Summary: We expand upon the notion of a pre-section for a singular Riemannian foliation \((M, \mathcal{F})\), i.e. a proper submanifold \(N \subset M\) retaining all the transverse geometry of the foliation. This generalization of a polar foliation provides a similar reduction, allowing one to recognize certain geometric or topological properties of \((M, \mathcal{F})\) and the leaf space \(M/\mathcal{F}\). In particular, we show that if a foliated manifold \(M\) has positive sectional curvature and contains a non-trivial pre-section, then the leaf space \(M/\mathcal{F}\) has nonempty boundary. We recover as corollaries the known result for the special case of polar foliations as well as the well-known analogue for isometric group actions.

MSC:

53C12 Foliations (differential geometric aspects)
53C23 Global geometric and topological methods (à la Gromov); differential geometric analysis on metric spaces

Keywords:
singular Riemannian foliation; positive sectional curvature; Alexandrov spaces

Full Text: DOI
[16] Molino, P., Riemannian foliations (1988), Boston: Birkhäuser Boston Inc, Boston- doi:10.1007/978-1-4684-8670-4
[17] Moreno, A.: Alexandrov Geometry of leaf spaces and applications, PhD thesis, University of Notre Dame (2019)
[18] Moreno, A., Point leaf maximal singular Riemannian foliations in positive curvature, Differential Geom. Appl., 66, 181-195 (2019) · Zbl 1482.53034 · doi:10.1016/j.difgeo.2019.06.001
[19] Radeschi, M.: Low dimensional singular riemannian foliations in spheres, PhD thesis, University of Pennsylvania (2012)
[20] Radeschi, M., Clifford algebras and new singular Riemannian foliations in spheres, Geom. Funct. Anal., 24, 1660-1682 (2014) · Zbl 1366.53018 · doi:10.1007/s00039-014-0304-5
[21] Straume, E., On the invariant theory and geometry of compact linear groups of cohomogeneity \( \leq 3 \), Differential Geom. Appl., 4, 1-23 (1994) · Zbl 0810.20036 · doi:10.1016/0926-2245(94)90007-7
[22] Wilking, B., Positively curved manifolds with symmetry, Ann. of Math., 163, 607-668 (2006) · Zbl 1104.53030 · doi:10.4007/annals.2006.163.607
[23] Wilking, B., A duality theorem for Riemannian foliations in nonnegative sectional curvature, Geom. Funct. Anal., 17, 1297-1320 (2007) · Zbl 1139.53014 · doi:10.1007/s00039-007-0620-0

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.