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The Atiyah Extension of a Lie Algebra Deformation

We construct an analogue of the ‘Atiyah Class’, or ‘Atiyah Extension’ in the context of deformation theory of sheaves of Lie algebras. Given a (suitable) sheaf \mathfrak{g} of Lie algebras on a space X , and a \mathfrak{g} -deformation ϕ over a formally smooth base, our Atiyah Extension is a Lie algebra extension of the algebra of base vector fields by the ϕ -twist of \mathfrak{g} . It comes equipped with a representation of the ϕ -twist on any (admissible) \mathfrak{g} -module.

Keywords: Sheaf of Lie algebras, deformation, Atiyah class, extension of Lie algebras.

MSC: 32G99; 17B55, 14D14