

On the conjecture of Gross-Deligne

(joint work with V. Maillot)

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Abstract

We prove that the existence of an automorphism of finite order on a \mathbb{Q} -variety X implies the existence of non-trivial algebraic linear relations between the logarithms of certain periods of X and the logarithms of special values of the Γ -function. This implies that a slight variation of results of Andersson, Colmez, Gross and Yosida on the periods of CM abelian varieties are valid for a large class of CM motives, which includes CM abelian varieties. In particular, we prove a weak form of the period conjecture of Gross-Deligne for a certain class of varieties and of Hodge structures cut out in the singular cohomology of the latter.