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The universal locally constant covering of an inverse semigroup

We examine an inverse semigroup in terms of the universal locally constant covering of its classifying topos. In particular, we prove that the fundamental group of this topos coincides with the maximum group image of the inverse semigroup. We characterize E-unitary inverse semigroups in terms of a kind of geometric morphism called a spread, characterize F-inverse semigroups, and interpret McAlister's P-theorem, which characterizes every E-unitary inverse semigroup as a kind of semidirect product of group with a poset, in terms of the universal covering morphism.

This is joint work with Ben Steinberg.