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SEMINARIO DE GEOMETRÍA ALGEBRAICA

Jueves 30 de Abril de 2009, **13:00**, Seminario 238

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UCM

Impartirá la conferencia

On the ring of Nash functions on a semialgebraic set

Abstract.
(Joint work with J.M. Gamboa)We study the $\mathbb{R}$-algebra $\mathcal{N}(S)$ of Nash functions on a semialgebraic set $S \subset \mathbb{R}^n$ and prove that it is a noetherian ring, a result already known in case $S = M$ is an affine Nash manifold. The semialgebraic sets $S \subset \mathbb{R}^n$ whose ring $\mathcal{N}(S)$ is an integral domain are called *irreducible*. We develop what we consider is a satisfactory theory of irreducible components of semialgebraic sets, and we use it fruitfully to approach four classical problems in Real Algebraic and Analytic Geometry: Substitution Theorem, Positivstellensätze, 17^{th} Hilbert Problem and real Nullstellensatz, whose solution was also already known in case $S = M$ is an affine Nash manifold. In fact, we give characterizations of the families of semialgebraic sets for which these classical results are true.