HIGHER FANO MANIFOLDS

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Fano manifolds are complex projective manifolds with positive first Chern class. This positivity condition has far-reaching geometric and arithmetic consequences: 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 significant progress toward defining suitable higher analogues of the Fano condition, which are expected to exhibit strengthened versions of several of the remarkable properties of Fano manifolds.

In this talk, I will discuss higher Fano manifolds, defined in terms of the positivity of higher Chern characters. I will present an overview of known general results, as well as recent developments in the case of toric Fano manifolds. These results are based on several joint works by Carolina Araujo, Roya Beheshti, Ana-Maria Castravet, Kelly Jabbusch, Svetlana Makarova, Enrica Mazzon, Will Reynolds, Libby Taylor, and Nivedita Viswanathan.