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Title: Vector Bundles and Projective Varieties

#### Abstract

Vector bundles play a prominent role in the study of projective algebraic varieties. Vector bundles can describe facets of the intrinsic geometry of a variety, as well as its relationship to other varieties, especially projective spaces. Additionally, being among the simplest examples of coherent sheaves, they can be manipulated by a wealth of technical machinery. Here we outline the general theory of vector bundles and describe their classification and structure. We also consider some special bundles and general results in low dimensions, especially rank 2 bundles and surfaces, as well as bundles on projective spaces. Finally, we indicate some open problems and current areas of research.