Session: Conjugation in Semigroups

Natural semigroup conjugacy and the partition monoid

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The conjugacy relation plays an important role in group theory. If a and b are elements of a group G, a is conjugate to b if $g^{-1}ag = b$ for some $g \in G$. The group conjugacy extends to inverse semigroups in a natural way: for a and b in an inverse semigroup S, a is conjugate to b if $g^{-1}ag = b$ and $gbg^{-1} = a$ for some $g \in S$. Konieczny [1] has recently defined a conjugacy for an arbitrary semigroup S that reduces to the inverse semigroup conjugacy if S is an inverse semigroup, and is included in all existing semigroup conjugacies. We will call it the *natural conjugacy* for semigroups, and denote it by $\sim_{\mathrm{n}}$.

In this talk, we will introduce $\sim_{\mathrm{n}}$ and characterize it in the finite partition monoids.

This is joint work with João Araújo (Universidade Nova), Michael Kinyon (University of Denver), Janusz Konieczny (University of Mary Washington), António Malheiro (Universidade Nova), and Valentin Mercier (Universidade Nova).

References

[1] Konieczny, J., *A new definition of conjugacy for semigroups*, J. Algebra and Appl. **17**, 1850032, 20 pp. (2018).