Abstract

In the present paper, we study several properties of the q-analysis (also known as q-algebra) which, according to the theory of Santilli, is a special case of the Lie-admissible algebras. First, we give a geometrical interpretation of the q-derivative and several representations of the basic operators of the q-algebra. The q-parabose operators are given, jointly with the corresponding Glauber operators of the q-algebra. The theory of q-linear differential equations is briefly outlined, and a linear homogeneous differential equation of the second order, related to special q-functions, is studied. Finally, we present a number of applications of the q-algebra, such as the hadronic oscillator and the case of q-algebra for particles without interactions.