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Tensor invariants and conservation laws in mechanics

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The influence of various conservation laws on the dynamics of the system is examined by considering different mechanical systems. In contrast to the standard conservation laws, which are given by first integrals of the system, the focus of my work is on conservation laws that are described by more complex tensor invariants (invariant measure, Poisson structures). Examples are given to show what dynamical phenomena are a consequence of the existence or absence of these conservation laws. In particular, some obstructions to Hamiltonization of dynamical systems are considered.

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