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Central extensions of crossed modules

A. M. Vieites , Dpto. Matemática Aplicada. E.T.S.I. Industriales. Universidad de Vigo. 36280 Vigo (Pontevedra). Spain (avieites@dma.uvigo.es).
J.M. Casas*, Dpto. Matemática Aplicada. E.U.I.T. Forestales. Universidadde Vigo. 36005 Pontevedra. Spain (jmcasas@uvigo.es).

ABSTRACT

The goal of the poster is to find the classification of central extensions of crossed modules by its second homology group. We recopile some homology and cohomology definitions and results: in [3] two homological invariants for a crossed module are introduced and, associated to an extension of crossed modules, they derive a five-term exact and natural sequence in integral homology connecting them. They also give a generalized Hopf formula similar to the one obtained by Brown and Ellis [1]. In [4] a generalization, to crossed modules, of the Eilemberg-MacLane cohomology groups is given; moreover, an exact and natural five-term exact sequence related to an extension of crossed modules, which gives rise to a five-term exact sequence in group cohomology in a particular case, is obtained.

From [2] we know cotriple (co)homology theory in crossed modules. This paper also contains a universal coefficient theorem which extends the classical one for cohomology of groups.

The two five-term exact sequences and this last theorem allow us to show up several new propositions involving central extensions which extend the classical ones for central extensions of groups. In our poster, we complete the classification of central extensions of crossed modules and we display the obtained results; moreover, we study some particular questions when the involving crossed modules are perfect.

References

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Contact Address: `jmcasas@uvigo.es`