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摘要

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Horizontal Connection and Horizontal Mean Curvature in Carnot Groups

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Abstract In this paper we give a geometric interpretation of the notion of the horizontal mean curvature which is introduced by Danielli--Garofalo--Nhiu and Pauls who recently introduced sub-Riemannian minimal surfaces in Carnot groups. This will be done by introducing a natural nonholonomic connection which is the restriction (projection) of the natural Riemannian connection on the horizontal bundle. For this nonholonomic connection and (intrinsic) regular hypersurfaces we introduce the notions of the horizontal second fundamental form and the horizontal shape operator. It turns out that the horizontal mean curvature is the trace of the horizontal shape operator.

Key words [Carnot groups](#) [Nonholonomic connection](#) [Horizontal mean curvature](#) [Sub-Riemannian minimal surfaces](#)

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