Medians of Seven Element Lattices

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Let L be a lattice of n elements. A monotone function $\phi : L^3 \to L$ is called a median of L if it is a majority function, that is, $f(l,l,k) = f(l,k,l) = f(k,l,l) = l$ for any elements $l, k \in L$. If a median is a lattice term (in other words, it can be expressed by the lattice operations $\wedge$ and $\vee$) then we call it an inner median, otherwise it is an outer median. The inner medians form a lattice denoted by $InnMedL$ and all the medians also form a lattice, denoted by $OutMedL$.

The outer and inner median lattices of L are closely connected to the equational theory of L, particularly the symmetric part of that theory. It also adds to the theory of free lattices.

In this talk we will describe the inner median lattice of all 7-elements lattices, and give an overview on the sized of the outer median lattices.

[1] G. Gyenizse, On the symmetric parts of finitely generated free lattices, *Acta Mathematica Hungarica*, **169(2)** (2003), 420–431.