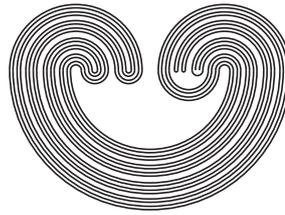


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## COMPLETE TOPOLOGIZED POSETS AND SEMILATTICES

by

TARAS BANAKH AND SERHII BARDYLA

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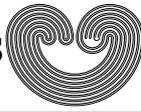
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## COMPLETE TOPOLOGIZED POSETS AND SEMILATTICES

TARAS BANAKH AND SERHII BARDYLA

**ABSTRACT.** In this paper we discuss the notion of completeness of a topologized poset and survey some recent results on closedness properties of complete topologized semilattices.

### 1. INTRODUCTION

In this paper we discuss a notion of completeness for topologized posets and semilattices.

By a *poset* we understand a set  $X$  endowed with a partial order  $\leq$ . A *topologized poset* is a poset endowed with a topology.

A topologized poset  $X$  is defined to be *complete* if each nonempty chain  $C$  in  $X$  has  $\inf C \in \bar{C}$  and  $\sup C \in \bar{C}$ , where  $\bar{C}$  stands for the closure of  $C$  in  $X$ . More details on this definition can be found in Section 2, where we prove that complete topologized posets can be equivalently defined using directed sets instead of chains. In Section 3 we obtain some results on the preservation of completeness by operations over topologized posets.

In Section 4 we study the interplay between complete and chain-compact topologized posets and in Section 5 we study complete topologized semilattices. In Section 6 we survey some known results on the absolute closedness of complete semitopological semilattices and in Section 7 we survey recent results on the closedness of the partial order in (complete) semitopological semilattices.

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