THE SPACE OF ORIENTED GEODESICS IN 3-DIMENSIONAL REAL SPACE FORMS.

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ABSTRACT. Over the past 100 years, the space of oriented geodesics has been a topic of study by many mathematicians. In particular, Weierstrass and Whittaker have studied the space $\mathbb{L}(\mathbb{R}^3)$ of oriented lines in the Euclidean 3-space \mathbb{R}^3 . More recently, Hitchin has studied the monopoles in \mathbb{R}^3 using the natural complex structure in $\mathbb{L}(\mathbb{R}^3)$. In this talk, we will first describe a canonical Kähler structure defined in the space $\mathbb{L}(\mathbb{M}^3)$ of oriented geodesics in the 3-dimensional real space form and then we will discuss some recent results on the submanifold theory.