

# Accuracy analysis of ridge line derived from airborne LiDAR data

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**Abstract:** For the calibration of Airborne Laser Scanner (ALS), flat horizontal surfaces are frequently used for calibrating the height of the scanned data. But for horizontal position calibration, clear defined linear features are needed. In such case, roof ridges are suitable for serving as calibration targets. Because of their linear characteristics, roof ridges are easily to be located and provide well-defined references for horizontal position verification. Roof ridges can be derived by intersecting of two roof patches. And a roof patch in turn can be derived from fitting a planar surface to the ALS point cloud falling on that roof patch. The geometric quality of thus intersected roof ridge depends on many factors like the number of ALS points on the roof patch, the surface roughness of the roof patch, the intersecting angle of two roof patches forming that ridge patch, etc. It is obvious that the geometric quality of such linear roof ridges is essential to the capability of their usages as calibration targets. In this paper, the error propagation analysis is used to examine the factors that affect the geometric accuracy of roof ridges derived from ALS point cloud.

Keyword: Airborne Laser Scanner, geometric accuracy, error propagation, roof ridge