ 39 0461/281624
dept.math@unitn.it