

Integrable systems on phase spaces with a nonflat metric

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Abstract

We study the integrability problem for evolution systems on phase spaces with a nonflat metric. We show that if the phase space is a sphere, the Hamiltonian systems are generated by the action of the Hamiltonian operators on the variations of the phase-space geodesics and the integrability problem for the evolution systems reduces to the integrability problem for the equations of motion for the frames on the phase space. We relate the bi-Hamiltonian representation of the evolution systems to the differential-geometric properties of the phase space.

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