

ON COVARIETY LATTICES

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Abstract

This paper shows basic properties of covariety lattices. Such lattices are shown to be infinitely distributive. The covariety lattice $L_{CV}(\mathbf{K})$ of subcovarieties of a covariety \mathbf{K} of F -coalgebras, where $F : \mathbf{Set} \rightarrow \mathbf{Set}$ preserves arbitrary intersections is isomorphic to the lattice of subcoalgebras of a \mathcal{P}_κ -coalgebra for some cardinal κ . A full description of the covariety lattice of $\mathcal{I}d$ -coalgebras is given. For any topology τ there exist a bounded functor $F : \mathbf{Set} \rightarrow \mathbf{Set}$ and a covariety \mathbf{K} of F -coalgebras, such that $L_{CV}(\mathbf{K})$ is isomorphic to the lattice (τ, \cup, \cap) of open sets of τ .

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