

THEMATIC SESSION: Noves tendències en Geometria Algebraica

Higher Fano manifolds

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Fano manifolds are complex projective manifolds having positive first Chern class. The positivity condition on the first Chern class has far reaching geometric and arithmetic implications. For instance, Fano manifolds are covered by rational curves, and families of Fano manifolds over one dimensional bases always admit holomorphic sections. In recent years, there has been some effort towards defining suitable higher analogues of the Fano condition. Higher Fano manifolds are expected to enjoy stronger versions of several of the nice properties of Fano manifolds.

In this talk, I will discuss higher Fano manifolds which are defined in terms of positivity of higher Chern characters. After a brief survey of what is currently known, I will present recent joint work with Carolina Araujo, Roya Beheshti, Kelly Jabbusch, Svetlana Makarova, Enrica Mazzon and Nivedita Viswanathan, regarding toric higher Fano manifolds. I will explain a strategy towards proving that projective spaces are the only higher Fano manifolds among smooth projective toric varieties.