Geometric reduction of spin trigonometric RS systems

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Abstract

The Ruijsenaars-Schneider (RS) system is a celebrated integrable system that describes the motion in a one-dimensional space of interacting particles which are invariant under Poincaré transformations. In 1995, it was realised by Krichever and Zabrodin that the system admits a spin generalisation, where the particles are endowed with internal 'spin' degrees of freedom. My goal is to review the story of the quasi-Hamiltonian reduction of such systems in the presence of a trigonometric potential. This will be based on a joint work with O. Chalykh in the complex case [1] and a recent investigation with L. Fehér in the real case [2]. As a motivation, I will start by recalling the geometric picture behind the simpler rational Calogero-Moser system with and without spin variables.

References

[1] O. Chalykh and M. Fairon, *On the Hamiltonian formulation of the trigonometric spin Ruijsenaars–Schneider system*. Lett. Math. Phys. **110** (2020) 2893-2940; arXiv:1811.08727

[2] M. Fairon and L. Fehér, *Integrable multi-Hamiltonian systems from reduction of an extended quasi-Poisson double of* $\mathrm{U}(n)$, Preprint (2023); arXiv:2302.14392