ON THE CANONICAL BUNDLE FORMULA IN POSITIVE CHARACTERISTIC

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An important problem in birational geometry is trying to relate in a meaningful way the canonical bundles of the source and the base of a fibration. The first instance of such a formula is Kodaira's canonical bundle formula for surfaces which admit a fibration with elliptic fibres. It describes the relation between the canonical bundles in terms of the singularities of the fibres and their j-invariants. In higher dimension, we do not have an equivalent of the j-invariant, but we can still define a moduli part. Over fields of characteristic 0, positivity properties of the moduli part have been studied using variations of Hodge structures. Recently, the problem has been approached with techniques from the minimal model program. These methods can be used to prove a canonical bundle formula result in positive characteristic.