

Bialgebras of Rota–Baxter (Hom-)Lie algebras of any weight

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Abstract. The aim of this paper is to consider the Rota–Baxterization of (Hom-) Lie bialgebra and related structures. For this, we set up the representation theory of Rota–Baxter (Hom-)Lie algebras of any weight, and then present the notion of admissible Rota–Baxter (Hom-)Lie algebras based on the dual representation. For admissible Rota–Baxter (Hom-)Lie algebras, we give the constructions of matched pair and Manin triple, and then introduce the notion of Rota–Baxter (Hom-)Lie bialgebra and also investigate the relationship among the solution of (Hom-)classical Yang–Baxter equation, \mathcal{O} -operator and Rota–Baxter (Hom-)Lie bialgebra. At last, we consider Rota–Baxter pre-Lie (Hom-)algebra of any weight, discuss the connections with Rota–Baxter (Hom-) Lie algebra and \mathcal{O} -operator.

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