

Cox rings of algebraic stacks

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Abstract. We give a proper definition of the multiplicative structure of the following rings: the Cox ring of invertible sheaves on a general algebraic stack; and the Cox ring of rank-one reflexive sheaves on a normal and excellent algebraic stack.

We show that such Cox rings always exist and establish their (non-)uniqueness in terms of an Ext-group. Moreover, we compare our definition with the classical construction of a Cox ring on a variety. Finally, we give an application to the theory of Mori dream stacks.

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