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Thomas Benedict Williams* (tbwillia@usc.edu). *Azumaya orders do not always exist.*

Azumaya algebras over schemes generalize central simple algebras over fields, and the taking of equivalence classes allows the generalization of the Brauer group to schemes. Suppose X is a regular noetherian integral scheme, with field of fractions K . Suppose A is a central simple K -algebra, and suppose further that the class of A in the Brauer group $\text{Br}(K)$ lies in the image of the functorial map $\text{Br}(X) \rightarrow \text{Br}(K)$. We consider the problem of extending A to X ; specifically, we ask if it is possible to find an Azumaya algebra whose restriction to the generic point is A . It has been known for a long time that this is possible if the dimension of X is less than three. By use of obstruction theory, we exhibit a complex affine variety X and a central simple algebra over the fraction field for which no extension exists. (Received September 25, 2012)