

Relative semi-abelian categories

Tamar Janelidze

We introduce a relative semi-abelian category as a pair (\mathbf{C}, \mathbf{E}) , where \mathbf{C} is a pointed category with finite limits, and \mathbf{E} is a class of normal epimorphisms in \mathbf{C} satisfying certain conditions, stronger than those defining a relative homological category [2]. In the absolute case, i.e. when \mathbf{E} is the class of all regular epimorphisms in \mathbf{C} , the pair (\mathbf{C}, \mathbf{E}) is relative semi-abelian if and only if \mathbf{C} is semi-abelian in the sense of [1]. Another extreme case is the “trivial” one, where \mathbf{E} is the class of isomorphisms in \mathbf{C} , and then (\mathbf{C}, \mathbf{E}) is always relative semi-abelian. Some results of [1] on the equivalence of the so-called old-style and new-style axioms are extended to the relative case.

REFERENCES

- [1] G. Janelidze, L. Márki, and W. Tholen, *Semi-abelian categories*, Journal of Pure and Applied Algebra 168 (2002) 367-386.
- [2] T. Janelidze, *Relative homological categories*, Journal of Homotopy and Related Structures 1 (2006) 185-194.