

Reduction and integrability of nonholonomic systems

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We consider a class of dynamical systems on Lie groups and grupoids with left-invariant metric and right-invariant nonholonomic constraints (so called LR systems) which always possess an invariant measure and, under some generic conditions on the constraints, can be regarded as generalized Chaplygin systems. The reduced systems are shown to possess an invariant measure as well. We give sufficient conditions for these systems

- 1) to be reducible to a Hamiltonian form by a time reparameterization according to the Chaplygin method of a reducing multiplier;
- 2) to be integrable by quadratures.

The approach will be illustrated on several classical and new examples. The talk presents the results of a joint work with B. Jovanovic (Belgrade, Serbia).