On operators in universal algebra and related structures

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We will consider classes of algebras of the same type and operators on such classes. Given a class $\mathcal{K}$ of algebras we let $I(\mathcal{K})$ and $H(\mathcal{K})$ denote the classes of all isomorphic images and homomorphic images of algebras in $\mathcal{K}$ respectively. Let $S(\mathcal{K})$, $P(\mathcal{K})$, $P_s(\mathcal{K})$, $P_u(\mathcal{K})$, $P_f(\mathcal{K})$, $R(\mathcal{K})$ denote the class of all algebras isomorphic to subalgebras, direct products, subdirect products, ultraproducts, filtered products and retracts of algebras in $\mathcal{K}$ respectively. To the set of operators $\Sigma = \{I, R, H, S, P, P_s, P_u, P_f\}$ we can associate a different partially ordered semigroups (actually, monoids) in a natural way. A well known result of this kind due to Pigozzi appears in 1972. He describes the po-monoid $\mathcal{M} = \langle \tau \rangle$ where $\tau = \{H, S, P\}$. $\mathcal{M}$ has eighteen elements and the corresponding partial order is given by Figure below. The aim of this talk is to present known results of this kind. Partially ordered monoids generated by the folowing subsets of Σ: $\theta = \{H, S, P, P_s\}$, $\varphi = \{R, H, S, P\}$, $\tau = \{H, S, P, P_f\}$, $\psi = \{H, S, P_u\}$, $\rho = \{H, S, P_f\}$, and other will be disscussed.