

# Abstract

In this talk, we study (proto-, quasi-)twilled Leibniz algebras and the associated L-infty-algebras and differential graded Lie algebras. As applications, first we study the twilled Leibniz algebra corresponding to the semidirect product of a Leibniz algebra and its representation. We show that Kupershmidt operators on this Leibniz algebra can be characterized as Maurer-Cartan elements of the associated gLa. Furthermore, a Kupershmidt operator will give rise to a dgLa that can control its deformations. Then we introduce the notion of a Leibniz bialgebra and show that matched pairs of Leibniz algebras, quadratic twilled Leibniz algebras and Leibniz bialgebras are equivalent. We further define classical Leibniz-Yang-Baxter equation, classical Leibniz r-matrix and triangular Leibniz bialgebra using the associated gLa and the twisting theory of twilled Leibniz algebras. We introduce the notion of a Leibniz-dendriform algebra as the algebraic structure underlying a Kupershmidt operator, by which we can construct solutions of the classical Leibniz-Yang-Baxter equation.