

An Intersection Property of Subalgebras in Congruence Distributive Varieties

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Call a subpower \mathbf{B} of the algebra \mathbf{A} k -complete if the projection of B onto every set of k coordinates equals A^k . It turns out that if \mathbf{A} is finite and generates a congruence distributive variety then for any integer $n > 0$, the intersection of all 2-complete subalgebras of \mathbf{A}^n is non-empty. If, on the other hand, \mathbf{A} is idempotent and the variety generated by \mathbf{A} fails to omit either of the unary or affine types from tame congruence theory then this intersection property fails in the variety.

We will relate this intersection property to the Constraint Satisfaction Problem and in particular to the notions of bounded width associated with constraint languages.