Abstract

In this talk, we will explore the action of a finite group $G \subset GL(V)$ on the algebra of polynomial functions $K[V]$ defined on an n-dimensional vector space V over a field K of characteristic 0. The group action is given by $(g \cdot f)(v) = f(g^{-1}v)$ for $g \in G$, $f \in K[V]$, and $v \in V$. We will focus on the ring of G-invariant polynomials, denoted $K[V]^G$, which consists of all polynomials in $K[V]$ that remain unchanged under the action of G. Using Hilbert's Basis Theorem, we will prove that $K[V]^G$ is finitely generated as a K-algebra.