DEFORMATIONS OF LIE–HAMILTON AND JACOBI–LIE SYSTEMS. A CASE STUDY

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Lie–Hamilton systems are systems of first-order ordinary differential equations (ODEs) whose integral curves are described by a curve within a finite-dimensional Lie algebra of vector fields, i.e. a *Vessiot-Guldberg* (VG) Lie algebra, whose elements are Hamiltonian relative to a Poisson bivector. Lie–Hamilton systems describe, as particular cases, t-dependent frequency Winternitz-Smorodinsky oscillators and t-dependent frequency harmonic oscillators. Ballesteros et al. recently proposed a Poisson–Hopf deformation procedure of Lie–Hamilton systems [1] that led to interesting physical systems, e.g. oscillators with a position-dependent mass, whose properties can be studied through Poisson–Hopf algebras. In this talk, I will describe this procedure and present its generalisation to *Jacobi–Lie systems*, i.e. systems of ODEs related to a VG Lie algebra of Hamiltonian vector fields with respect to a Jacobi structure. To illustrate this approach, the Schwarz equation will be discussed.

References

[1] Ballesteros A., Campoamor-Stursberg R., Fernandez-Saiz E., Herranz J.F., de Lucas J., *Poisson-Hopf algebra deformations of Lie-Hamilton systems*, J. Phys. A **51**, 065202 (2018).