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*Equivariant K-theory of the based loop group of  $SU(2)$*

(Joint work with Megumi Harada and Paul Selick)

Let  $G$  be a compact Lie group. The loop group  $\Omega G$  is the set of maps from  $S^1$  to  $G$ . The based loop group (those loops which send the basepoint of  $S^1$  to the identity element of  $G$ ) is an infinite-dimensional analogue of a coadjoint orbit of a compact Lie group. It is equipped with a natural  $G$  action (pointwise conjugation) and a circle action (rotation of the loop); these two actions commute. Its cohomology, K-theory and equivariant cohomology (under the  $G$  action) have been studied since the work of Bott in the 1940's, but its equivariant K-theory has not been studied until recently. I describe our recent results, which compute the equivariant  $K$ -theory of the based loop group of  $SU(2)$  (both as a module and as an algebra).