THE FIXED POINT SETS OF GROUP ACTIONS ON MANIFOLDS

Krzysztof Pawałowski
UAM Poznań Poland

For a finite group G, we focus on smooth actions of G on Euclidean spaces, disks, and spheres, to survey results which describe necessary and sufficient conditions for a smooth manifold F to occur as the fixed point set. We also discuss methods such as thickening, surgery, and vector bundle extension, which are used to obtain related results. Finally, we mention the situations where we do not know the complete description of the fixed point set F.

The topic that we have chosen is a central one in transformation groups. Its central role follows from the fact that Euclidean spaces, disks, and spheres are manifolds which admit natural, linear actions of G, and as the manifolds have high degree of symmetry, they do admit also a lot of smooth nonlinear actions of G with pleanty of possibilities for the fixed point set F.