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Remarks on 2-star-permutability in regular multi-pointed categories

2-star-permutable categories were introduced in a joint work with Z. Janelidze and A. Ursini [1] as a common generalisation of regular Mal'tsev categories and normal subtractive categories. In the present article we first characterise these categories in terms of what we call star-regular pushouts. We then show that the 3×3 Lemma characterising normal subtractive categories [3] and the Cuboid Lemma characterising regular Mal'tsev categories [2] are special instances of a more general homological lemma for star-exact sequences. We show that 2-star-permutability is equivalent to the validity of this lemma for a star-regular category.

This is joint work with Marino Gran.

REFERENCES

[1] M. Gran, Z. Janelidze, D. Rodelo, and A. Ursini, *Symmetry of regular diamonds, the Goursat property, and subtractivity*, Theory Appl. Categ. 27 (2012) 80-96.

[2] M. Gran and D. Rodelo, *The Cuboid Lemma and Mal'tsev categories*, Preprint (2012), accepted for publication in Applied Categorical Structures.

[3] Z. Janelidze, *The pointed subobject functor, 3×3 lemmas and subtractivity of spans*, Theory Appl. Categ. 23 (2010) 221-242.