

Second-order structures on Banach manifolds

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Abstract

Ambrose *et al.* (Sprays, *Anais da Academia Brasileira de Ciencias*, 32, 1–15 (1960)) introduced the concept of certain second-order structures on finite-dimensional manifolds, viz. dissection, Hessian structure and spray, and have shown that each of these structures uniquely determines and is determined by a symmetric connection. In this paper we extend these results to Banach manifolds. We define a Christoffel structure which is central to our exposition and yields all the results.

Keywords: Hessian structure, dissection, spray, Christoffel structure, connection.