

On semigroups of orientation-preserving partial permutations with restricted range

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Abstract. Let Ω_n be a finite chain with n elements ($n \in \mathbb{N}$), and let $\mathcal{POPI}_n$ be the semigroup of all injective orientation-preserving partial transformations of Ω_n . In this paper, for any nonempty subset Y of Ω_n , we consider the subsemigroup $\mathcal{POPI}_n(Y)$ of $\mathcal{POPI}_n$ of all transformations with range contained in Y . We study the regularity and describe Green's relations and extended Green's relations of $\mathcal{POPI}_n(Y)$. Moreover, we calculate the rank of $\mathcal{POPI}_n(Y)$ and determine when two semigroups of this type are isomorphic.

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