

Periodicity in Equivariant Surgery

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For topological manifolds, the classical equivariant surgery theory has the four-fold periodicity: $\mathcal{S}(M) = \mathcal{S}(M \times D^4)$. Numerous attempts have been made to extend such periodicity to the equivariant setting, where the disk D^4 was replaced with a suitable representation that is still four-fold in some sense. Such extensions are useful for studying certain equivariant problems, to some of which Prof Illman has made contributions.

For homotopically stratified equivariant topological manifolds acted by compact Lie groups, we have conjectured the periodicity for the case D^4 is replaced by twice of any complex representation. Several special cases (for example, when the group is abelian) have been proved in the last ten years. Now we are able to prove the conjecture in general. In fact, we are able to prove the periodicity for twice of any complex vector bundle.