AFFINGE GROUP SCHEMES 09

THEOREM 0.1 (Schur's lemma). *Let V be a finite dimensional irreducible representation of a group G over a field $\Bbbk$ which is algebraically closed. Then* $\mathrm{End}_{\Bbbk,G}(V) \cong \Bbbk$.

THEOREM 0.2. *Let $\Bbbk$ be algebraically closed field. Let $G \subset \mathrm{GL}_n$ be a subgroup. We assume that for any $A \in G$, $A - 1_n$ is a nilpotent matrix. Then there exists a G-fixed point in $\Bbbk^n \setminus \{0\}$.*

THEOREM 0.3. *Let $\Bbbk$ be algebraically closed field. Let $G \subset \mathrm{GL}_n$ be connected, solvable subgroup, Then there exists a G-fixed point in $\mathbb{P}^n(\Bbbk)$.*