LAGUERRE’S FUNCTION OF DIRECTION IN A GENERALIZED WEYL HYPERSURFACE

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Abstract. In [1], the generalization of Laguerre’s function of direction for a surface in ordinary space to a hypersurface of a Riemannian space is obtained. The Laguerre’s function of direction for a hypersurface of a Weyl space has been derived in [2]. In this paper, the generalization of Laguerre’s function of direction to a hypersurface of generalized Weyl space is made.

1. Introduction

An \( n \)-dimensional differentiable manifold \( W_n \) is said to be a Weyl space if it has a symmetric conformal metric tensor \( g_{ij} \) and a symmetric connection \( \nabla \) satisfying the compatibility condition given by the equation

\[
\nabla_k g_{ij} - 2T_k g_{ij} = 0 ,
\]

where \( T_k \) are the components of a covariant vector field and \( \nabla_k \) denotes the usual covariant derivative.

Let \( \Gamma^i_{jk} \) denote the coefficients of the connection \( \nabla \). Then, from the compatibility condition given by (1.1) we get

\[
\Gamma^i_{jk} = \left\{ \begin{array}{c} i \\ jk \end{array} \right\} - \left( \delta^i_j T_k + \delta^i_k T_j - g^{li} g_{jk} T_l \right) .
\]

Under a renormalization of the fundamental tensor of the form \( \tilde{g}_{ij} = \lambda^2 g_{ij} \) an object \( A \) admitting a transformation of the form \( \tilde{A} = \lambda^p A \) is called a satellite with weight \( \{ p \} \) of the metric tensor \( g_{ij} \).