

Existence and extension of actions of Lie groups on some spaces

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Given G a topological group, H a subgroup of G and X a topological space, finding conditions for the existence of free actions of H on X is a classic problem associated with these elements. Furthermore, we can ask about the possibility of the existence of an extension of a certain action of H on X to an action of G on X , which preserves certain properties of the original one. In this lecture we intend to present some obtained results, related to this type of problem, considering some particular classes of compact Lie groups and some finitistic spaces, by using spectral sequences and elements of equivariant cohomology as main tools.