

## **Functoriality of the intrinsic fundamental group.**

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First we will consider fibre products of Galois coverings of linear categories, in order to prove that a covering is Galois if and only if its square is trivial, as expected from similar theories. However we show that the behaviour of the fibre product is unusual since the fibre product of Galois coverings is not Galois in general.

The intrinsic fundamental group of a linear category is the automorphism group of the fibre functor from the category of Galois coverings to the category of sets. Due to the unusual behaviour of the fibre product described above, some standard tools are not available.

Nevertheless, explicit computations can be performed (see the previous talk by Maria Julia Redondo). An element of the fundamental group is a family of elements in the various groups which grades connectively the linear category, such that they corresponds under surjective group maps between the structure groups.

In case of a full linear subcategory, using the above description and the fibre product, we provide a canonical group map between the corresponding intrinsic fundamental groups. This leads on an explicit but almost functorial construction of a connected grading of a full subcategory out of a connected grading of the entire category. Nevertheless the resulting morphism is functorial, answering this way a natural question by Alain Bruguières. We give some conditions insuring that the morphism is injective.

This work is joint with Maria Julia Redondo and Andrea Solotar.