Integral formulae for codimension-one foliated Finsler manifolds

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The talk is based on our joint with P. Walczak works [2, 3] about a codimension-one foliated Finsler space (M, F), in particular, a Randers space (i.e., $F = \alpha + \beta$, α being the norm of a Riemannian structure on M and β a 1-form of α-norm smaller than 1 on M). Using a unit vector field orthogonal (in the Finsler sense) to the leaves we define a new Riemannian metric g on M. For that g we calculate several geometric invariants of F, express them in terms of invariants arising from α and some quantities related to β, and then, using the approach of [1], we obtain the integral formulae for closed (M, F) and $(M, \alpha + \beta)$. On this way, we generalize Reeb's formula (that the total mean curvature of the leaves is zero) and its companion (that twice total second mean curvature of the leaves equals to the total Ricci curvature in the normal direction). We also extend result by Brito-Langevin-Rosenberg (1981) (that total mean curvatures of arbitrary order for a codimension-one foliated Riemannian manifold of constant curvature don't depend on a foliation).

References

[1] V. R. and P. Walczak, Integral formulae on foliated symmetric spaces, Math. Ann. 352, (2012) 223–237.

[2] V. R. and P. Walczak, Integral formulae for codimension-one foliated Finsler spaces, Balkan J. Geom. & Appl. 2016 (see ArXiv:1602.00610).

[3] V. R. and P. Walczak, Integral formulae for codimension-one foliated Randers spaces, preprint, ArXiv:1604.04069.