BI-SEMINARIO DI GEOMETRIA

MERCOLEDÌ 13 giugno 2012, h.15.30 – 17.30

@ DISMA, Politecnico di Torino, **aula Buzano**

15.30 – 16.30 **BARBARA NELLI** (Università dell'Aquila)

Superfici minime con due fini in $\mathcal{H}^2 \times \mathbb{R}$

In che modo la forma delle fini di una superficie minima determina la superficie stessa?

Discutiamo questo problema per le superfici minime con due fini in $\mathcal{H}^2 \times \mathbb{R}$. In particolare, dimostriamo un Teorema di Schoen per tali superfici.

16.30 – 17.30 **ROBERTO LA SCALA** (Università di Bari)

Gröbner bases and gradings for partial difference ideals

In this talk we introduce a working generalization of the theory of Gröbner bases for the algebras of partial difference polynomials with constant coefficients.

Such algebras are free objects in the category of commutative algebras endowed with the action by endomorphisms of a monoid isomorphic to $\mathbb{N}^r$.

Since they are not Noetherian algebras, we propose a theory for grading them that provides a Noetherian subalgebras filtration.

This implies that the variants of the Buchberger algorithm we developed for partial difference ideals terminate in the finitely generated graded case when truncated up to some degree. Moreover, even in the non-graded case, we provide criterions for certifying completeness of eventually finite Gröbner bases when they are computed within sufficiently large bounded degrees.

We generalize also the concepts of homogenization and saturation, and related algorithms, to the context of partial difference ideals. The feasibily of the proposed methods is shown by an implementation in Maple and a test set based on the discretization of concrete systems of non-linear partial differential equations.

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