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Sciences, Département de Mathématiques, LAREMA, 49000 Angers, France, and **Sokolov V.**
Vladimir, Kosygina st., 2, Moscow, 119334, Russia. *Non-abelian quadratic Poisson brackets:*

From noncommutative ODE to noncommutative Algebraic Geometry and back. Preliminary report.

We study some general non-abelian quadratic Poisson brackets. The study was motivated by some top-like integrable systems on associative algebras. We give and interpret the compatibility condition of linear and quadratic non-abelian Poisson structures using Hochschild cohomology of infinitesimal associative bialgebras. We give a full classification of such structures in the case of the free associative algebra with 2 generators. Relations with double Poisson structure of M. Van den Bergh and H_0 -structures of W. Crawley-Boevey are discussed. (Received September 20, 2011)