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Closure operators in the category of quandles

The purpose of this talk is to present some recent results concerning the adjunction between the category of quandles and its full subcategory of trivial quandles. The first point will be to show that this adjunction is admissible [3] in the sense of categorical Galois theory thanks to a result about the permutability of certain congruences in the category of quandles [5]. An algebraic description of the trivial extensions and central extensions [6] will also be given, these latter turning out to be the quandle coverings investigated in [2]. Then we will turn to closure operators for subobjects in the category of quandles, we will show that the regular closure operator and the pullback closure operator both corresponding to the reflector of the previous adjunction coincide [4], and give an algebraic description of this closure operator. Finally, we will show that the category of connected quandles is a connectedness in the sense of Arhangel'skiĭ and Wiegandt [1] corresponding to the category of trivial quandles.

This talk is based on joint work with Marino Gran.

References:

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[4] V. Even, M. Gran, Closure operators in the category of quandles, preprint available at *arXiv:1412.8626* [math.CT] (2014).

[5] V. Even, M. Gran, On factorization systems for surjective quandle homomorphisms, *J. Knot Theory Ramifications*, 23, 11, 1450060 (2014).

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