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EQUIVARIANT HOMOTOPY THEORY

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In this note we announce an *obstruction theory* for extending (continuous) equivariant maps defined on a certain class of G-spaces, where G is a compact Lie group. The details of this work will be published elsewhere. Our results barely touch upon the attendant problem of providing techniques that would serve in practice for the computation of the obstruction groups. In general this last problem presents considerably greater difficulties than in the case of a finite group G, which has been treated fairly exhaustively in **[1]**. The author expresses his deep gratitude to Professor Glen E. Bredon in consultation with whom these results were obtained.

Let G be a compact Lie group. If H is a closed subgroup of G, a closed *G-stem* of type (H) and equivariant dimension n is defined to be a G-space which is equivariantly homeomorphic to $B^n \times G/H$, where B^n is the standard n-cell, G/H is the homogeneous G-space consisting of the left cosets of H in G, and the action of G is the product of the trivial action on B^n and the usual action on G/H. A Hausdorff G-space K is said to be a *G-complex* if it is filtered by an ascending sequence of closed invariant subspaces K^n, whose union is K, such that $K^{-1} = \varnothing$ and, for each n, K^n is obtained from K^{n-1} by attaching any number of n-stems by equivariant maps defined on the boundaries $S^{n-1} \times G/H$ of the standard n-stems $B^n \times G/H$. A G-complex K is also required to have the topology coherent with the sequence of subspaces K^n. The least integer n such that $K^n = K$ is called the *equivariant dimension* of K and is denoted by $\dim_G K$. The class of G-complexes is the analogue in the equivariant category of CW-complexes in the topological category. (See [3] for the definition and some of the properties of a CW-complex.) When G is a finite group G-complexes have been defined by Bredon in **[1]**. Our notion is derived from his and we extend his techniques to the more general case.

Matumoto has defined in [2] what he calls a G-CW-complex. His definition is equivalent to that of a G-complex K whose orbit space K/G is a locally finite CW-complex. He has also indicated in [2] a proof of the important result that a differentiable G-manifold is a G-CW-complex

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