

## On Tarski's Type Theorems for L-Fuzzy Isotone and L-Fuzzy Relatively Isotone Maps on L-Complete Propelattices

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**Abstract :** Recently a new type of very general relational structures, the so called (L-)complete propelattices, was introduced. These significantly generalize complete lattices and completely lattice L-ordered sets, because they do not assume the technically very strong property of transitivity. For these structures also the main part of the original Tarski's fixed point theorem holds for (L-fuzzy) isotone maps, i.e., the part which concerns the existence of fixed points and the structure of their set. In this paper, fundamental properties of (L-)complete propelattices are recalled and the so called L-fuzzy relatively isotone maps are introduced. For these maps it is proved that they also have fixed points in L-complete propelattices, even if their set does not have to be of an awaited analogous structure of a complete propelattice.

**Keywords :** fixed point, L-complete propelattice, L-fuzzy (relatively) isotone map, residuated lattice, transitivity

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