

Poset valued ideals and filters

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Lattice-valued up-sets and down-sets, i.e., isotone and anti-isotone mappings from a poset into a complete lattice are investigated. Cuts of these are semi-filters and semi-ideals. The collection of all lattice-valued up-sets (down-sets) of a poset is a complete lattice under the order inherited from the lattice. Among other results, for a collection of crisp up-sets (down-sets) of a poset, necessary and sufficient conditions are given under which this collection consists of cuts of a lattice valued up-set (down-sets). Some generalizations in the sense of closed fuzzy sets with respect to fuzzy relations will also be presented.

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