STUDY ON DIFFERENT TYPES OF CONNECTIONS ON CHAKI-PSEUDO PARALLEL INVARIANT SUBMANIFOLDS OF LORENTZIAN PARA-KENMOTSU MANIFOLD

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Abstract: The focus of this research is to investigate Chaki-pseudo parallel submanifolds in Lorentzian para-Kenmotsu manifolds. This study examines the properties of these submanifolds, including their totally geodesic nature under different connections such as the semisymmetric connection, Schouten-van Kampen connection, and Tanaka Webstar connections.

Keywords and Phrases: Lorentzian para-Kenmotsu manifold, invariant submanifold, totally geodesic submanifold, semisymmetric metric connection, Schouten-van Kampen connection and Tanaka Webstar connections.

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1. Introduction

In the field of mathematics, invariant submanifolds play a crucial role in understanding the behavior of dynamical systems. An invariant submanifold is a subset of a manifold that remains invariant under the flow of a particular dynamical system. The study of invariant submanifolds can reveal important properties of the system, such as the existence of periodic orbits and the emergence of chaotic behavior. In addition, invariant submanifolds have applications in various areas of science and engineering, including celestial mechanics, fluid dynamics, and control theory ([6], [18]). This topic has a rich history dating back to the pioneering work