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Quantum MV algebras. (English) Zbl 0854.03057

Stud. Log. 56, No. 3, 393-417 (1996).

The infinite-valued logic L_∞ (Lukasiewicz logic) was introduced as a generalization of classical logic. *C. C. Chang* [Trans. Am. Math. Soc. 88, 467-490 (1958; Zbl 0084.00704)] introduced MV algebras in order to provide an algebraic proof of its completeness theorem. Just as MV algebras stand for nonidempotent extensions of Boolean algebras, quantum MV algebras, proposed in this paper, stand for nonidempotent extensions of orthomodular lattices. While every MV algebra is representable as a subdirect product of totally ordered MV algebras, the author shows that there exist quantum MV algebras that can not be represented as subdirect products of quasilinear quantum MV algebras. The paper ends with some open problems.

Reviewer: Hirokazu Nishimura (Tsukuba)

MSC:

03G12 Quantum logic
06D30 De Morgan algebras, Łukasiewicz algebras (lattice-theoretic aspects)

Cited in **2** Reviews
Cited in **12** Documents

Keywords:

quantum MV algebras; nonidempotent extensions of orthomodular lattices; subdirect products

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