Referee's report on the thesis
Milan Matoušek:
Algebraic methods in multivalued logics
(Orthocomplemented lattices with a symmetric
difference)

The author studies *orthocomplemented difference lattices*. These are ortholattices (quantum event structures generalizing Boolean algebras and thoroughly studied before) with an additional binary operation $\triangle$ generalizing the symmetric difference. Unlike preceding attempts, this operation is primary and cannot be expressed using other ortholattice operations. It is a surprising fact that the orthomodular law (and also commutativity of the symmetric difference) follow from other axioms. Special attention is given to set-representable orthocomplemented difference lattices. In the final section, the results are extended to more general orthocomplemented difference posets.

Similar topics were studied by many experts, thus the subject is topical. It is motivated by quantum physical phenomena. The approach of the author is new, original, and well accepted in the quantum structures community.

I agree with the form of the thesis as a commented set of papers. Most of them were accepted in high-level international journals, which proves the importance of the author's contribution. Nevertheless, the introduction could have been more detailed, including at least the basic definitions of an orthocomplemented and orthomodular lattice.

The results are new and significant and fulfill the requirements for a PhD thesis. I have only the following objections[1]:

The main title "Algebraic methods in multivalued logics" is misleading -- the thesis does not deal with multivalued logic.

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[1]The following numbering of pages is used:
P. thesis_page_no (paper_no/paper_page_no)[, l line_no].