(WEAKLY) PROTOMODULAR OBJECTS IN UNITAL CATEGORIES

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Abstract. We recall a purely categorical characterisation of groups amongst monoids which was obtained by considering a local (or object-wise) version of protomodularity. This led to the notion of *protomodular object* in a (not necessarily protomodular) category. Groups are precisely the protomodular objects in Mon, the category of monoids [2]. It was later shown in [1] that groups are also the *weakly protomodular objects* (a weaker notion than that of protomodular object) in Mon. The coincidence of weakly protomodular and protomodular objects in Mon is not a unique case. Indeed, there are other unital categories, besides Mon, where this coincidence holds. In this talk we compare the concepts of protomodular and weakly protomodular objects within the context of unital categories and show that these two notions are generally distinct.

References

[1] X. García-Martínez, *A new characterisation of groups amongst monoids*, Appl. Categ. Structures **25** (2017), no. 4, 659–661.

[2] A. Montoli, D. Rodelo, and T. Van der Linden, *Two characterisations of groups amongst monoids*, J. Pure Appl. Algebra **222** (2018), 747–777.

* Joint work with Xabier García-Martínez, Andrea Montoli, Tim Van der Linden