Abstract

A generalization of the Albanese variety to the case of a singular projective variety X over an algebraically closed field k is given in [ESV], where H. Esnault, V. Srinivas and E. Viehweg constructed a universal regular quotient of the Chow group $\mathrm{CH}_0(X)_{\deg 0}$ of 0-cycles of degree 0 modulo rational equivalence. This is a smooth connected commutative algebraic group, universal for rational maps from X to smooth commutative algebraic groups which factor through a homomorphism of groups $\mathrm{CH}_0(X)_{\deg 0} \longrightarrow G(k)$. Suppose now that in addition k is of characteristic 0. Interpreting this algebraic group as a generalized 1-motive in the sense of Laumon [L], we may ask for the dual 1-motive. The intention of these notes was to describe the functor which is represented by the dual 1-motive. This forms the main result of this work.

The notion of dual 1-motive allows to treat the problem in a more general way: We consider certain categories of rational maps from a projective variety to commutative algebraic groups (the category of rational maps factoring through $\mathrm{CH}_0(X)_{\deg 0}$ is a special case). A necessary and sufficient condition for the existence of an object of such a category satisfying the universal mapping property is given, as well as a construction of these universal objects via their dual 1-motives. In particular, this provides an independent proof of the existence and an explicit construction of the universal regular quotient for algebraically closed base field of characteristic 0.