

# Spin 2 Particle with Anomalous Magnetic Moment in Riemann Space-Time: A Massless Case with the Gauge Symmetry

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Ключевые слова: spin 2 particle, anomalous magnetic moment, electromagnetic field, Riemannian space-time, non-minimal interaction, massless limit, gauge symmetry.

Аннотация: The most of studies in the theory of spin 2 \_field were performed with the use of the 2-nd order equations. The spin 2 particle theory proposed by F.I. Fedorov is based on the first order equations requires a 30-component set of tensors. Besides, by him and coauthors was elaborated a more general theory, which is based on 50-component set of tensors. In the

present paper, we consider this more general theory in presence of arbitrary electromagnetic fields and Riemannian space-time backgrounds. First we study the 50-component theory for a massive particle. In this case, there arises the non-minimal interaction with the curved space-time background through the Ricci and Riemann tensors. It is important that the theory under consideration allows for a new massless limit for the spin 2 field. This fact is of special interest, because the conventional Pauli - Fierz theory for the massless field does not

possess gauge symmetry in the curved space-time, in particular, in models with the vanishing

Ricci tensor. We show that the generalized theory possesses such a gauge symmetry in all space-time models for which the Ricci tensor vanishes.

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