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In the early 1980's, Dress and Kuku, and Fiedorowicz, Hauschild and May introduced space level equivariant versions of the plus and Q constructions in algebraic K-theory. However, back then, the methods did not allow for nontrivial group action on the input ring or category. We generalize these definitions to the case in which a finite group G acts nontrivially on a ring (or an exact or Waldhausen category) and we show how to construct a genuine equivariant K-theory spectrum with good properties from a G -ring. An example of interest is that of a Galois extension.

The equivariant constructions rely on finding categorical models for classifying spaces of equivariant bundles (a joint project with Guillou and May) and the use of equivariant infinite loop space machines such as the one developed by Guillou and May, or the equivariant version of Segal's machine. The comparison of these machines, which will allow their interchangeable use in algebraic K-theory constructions, is a joint project with May and Osorno. New ideas are needed since, among other things, the comparison theorem of May and Thomason fails equivariantly. (Received September 17, 2013)