SECOND ORDER GEOMETRY
OF SPACELIKE SURFACES IN DE SITTER 5-SPACE

MASAKI KASEDOU, ANA CLAUDIA NABARRO, AND
MARIA APARECIDA SOARES RUAS

Abstract: The de Sitter space is known as a Lorentz space with positive constant curvature in the Minkowski space. A surface with a Riemannian metric is called a spacelike surface. In this work we investigate properties of the second order geometry of spacelike surfaces in de Sitter space $S^5_1$ by using the action of $GL(2, \mathbb{R}) \times SO(1, 2)$ on the system of conics defined by the second fundamental form. The main results are the classification of the second fundamental mapping and the description of the possible configurations of the $LMN$-ellipse. This ellipse gives information on the lightlike binormal directions and consequently about their associated asymptotic directions.


Key words: Spacelike surface, de Sitter 5-space, second order geometry, asymptotic directions, lightlike binormal directions.