

Monads over projective varieties

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Given a smooth projective variety X over an algebraically closed field K of characteristic zero, a monad over X is a complex

$$M : 0 \longrightarrow A \xrightarrow{\alpha} B \xrightarrow{\beta} C \longrightarrow 0$$

of coherent sheaves over X that is exact at A and C . The coherent sheaf $E := \ker \beta / \operatorname{im} \alpha$ is called the cohomology (sheaf) of the monad M . We will report on recent results on their existence and on the simplicity and stability of their cohomology sheaf.