FIXED POINTS OF G-CW-COMPLEX WITH PRESCRIBED HOMOTOPY TYPE

Sylvain Cappell
Courant Institute of Mathematical Sciences, New York University

For a finite group G of not prime power order, Oliver showed that the obstruction for a finite CW-complex F to be the fixed point set of a contractible finite G-CW complex depends upon the Euler characteristic $\chi(F)$. We show that the similar problem for F to be the fixed point set of a finite G-CW complex of some given homotopy type still depends upon the Euler characteristic. For simply-connected homotopy types, this was known using different methods from joint work of Oliver and Petrie. We also give additional information on the obstruction in terms of the whole and the individual connected components of the fixed point set.

This is one of a pair of current works on fixed points of finite transformation groups of the speaker with Shmuel Weinberger of the U. of Chicago and Min Yan of Hong Kong U. of Science and Tech; the other work treats, with different methods and contrasting results, fixed points of semi-free actions in non-simply connected settings.