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bte L7.01.02, 1348 Louvain-la-Neuve, Belgium. *When is a double central extension universal?*

It is easy to prove that a double central extension over an object  $X$  which is initial amongst such is necessarily the zero double extension over  $X = 0$ . This explains why it does not make sense to define universality of higher central extensions in the way done classically for one-fold central extensions.

The aim of my talk is to introduce an appropriate notion of universality for higher central extensions which does extend the theory of one-fold central extensions and perfect objects to higher degrees in a non-trivial way. This work is done in semi-abelian categories, but the results are new even for groups.

We shall see that a universal double central extension of  $X$  by  $H_3(X)$  exists as soon as  $H_2(X) = H_1(X) = 0$ . I will also describe a simple construction for such universal extensions.

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