

Integrable deformations of the Rössler and Lorenz systems: A Poisson-Lie approach

Alfonso Blasco-Sanz

Escuela Politécnica-Universidad de Burgos. (Burgos University)
Avenida de Cantabria s/n
Burgos, Spain

Joint work with: Angel Ballesteros, Fabio Musso

Starting from a Hamiltonian systems of ODEs endowed with Lie-Poisson symmetries and using the Poisson-Lie groups as deformations of the Lie-Poisson (co)algebras, we construct integrable deformations of the initial system. The approach is applied in order to construct integrable deformations of both uncoupled and coupled versions of certain integrable types of Rössler and Lorenz systems. It is worthy to stress that such deformations are of non-polynomial type since they are obtained through an exponentiation process that gives rise to the Poisson-Lie group from its infinitesimal Lie bialgebra structure.