

INVERSE MONOIDS AND IMMERSIONS OF 2-COMPLEXES

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It is well known that under mild conditions on a connected topological space \mathcal{X} , connected covers of \mathcal{X} may be classified via conjugacy classes of subgroups of the fundamental group of \mathcal{X} . In [1], we extend these results to the study of *immersions* into 2-dimensional *CW*-complexes. An immersion $f : \mathcal{D} \rightarrow \mathcal{C}$ between *CW*-complexes is a cellular map such that each point $y \in \mathcal{D}$ has a neighborhood U that is mapped homeomorphically onto $f(U)$ by f . In order to classify immersions into a 2-dimensional *CW*-complex \mathcal{C} , we need to replace the fundamental group of \mathcal{C} by an appropriate inverse monoid. We show how conjugacy classes of the closed inverse submonoids of this inverse monoid may be used to classify connected immersions into the complex. We also give a process to construct the 2-complex corresponding to a given conjugacy class given by its generators. We prove that when it is finitely generated, the process ends after a finite number of steps.

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- [1] J. MEAKIN, N. SZAKACS, Inverse monoids and immersions of 2-complexes, submitted for publication, arXiv:1401.2621.