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Generalized difference posets and orthoalgebras. (English) Zbl 0922.06002
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Summary: A difference on a poset (P, \leq) is a partial binary operation \ominus on P such that $b \ominus a$ is defined if and only if $a \leq b$ subject to the conditions $a \leq b \Rightarrow b \ominus (b \ominus a) = a$ and $a \leq b \leq c \Rightarrow (c \ominus a) \ominus (c \ominus b) = b \ominus a$. A difference poset (DP) is a bounded poset with a difference. A generalized difference poset (GDP) is a poset with a difference having a smallest element and the property $b \ominus a = c \ominus a \Rightarrow b = c$. We prove that every GDP is an order ideal of a suitable DP, thus extending previous similar results of Janowitz for generalized orthomodular lattices and of Mayet-Ippolito for (weak) generalized orthomodular posets. Various results and examples concerning posets with a difference are included.

MSC:

06A06 Partial orders, general
03G12 Quantum logic
06C15 Complemented lattices, orthocomplemented lattices and posets
08A55 Partial algebras

Cited in **40** Documents

Keywords:

orthomodular posets; order ideal; orthogonality relation; orthomodular group; difference poset; generalized difference poset

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