

MR1712785 (2000f:70022) [70H40](#) [70E99](#) [70H05](#) [70H45](#) [83A05](#)

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Hamilton-Ostrohrads'kyj [Ostrogardskii] approach to relativistic free spherical top dynamics. (English summary)

Differential geometry and applications (Brno, 1998), 547–551, *Masaryk Univ., Brno*, 1999.

In this work the author proposes a formulation of the dynamics of the classical relativistic spinning particle based on a generalized Hamiltonian approach, without the use of Dirac's theory of constraints. The theory is shown to reproduce Dixon's equations and a form of supplementary condition analogous to Pirani's, involving the four-velocity instead of the four-momentum.

The theory is developed following the Ostrogradskii approach of the dynamics of higher order, with equations of motion of the third order. The theory is shown to be Hamiltonian and a possible Legendre transformation is explicitly given. A fixed relation between the mass and the spin of the particle is implied by the dynamics.

{For the entire collection see [MR1701175 \(2000e:53004\)](#)}

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