

Semi-abelian categories and non-additive torsion theories.

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In his celebrated article [1] S. Mac Lane first mentioned the problem of finding an axiomatic context capturing some typical properties of the category of groups. The introduction of the notion of semi-abelian category [2] made it possible to treat many fundamental properties the categories of groups, Lie algebras, crossed modules and compact groups have in common, in a similar way to the one the notion of abelian category is useful to study module categories and their categories of sheaves. The theory of semi-abelian categories provides a suitable categorical setting to investigate some fundamental aspects of non-abelian homological algebra, and to develop a categorical approach to torsion theories and commutators.

This introductory talk will focus on some basic properties and examples of semi-abelian categories. It will be shown that the notion of non-additive torsion theory is related to the notion of semi-localization [3], and then an abstract characterization of semi-localizations of semi-abelian categories will be given [4].

References

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- [3] D. Bourn and M. Gran, *Torsion theories in homological categories*, J. Algebra 305, 18-47 (2006)
- [4] M. Gran and S. Lack, *Semi-localizations of semi-abelian categories*, J. Algebra 454, 206-232 (2016)