Bounded lattices edit

Abbreviation: BLat

Definition 1. A *bounded lattice* is a structure $\mathbf{L} = \langle L, \vee, 0, \wedge, 1\rangle$ such that

$\langle L, \vee, \wedge\rangle$ is a lattice

0 is the least element: $0 \leq x$

1 is the greatest element: $x \leq 1$

Morphisms. Let $\mathbf{L}$ and $\mathbf{M}$ be bounded lattices. A morphism from $\mathbf{L}$ to $\mathbf{M}$ is a function $h : L \to M$ that is a homomorphism:

$h(x \vee y) = h(x) \vee h(y)$, $h(x \wedge y) = h(x) \wedge h(y)$, $h(0) = 0$, $h(1) = 1$

Basic Results.

Examples.

1.

Properties. (description)

Classtype	variety
Equational theory	decidable
Quasiequational theory	decidable
First-order theory	undecidable
Congruence distributive	yes
Congruence modular	yes
Congruence n-permutable	no
Congruence regular	no
Congruence uniform	no
Congruence extension property	no
Definable principal congruences	no
Equationally def. pr. cong.	no
Amalgamation property	yes
Strong amalgamation property	yes
Epimorphisms are surjective	yes
Locally finite	no
Residual size	unbounded

Finite Members. $f(n)$ = number of members of size n.

$f(1) =$	1	$f(6) =$	15	$f(11) =$	37622	$f(16) =$	1471613387
$f(2) =$	1	$f(7) =$	53	$f(12) =$	262776	$f(17) =$	15150569446
$f(3) =$	1	$f(8) =$	222	$f(13) =$	2018305	$f(18) =$	165269824761
$f(4) =$	2	$f(9) =$	1078	$f(14) =$	16873364	$f(19) =$	
$f(5) =$	5	$f(10) =$	5994	$f(15) =$	152233518	$f(20) =$	

[1]

Subclasses.

Bounded modular lattices

Complete lattices

Superclasses.

Lattices

References

[1] Jobst Heitzig and Jürgen Reinhold, *Counting finite lattices*, Algebra Universalis, **48**, 2002, 43–53 MRreview