Equivariant K-theory of Real Representation Spaces

of Compact Lie Groups

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Let G be a compact Lie group and $V \cong \mathbb{R}^n$ a representation of G. The group $K_G^*(V)$ is part of the coefficient system of the equivariant cohomology functor $K_G^*(\ )$, but not much is known about them. We compute $K_G^*(V)$, the equivariant complex K-theory of V, as an R(G) module, for any real representation V of any compact connected Lie group G. The result is surprisingly simple.