# SEMIBIPRODUCT EXTENSIONS OF SEMIGROUPS

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We will see how the classical notion of biproduct introduced by Mac Lane in the context of abelian categories for the study of homology may be considered in any concrete category over sets as soon as map addition is provided. The resulting notion is called semibiproduct. For example, every group extension (with a specified section map) can be identified with a semibiproduct of groups. In particular every split extension of groups is a semibiproduct. Similarly, every Schreier extension of monoids (with a specified section map) is a semibiproduct but there are other types of semibiproducts of monoids [1]. Surprisingly, in spite of the fact that the category of semigroups is not pointed, semibiproducts of semigroups admit a characterisation in terms of pseudo-actions and factor-systems that generalize the case of groups and monoids.

## References

[1] N. Martins-Ferreira, Semi-biproducts of monoids, `arxiv.org/abs/2109.06278`

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