

Higher dimensional Fano varieties

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Abstract: This will be a 6 hour mini-course about Fano varieties. We will start with the classic classification of del Pezzo (smooth Fano) and smooth Fano 3-folds (Iskhoskikh-Prokhorov). This will be an overview of the known results and a highlight of why understanding Fano varieties is important for Algebraic Geometry. Then we will introduce Kawamata log terminal singularities and discuss some classic and new results about this class of singularities. We will explain why understanding these singularities is vital, for instance, through the classification of Gorenstein Fano surfaces of Picard rank one. Finally, we will explore some new results regarding Fano varieties and klt singularities, discussing the existence of complements on Fano varieties and the boundedness of Fano varieties.