

## SEMILATTICES WITH SECTIONAL MAPPINGS

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### Abstract

We consider join-semilattices with 1 where for every element  $p$  a mapping on the interval  $[p, 1]$  is defined; these mappings are called sectional mappings and such structures are called semilattices with sectional mappings. We assign to every semilattice with sectional mappings a binary operation which enables us to classify the cases where the sectional mappings are involutions and / or antitone mappings. The paper generalizes results of [3] and [4], and there are also some connections to [1].

**Keywords:** semilattice, sectional mapping, antitone mapping, switching mapping, involution.

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#### REFERENCES

- [1] J.C. Abbott, *Semi-Boolean algebras*, Matem. Vestnik **4** (1967), 177–198.
- [2] I. Chajda, G. Eigenthaler and H. Länger, *Congruence Classes in Universal Algebra*, Heldermann Verlag, Lemgo 2003, pp. 217.
- [3] I. Chajda and P. Emanovský, *Bounded lattices with antitone involutions and properties of MV-algebras*, Discussiones Mathem., General Algebra and Appl. **24** (1) (2004), 31–42.
- [4] I. Chajda, R. Halaš and J. Kühr, *Distributive lattices with sectionally antitone involutions*, Acta Sci. Math. (Szeged) **71** (2005), 19–33.

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