



TED UNIVERSITY

Department of Mathematics

Seminars

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Instanton Bundles on Varieties

Abstract

Instanton bundles originally arose in mathematical physics as vector bundles on projective space encoding solutions to the Yang–Mills equations. From an algebro-geometric perspective, they form a rich and intriguing class of μ -stable bundles characterized by cohomological vanishing conditions. Over the past decades, the notion of instanton bundles has been extended beyond $\mathbb{P}^3$ to higher dimensional projective spaces, other Fano threefolds, and finally arbitrary projective varieties.

In this talk, I will introduce the classical definition of instanton bundles on $\mathbb{P}^3$, discuss their key properties and moduli, and then explore how these ideas generalize to other varieties. Along the way, I will highlight both the challenges and the geometric insights that arise when adapting the instanton condition to broader settings.