P-04

Integral free loop cohomology of complete flag manifolds

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A complete flag manifold is the quotient of a Lie group by its maximal torus and is one of the nicer examples of homogeneous spaces. Related objects are studied in different areas of mathematics and mathematical physics. In topology, the study of free loop spaces on manifolds has two folded motivation. First there is a relation between geometrically distinct periodic geodesics on a manifold and their free loop spaces, originally studied by Gromoll and Meyer in their 1969 paper. More recently the study of string topology, in particular the Chas-Sullivan loop product, has been an active area of research with connection to interesting areas in algebraic topology including topological quantum field theory, operads and topological cyclic homology. In this talk I will discuss my work on the cohomology of the free loop space of complete flag manifolds. I will explain my results in the case of the special unitary group $SU(n)$, as this is complicated enough case to illustrate the main ideas but at the same time technically the simplest one.