

Abstract

Supermanifolds are known to admit both differential forms and integral forms, thus any appropriate super analogue of the de Rham theory should take both types of forms into account. However, the cohomology of Lie superalgebras studied so far in the literature involves only differential forms when interpreted as a de Rham theory for Lie supergroups. Thus a new cohomology theory of Lie superalgebras is needed to fully incorporate differential-integral forms, and we investigate such a theory here. This new cohomology is defined by a BRST complex of Lie superalgebra modules, and includes the standard Lie superalgebra cohomology as a special case. General properties expected of a cohomology theory are established for the new cohomology, and examples of the new cohomology groups are computed. This is a joint work with R.B. Zhang.