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POINTED PRINCIPALLY ORDERED REGULAR SEMIGROUPS

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Abstract

An ordered semigroup S is said to be *principally ordered* if, for every $x \in S$ there exists $x^\star = \max\{y \in S \mid xyx \leqslant x\}$. Here we investigate those principally ordered regular semigroups that are *pointed* in the sense that the classes modulo Green's relations $\mathcal{L}$, $\mathcal{R}$, $\mathcal{D}$ have biggest elements which are idempotent. Such a semigroup is necessarily a semiband. In particular we describe the subalgebra of $(S;^\star)$ generated by a pair of comparable idempotents that are $\mathcal{D}$-related. We also prove that those $\mathcal{D}$-classes which are subsemigroups are ordered rectangular bands.

Keywords: regular semigroup, principally ordered, naturally ordered, Green's relations.

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