▸ IOSIF PETRAKIS, DANIEL WESSEL, *Swap algebras and swap rings.*
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Following [1], an equality and an inequality on a set X induce the positive notions of disjoint subsets and of complemented subsets of X. Complemented subsets are easier to handle than plain subsets, as their partial, characteristic functions are constructively defined and their complement, formed by swapping its components, behaves like the classical complement of a subset. Complemented subsets are crucial to the constructive reconstruction of the classical Daniell approach to measure theory. We explain why the pair of notions (complemented subsets, boolean-valued partial functions) is the constructive analogue to the classical pair (subsets, boolean-valued total functions). Following [2, 3], we introduce swap algebras of type (I) and (II) as an abstract version of Bishop's algebras of complemented subsets of type (I) and (II), respectively, and swap rings as an abstract version of the boolean-valued partial functions on a set. We present several results indicating that the theory of swap algebras and swap rings is a generalisation of the theory of boolean algebras and boolean rings.

[1] E. Bishop, D. Bridges, ***Constructive Analysis***, Springer-Verlag, 1985.

[2] I. Petrakis, D. Wessel: Algebras of complemented subsets, in U. Berger et.al. (Eds): ***Revolutions and Revelations in Computability***, LNCS 13359, Springer, 2022, 246–258.

[3] I. Petrakis, D. Wessel: Complemented subsets and boolean-valued, partial functions, submitted to Computability, 2023.