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Countable chains of distributive lattices as maximal semilattice quotients of positive cones of dimension groups

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Abstract: We construct a countable chain of Boolean semilattices, with all inclusion maps preserving the join and the bounds, whose union cannot be represented as the maximal semilattice quotient of the positive cone of any dimension group. We also construct a similar example with a countable chain of strongly distributive bounded semilattices. This solves a problem of F. Wehrung.

Keywords: semilattice, lattice, distributive, dimension group, direct limit

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