

# Partial actions in semigroup theory

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## Abstract

The talk will survey various aspects of partial actions of groups, monoids and semigroups, with the emphasis on the constructions of globalization and expansion of partial actions and their applications. I will explain how partial actions arise naturally in the theories of inverse and restriction semigroups. For example, the famous McAlister structure theorem for  $E$ -unitary inverse semigroups can be elegantly stated using partial actions and admits a natural extension to more general objects, called restriction semigroups. I will present results obtained over years by several authors mainly focusing on the works [1, 2, 3, 4, 5, 6].

## References

- [1] C. Cornock, V. Gould, Proper two-sided restriction semigroups and partial actions, *J. Pure Appl. Algebra* **216** (2012), 935–949.
- [2] M. Dokuchaev, M. Khrypchenko, G. Kudryavtseva, Partial actions and proper extensions of two-sided restriction semigroups, *J. Pure Appl. Algebra* **225** (2021) (9), paper no. 106649, 30 pp.
- [3] J. Kellendonk, M. V. Lawson, Partial actions of groups, *Internat. J. Algebra Comput.* **14** (2004) (1), 87–114.
- [4] G. Kudryavtseva, Partial monoid actions and a class of restriction semigroups, *J. Algebra* **429** (2015), 342–370.
- [5] G. Kudryavtseva, Two-sided expansions of monoids, *Internat. J. Algebra Comput.* **29** (2019) (8), 1467–1498.
- [6] G. Kudryavtseva, V. Laan, Globalization of partial actions of semigroups, preprint, arXiv:2206.06808.