Perturbed N-Dimensional Kepler System Through the Nilpotent Adjoint Orbits of $U(n,n)$

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ABSTRACT

In our presentation we describe the geometry of a class of nilpotent adjoint orbits of $U(n,n)$ and explain their role as the phase spaces for n-dimensional regularized Kepler system. Next we present some integrable generalization (perturbation) of n-dimensional Kepler problem. Hamiltonian for this generalized Kepler problem contains the part which describe an interaction between the components of angular mamentum and the components of Runge-Lenz vector.

Therefore, both of them stop to be integrals of motion. But, using the methods investigated in [OW], we construct sufficient number of integrals of motions to integrate this perturbed Kepler system in quadratures.

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