

James Gray

Normalizers, centralizers and action accessibility

We recall the definition of action accessibility in the sense of D. Bourn and G. Janelidze from [2]. As proved in [1], for pointed exact protomodular categories the existence of normalizers implies action accessibility. We will prove that for each normal monomorphism $\kappa : X \rightarrow A$ the normalizer of $\langle \kappa, \kappa \rangle : X \rightarrow A \times A$ exists. We will explain how the existence of these normalizers is equivalent to the existence of non-symmetric centralizers of [3]. We will show that a pointed exact protomodular category with coequalizers is action accessible if centralizers of normal monomorphisms exist, and the normality of unions holds. The above results appear in [4].

References:

- [1] D. Bourn and J. R. A. Gray, Normalizers and split extensions, *Applied categorical structures*, available online DOI 10.1007/s10485-014-9382-7, 2014.
- [2] D. Bourn and G. Janelidze, Centralizers in action accessible categories, *Cahiers de Topologie et Geometrie Differentielles Categoriqes* 50 (3), 211-232, 2009.
- [3] A. Cigoli and S. Mantovani, Action accessibility via centralizers, *Journal of Pure and Applied Algebra* 216 (8-9), 1852-1865, 2012.
- [4] J. R. A. Gray, Normalizers, Centralizers and action accessibility, *Theory and Applications of Categories* 30 (12), 410-432, 2015.