Chiral Equivariant Cohomology

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Abstract

I will discuss a new cohomology theory that extends H. Cartan's cohomology theory of G^* algebras. The latter is an algebraic abstraction of the topological equivariant cohomology theory for G-spaces, where G is a compact Lie group. Cartan's theory, discovered in the 50s and further developed by others in the 90s, gave a de Rham model for the topological equivariant cohomology, the same way ordinary de Rham theory does for singular cohomology in a geometric setting. The chiral equivariant cohomology takes values in a vertex algebra and includes Cartan's cohomology as a subalgebra. I will give a brief introduction to vertex algebras, and then discuss the construction of the new cohomology and some of the basic results and examples. This is a joint work with Bong Lian and Bailin Song.