

Some Characterization theorems for lightlike hypersurfaces of semi-Riemannian manifolds admitting a semi-symmetric non-metric connection

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Abstract

We study lightlike hypersurfaces of semi-Riemannian manifolds admitting a semi-symmetric non-metric connection whose structure vector field is tangent to the hypersurface. We obtain conditions for the induced Ricci type tensor of a lightlike hypersurface of such semi-Riemannian manifolds to be symmetric, which in general is not symmetric and find a characterization theorem for a lightlike hypersurface to be screen conformal. We also find conditions for a lightlike hypersurface of a semi-Riemannian space form to be Ricci flat and show that the null sectional curvature of lightlike hypersurface also vanishes. Finally, we obtain Chen-like inequalities on lightlike hypersurfaces of a semi-Riemannian manifold admitting semi-symmetric non-metric connection.