

Let X denote a K3 surface over an arbitrary field k . Let k^s denote a separable closure of k and let X^s denote the base change of X to k^s . Let $O(\text{Pic } X)$ and $O(\text{Pic } X^s)$ denote the group of isometries of the lattices $\text{Pic } X$ and $\text{Pic } X^s$, respectively. Let R_X denote the Galois invariant part of the Weyl group of $\text{Pic } X^s$. One can show that each element in R_X can be restricted to an element of $O(\text{Pic } X)$. The following question arises: Is the image of the restriction map $R_X \rightarrow O(\text{Pic } X)$ a normal subgroup of $O(\text{Pic } X)$ for every K3 surface X ? We show that the answer is negative by giving counterexamples over $k = \mathbb{Q}$.