A Classical Model of Spin 1 Massless Particle

A. T. Muminov
Institute of Applied Physics
Uzbekistan

The problem of constructing a classical model of a particle with spin is considered. A variational principle is proposed, which describes classical mechanics of a particle with internal degrees of freedom. It is shown that the corresponding Euler-Lagrange equations coincide with euqations of motion of a spin 1 particle in a curved space-time and equations for a locally plane wave for its inner degrees of freedom. Geometric analysis of the variational principle shows that spinning particles obey Papapetrou equations.