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Title: Two generalisations of the symmetric inverse semigroups

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We study two generalisations of the full inverse symmetric semigroup \mathcal{I}_X and its dual semigroup \mathcal{I}_X^* – inverse semigroups \mathcal{PT}_X^* and $\overline{\mathcal{PT}_X^*}$. Both of them have the same carrier and contain \mathcal{I}_X . Binary operations on \mathcal{PT}_X^* and $\overline{\mathcal{PT}_X^*}$ are reminiscent of the multiplication in \mathcal{I}_X . We use a convenient geometric way to realise elements from these two semigroups. This enables us to study efficiently their inner properties and to compare them with the corresponding properties of \mathcal{I}_X and \mathcal{I}_X^* .

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