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Classification of $$ -homomorphisms using the Cuntz semigroup functor.*

We will show how the homomorphisms from the C^* -algebra of continuous function on a tree to a C^* -algebra of stable rank one can be classified by means of the Cuntz functor. In the special case when the tree consists of a single edge we describe a class of codomain C^* -algebras—not necessarily of stable rank one—for which this classification holds. We will also discuss how in certain cases the classification fails. These results are obtained in a joint work with Alin Ciuperca and George Elliott and in a joint work with Leonel Robert. (Received September 10, 2009)