



UNIVERSITÀ DEGLI STUDI
DI TRENTO

Dipartimento di Matematica



SEMINARI

Thursday June 15th – at 4.00 pm

Seminar Room 1 – Povo0, Via Sommarive 14

h 4.00-4.40 pm

Leo Margolis (Universidad Autónoma de Madrid)

The nilpotent decomposition in integral group rings

Abstract

Inspired by the Jordan decomposition in group rings Passman and Liu defined nilpotent decomposition: a finite group G has this property, if for any nilpotent element n in the integral group ring of G and every central idempotent e of the rational group algebra of G the product $e*n$ also lies in the integral group ring. It is easy to see that if the rational group algebra of G has at most one matrix component, then G has also nilpotent decomposition. Jespers and Sun conjectured that these two properties are in fact equivalent. We will report on some ongoing work on this conjecture which has already uncovered some rather surprising results.

h 4.50-5.30 pm

Irene Villa (University of Trento)

The classification of planar monomials over fields of order p^3

Abstract

Planar functions are functions defined over finite fields of odd characteristics such that their (nonzero) derivatives are permutations. It was conjectured in 1968 by Dembowski and Ostrom that all planar maps have degree two. This conjecture was proven correct for functions defined over prime fields. Moreover, when restricted to monomials, it was proven correct for fields of order p^2 and, when $p > 3$, for fields of order p^4 (a counterexample was constructed for the field of order 3^4). In this talk, I will present a proof of the conjecture for monomials over fields of order a prime cubed.

h 5.40-6.20 pm

Daniele Taufer (KU Leuven)

Elliptic Curves over Hasse pairs

Abstract

Given a prime power q , the size p of elliptic curves over F_q lies inside an interval of integers, usually referred to as the Hasse interval. When this p is also a prime power, we have a natural “dual” family of curves defined over F_p and with a group of points of order q . We define such a pair (p, q) , i.e. a pair of prime powers lying inside the Hasse interval of each other, as a Hasse pair, and we investigate the relation between these families of curves. When supersingular curves are involved, we show that the problem of constructing curves over Hasse pairs may be reduced to well-known open problems in number theory. Instead, when only ordinary curves are involved, we prove a perfect correspondence between their isogeny graphs, which highlights how these seemingly different local objects arise from good reductions of the same global curves. This is joint work with Antoine Joux and Eleni Agathocleous.

After the seminar we will go to dinner. Please contact one of the organisers if you are interested in joining us.

Contact persons: Mima Stanojkovski, Willem Adriaan De Graaf

CONTATTI

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