

Rigidity of some classes of Lie algebras in connection to Leibniz algebras

ABSTRACT

In this paper we focus on algebraic aspects of contractions of Lie and Leibniz algebras. The rigidity of algebras plays an important role in the study of their varieties. The rigid algebras generate the irreducible components of this variety. We deal with Leibniz algebras which are generalizations of Lie algebras. In Lie algebras case, there are different kind of rigidities (rigidity, absolutely rigidity, geometric rigidity, e.t.c.). We explore the relations of these rigidities with Leibniz algebra rigidity. Necessary conditions for a Lie algebra to be Leibniz rigid are discussed.

Keyword: Contraction and degeneration; Degeneration invariants; Rigid algebras; Zariski closure