Contribution ID : **81**   Type : **not specified**

Spin-3/2 formalism free from pathologies

Tuesday, 10 November 2009 17:10 (0:30)

Abstract content

Summary

We present a conceptually new formalism for the description of fundamental high-spin states in terms of totally symmetric K-rank Lorentz tensors with Dirac spinor components, $Psi_{\mu_1,\ldots,\mu_K}$. The formalism employs on equal footing both the mass-shell, and the covariant spin-condition as set by the eigenvalue problem of the operator of the squared Pauli-Lubanski vector. The resulting waveequation is quadratic in the momenta and we couple it minimally to the electromagneticfield . We work out the cases of spin-1 and and spin-3/2 . We find (i) causal propagation of the spin-3/2 field in an electromagneticbackground thus resolving the Velo-Zwanziger problem, and (ii) an universal value of g_s=2 for the gyromagnetic ratio thus invalidating Belinfante's conjecture on the inverse proportionality between gyromagnetic factor and spin.

Primary author(s) :   Dr. KIRCHBACH, Mariana (Institute of Physics, Autonomous University of San Luis Potosi Mexico)

Presenter(s) :   Dr. KIRCHBACH, Mariana (Institute of Physics, Autonomous University of San Luis Potosi Mexico)

Session Classification :   Hadron and LHC Physics II