Thirteenth International Conference on
Geometry, Integrability and Quantization
June 3–8, 2011, Varna, Bulgaria
Ivaïlo M. Mladenov, Andrei Ludu
and Akira Yoshioka, Editors
Avangard Prima, Sofia 2012, pp 205–214

ON THE INVOLUTIVE B-SCROLLS IN THE EUCLIDEAN THREE-SPACE $\mathbb{E}^3$

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Abstract. Deriving curves based on the other curves like involute-evolute curves or Bertrant curves is an old subject in geometry. In this paper, we have defined a ruled surface based on the involute curve of a given curve which is called the involutive B-scroll. We introduced the positions of the involutive B-scroll and the B-scroll relative to each other.

1. Introduction

Some of the earliest research results about plane curves were motivated by the desire to build more accurate clocks. Practical designs were based on the motion of a pendulum, requiring careful study of motion due to gravity first carried out by Galileo, Descartes, and Mersenne. The culmination of these studies was the work of Christian Huygens (1629-1695) in his 1673 treatise. He is also known for his work in optics. Some of the ideas introduced in Huygens's classic work [6], such as the involute and evolute of a curve, are part of our current geometric language. The idea of a string involute is due to Huygens, he discovered involutes while he was trying to build a more accurate clock [1].

The involute of a given curve is a well-known concept in Euclidean three-space $\mathbb{E}^3$. We can say that evolute and evolvent is a method of deriving a new curve based on a given curve. The evolvent is often called the involute of the curve. Evolvents play a part in the construction of gears [7]. Evolute is the locus of the centers of tangent circles of the given planar curve.

It is well-known that if a curve is differentiable in an open interval, at each point, a set of mutually orthogonal unit vectors can be constructed. And these vectors are called Frenet frame or moving frame vectors. The rates of these frame vectors along the curve define curvatures of the curves.