



Seminario de Álgebra, Geometría algebraica y Singularidades
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Global multiplicity, special closure and non-degeneracy of gradient maps

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Given a polynomial map $F : \mathbb{C}^n \rightarrow \mathbb{C}^p$ with finite zero set, $p \geq n$, we introduce the notion of global multiplicity associated to F , which is analogous to the multiplicity of ideals in Noetherian local rings. This notion allows to characterize numerically the Newton non-degeneracy at infinity of F . This fact motivates us to study a combinatorial inequality concerning the normalized volume of global Newton polyhedra and to characterize the corresponding equality using special closures. We will also show a counterpart of the Rees' multiplicity theorem in the context of polynomial maps. Moreover, we will study the Newton non-degeneracy at infinity of gradient maps and we will also discuss some implications of our study with the index of real polynomial vector fields and the estimation of Łojasiewicz exponents at infinity. This is a joint work with J.A.C. Huarcaya (Universidad Nacional Mayor de San Marcos, Lima, Perú).

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