

S -preclones and the Galois connection ${}^S\text{Pol} - {}^S\text{Inv}$

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We consider so-called S -operations $f : A^n \rightarrow A$ for which each variable gets a *signum* $s \in S$ representing “properties” like, e.g., order preserving or order reversing with respect to a partial order on A . The set S of such properties has the structure of a monoid reflecting the behaviour of composition of S -operations (e.g., order reversing composed with order reversing is order preserving). The collection of all operations with prescribed properties for their signed variables is not a clone (since it is not closed under arbitrary identification of variables), but it is a preclone with special properties what leads to the notion of S -preclone. We introduce S -relations $\varrho = (\varrho_s)_{s \in S}$, S -relational clones and a preservation property $(f \overset{S}{\triangleright} \varrho)$, and consider the induced Galois connection ${}^S\text{Pol} - {}^S\text{Inv}$. The S -preclones and S -relational clones turn out to be just the Galois closures.

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