

ABSTRACT. Let X and Y be smooth projective varieties over \mathbb{C} . They are called *D-equivalent* if their derived categories of bounded complexes of coherent sheaves are equivalent as triangulated categories, and *K-equivalent* if they are birationally equivalent and the pull-backs of their canonical divisors to a common resolution coincide. We expect that the two equivalences coincide for birationally equivalent varieties. We shall provide a partial answer to the above problem in this paper.