Equivariant Gysin maps and pulling back fixed points

Bernhard Hanke

This is joint work with V. Puppe. We develop a new approach to the following 'Pulling back fixed points' theorem of W. Browder (Inv. Math. 1987):

Let G be a finite abelian p-group, where p is odd (or $p = 2$ and some additional assumptions are fulfilled). Let M be an oriented smooth G-manifold and let N be an oriented PL G-manifold. Assume that M and N are without boundary and have the same dimension. Let $f : M \to N$ be a continuous proper G-equivariant map. Then, if the degree of f is not divisible by p, the induced map of fixed point sets $f^G : M^G \to N^G$ is surjective.

Browder asks at the end of his paper, if his result could not be generalized and in particular, if the differentiability assumption on the action on M could not be weakened (as it is the case, by classical Smith theory, if G is elementary abelian). We approach this question by use of the Atiyah-Segal-tom Dieck localization theorem applied to generalized equivariant cohomology theories. Using K-theory in combination with Sullivan's K-theory orientation of topological bordism, this leads to a version of Browder's theorem for continuous actions on M and N in the case that G is a finite cyclic p-group.