Artur Barkhudaryan

A note on coclones of topological spaces

Comment.Math.Univ.Carolin. 52,3 (2011) 403 –416.

Abstract: The clone of a topological space is known to have a strictly more expressive first-order language than that of the monoid of continuous self-maps. The current paper studies coclones of topological spaces (i.e. clones in the category dual to that of topological spaces and continuous maps) and proves that, in contrast to clones, the first-order properties of coclones cannot express anything more than those of the monoid, except for the case of discrete and indiscrete spaces.

Keywords: clone, coclone, monoid of continuous self-maps, clone theory, monoid theory
AMS Subject Classification: 54H15, 08A68

References

[1] Barkhudaryan A., Sichler J., Trnková V., *The clone of a topological space: an inspiring book by Walter Taylor*, Algebra Universalis **55** (2006), 319–344.
[2] Birkhoff G., Lipson J.D., *Heterogeneous algebras*, J. Combin. Theory **8** (1970), 115–153.
[3] Cook H., *Continua which admit only the identity mapping onto non-degenerate sub-continua*, Fund. Math. **60** (1967), 241–249.
[4] Hall P., *Some word problems*, J. London Math. Soc. **33** (1958), 482–496.
[5] Herrlich H., *On the concept of reflections in general topology*, in Proc. Symp. on Extension Theory of Topological Structures, Berlin, 1967, pp. 105–114.
[6] Herrlich H., *Topologische Reflexionen und Coreflexionen*, Lecture Notes in Mathematics, 78, Springer, Berlin, 1968.
[7] Lawvere F.W., *Functorial semantics of algebraic theories*, Proc. Nat. Acad. Sci. USA **50** (1963), 869–872.
[8] Lawvere F.W., *Some algebraic problems in context of functorial semantics of algebraic theories*, Lecture Notes in Mathematics, 61, Springer, Berlin, 1968, pp. 41–46.
[9] Magill K.D., Jr., *A survey of semigroups of continuous selfmaps*, Semigroup Forum **11** (1975/1976), 189–282.
[10] Sichler J., Trnková V., *On elementary equivalence and isomorphism of clone segments*, Period. Math. Hung. **32** (1996), 113–128.
[11] Taylor W., *The Clone of a Topological Space*, Research and Exposition in Mathematics, 13, Heldermann, Berlin, 1986.