

Zoll-like manifolds in minimal submanifold theory

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One of the salient properties of the Euclidean sphere is the property that all of its non-trivial geodesics are periodic and have the same period. However, this property alone is not enough to characterise the Euclidean sphere. In fact, in the beginning of the last century, Otto Zoll described spheres of revolution in the Euclidean space that are not as symmetric as the Euclidean sphere, but whose geodesic flows have that same property. This discovery marked the beginning of a systematic study of "Zoll manifolds". We will formulate a variational generalisation of this notion in the context of minimal submanifolds theory, explain why do we think these new objects are interesting (beyond their natural geometric appeal), and present some results about their existence, properties and classification.