

# Classical dynamical r-matrices and dynamical Poisson structures

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Let  $G$  be a Lie group and  $\mathfrak{g} = Lie(G)$  its Lie algebra. Classical dynamical r-matrices are a natural generalization of classical r-matrices, where the classical Yang-Baxter equation (CYBE) is replaced by the dynamical classical Yang-Baxter equation (DCYBE). They are related with a given Lie subalgebra  $\mathfrak{h}$  of the Lie algebra  $\mathfrak{g}$ , being  $\mathfrak{h} = \{0\}$  the corresponding to the 'non-dynamical' case. As the 'non-dynamical' ones, classical dynamical r-matrices define canonically some Poisson structures on the group  $G$ .

In this short talk, I will give precise definitions of dynamical classical r-matrices, emphasizing their relation with 'non-dynamical' ones and I will present two, quite different, related Poisson structures, namely the dynamical Sklyanin and dual brackets. The important example of  $G = SL(2, \mathbb{R})$  will be worked out explicitly and, time permitting, some of its connections with physics will be sketched.