

# Realizability problem for finite groups

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In this talk, we state a theorem about realizability of groups using topological spaces. Namely, every finite group can be realized as the group of autohomeomorphisms and the group of homotopy classes of self-homotopy equivalences of infinite non-homotopy-equivalent finite topological spaces ([1]). The starting point to prove this result relies on the construction made in ([2]), where it was proved that every finite group  $G$  can be realized as the group of autohomeomorphisms of a finite  $T_0$  topological space. The idea is to modify that construction in order to make it minimal without changing the group of autohomeomorphisms and then apply some classical results about finite spaces ([3]).

## References

- [1] P.J. Chocano, M.A. Morón and F. R. Ruiz del Portal, ‘Topological realizations of groups in Alexandroff spaces,’ *In preparation*.
- [2] J.A. Barmak. and E.G. Minian, ‘Automorphism groups of finite posets’, *Discrete Math.* Vol 309, Issue 10, 3424–3426, 2009.
- [3] R.E. Stong, ‘Finite topological spaces’, *Trans. Amer. Math. Soc.* 123, pp. 325–340, 1966.