

On the Gauss Map of Lorentzian Surfaces with Zero Mean Curvature in Semi-Riemannian Space-forms of Arbitrary Dimension

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Keywords: finite type submanifolds, Gauss map, Lorentzian surfaces, Pointwise 1-type

A mapping $\phi : M \rightarrow \mathbb{E}_S^N$ is said to be finite type if it can be expressed as

$$\phi = \phi_0 + \phi_1 + \dots + \phi_k$$

for a constant vector ϕ_0 and some eigenvectors ϕ_1, \dots, ϕ_k of the Laplace operator Δ of M , where M is a submanifold of a semi-Euclidean space \mathbb{E}_s^m . Moreover, ϕ is called k -type if ϕ_1, \dots, ϕ_k are corresponding to k distinct eigenvalues of Δ .

In this talk consider Lorentzian surfaces with zero mean curvature in semi-Riemannian space forms with non-negative sectional curvatures. First, we are going to present a survey on constant mean curvature surfaces with finite type Gauss map. Then, we will show our recent results on surfaces with k -type Gauss map for $k \leq 2$.

Acknowledgements. The author is supported by The Scientific and Technological Research Council of Turkey (TÜBİTAK) (Project Name: Y_EUCL2TIP, Project Number: 114F199).

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