Projective Normality of G.I.T. quotient varieties modulo finite solvable groups and Weyl groups

Santosha Pattanayak

Abstract

We prove that for any finite dimensional vector space V over an algebraically closed field K, and for any finite subgroup G of GL(V) which is either solvable or is generated by pseudo reflections such that the |G| is a unit in K, the projective variety P(V)/G is projectively normal with respect to the descent of $\mathcal{O}(1)^{\otimes |G|}$, where $\mathcal{O}(1)$ denotes the ample generator of the Picard group of $\mathbb{P}(V)$. We also prove that for the standard representation V of the Weyl group W of a semi-simple algebraic group of type A_n, B_n, C_n, D_n, F_4 and G_2 over \mathbb{C} , the projective variety $\mathbb{P}(V^m)/W$ is projectively normal with respect to the descent of $\mathcal{O}(1)^{\otimes |W|}$, where V^m denote the direct sum of mcopies of V.