Existence of almost complex substructures on spheres equivariant under finite group actions

Turgut Önder
Department of Mathematics, Middle East Technical University, Türkiye
onder@metu.edu.tr

Let G be a finite group and M be a unitary representation space of G. The action induces an action on the tangent bundle $T(S(M))$ of the unit sphere of the underlying real G-representation. Under this action $T(S(M))$ is a G-vector bundle. The sufficient and necessary conditions for the existence of orthogonal splittings of $T(S(M))$ into two G-invariant subbundles one of which admitting a G-equivariant complex structure were investigated in earlier papers ([2], [3]), and a complete solution of the non-equivariant version of the problem was given in 1976 ([1]). In the talk, a brief overview of these earlier results will be given and more recent results will be presented.

References

[1] İ. Dibağ, *Almost-complex substructures on the sphere*, Proc. Amer. Math. Soc., **51** (1976) 361–366.

[2] T. Önder, *Equivariant frame fields spheres with complementary equivariant complex structures*, Manuscripta Math., **86** (1995) 393–407.

[3] T. Önder, *Equivariant cross sections of complex Stiefel Manifolds*, Topology and its Applications, **109** (2001) 107–125.