On the matrix equation for a spin 2 particle in pseudo-Riemannian space-time (II). Separating the variables in spherical coordinates Method

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Abstract: In the present paper we develop the theory of the massive spin 2 field, extended to the generally covariant theory within the TetrodeWeyl-Fock-Ivanenko tetrad method. Such an equation is specified in spherical coordinates of the Minkowski space. We separate the variables by diagonalizing the square and the third projection of the total angular momentum; at this, the formalism of Wigner D-function is applied instead of spin-weight harmonics. As a result, we derive the radial system of differential equations of the first order. From these we derive the 2-nd order radial equations for components referring to symmetric tensor and scalar involved in the description of the spin 2 field. The radial system is divided

into two more simple subsystems, which describe states with opposite space parities. We find, in closed form, some exact solutions for such subsystems. The restriction in the radial equations to the massless spin 2 field is possible, and the extension of the developed procedure of separating the variables to arbitrary space-time models with spherical symmetry does not require new ideas.

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