On the lattice of clones of incompletely specified operations

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Operations with not specified values for some elements of domain are called incompletely specified operations. They can be defined in the same way as partial operations, while their composition differs. For example, in case of incompletely specified operations, we have that $\mathtt{AND}(g(x), 0) = 0$ even if g is unspecified for an input value x. We introduce definition of composition of such operations and corresponding clones. The set of all clones of incompletely specified operations on A, ordered by set inclusion, is an algebraic lattice. For $|A| = 2$ the lattice is isomorphic to the lattice of hyperclones, with cardinality of the continuum, 9 coatoms and 13 atoms. We present several properties of the lattice: a Galois connection between sets of incompletely specified operations on A and sets of relations on $A \cup \{k\}$, coatoms determined by Rosenberg's relations and some atoms on a three-element set. This is a joint work with Jovanka Pantović and Hajime Machida.

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