Group actions on categories and related equivariant categories

Alexander Barvels

I will tell you how a group G can act on a monoidal category $\mathcal{C}$. This is in some way similar to a group acting on a vector space.

After we know what a group action on a monoidal category is, we can define the notion of G-equivariant category. These categories can be used to construct invariants of homotopy classes of maps $f : M \to X$ where M is a $3d$ manifold and X an Eilenberg-MacLane space $K(G, 1)$.

I will describe a method to define a G-equivariant category $Z_G(\mathcal{C})$ starting from an action of G on $\mathcal{C}$.