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A multiplicity result for orthogonal geodesic chords in Finsler disks. (English) [Zbl 07393886]
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Summary: In this paper, we study the existence and multiplicity problems for orthogonal Finsler geodesic chords in a manifold with boundary which is homeomorphic to a $N$-dimensional disk. Under a suitable assumption, which is weaker than convexity, we prove that, if the Finsler metric is reversible, then there are at least $N$ orthogonal Finsler geodesic chords that are geometrically distinct. If the reversibility assumption does not hold, then there are at least two orthogonal Finsler geodesic chords with different values of the energy functional.

MSC:
70G75 Variational methods for problems in mechanics
70H03 Lagrange's equations
58E10 Variational problems in applications to the theory of geodesics (problems in one independent variable)
53B40 Local differential geometry of Finsler spaces and generalizations (areal metrics)

Keywords:
Hamiltonian systems; brake orbits; variational methods; Finsler metric; manifolds with boundary

Full Text: DOI

References: