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Camera Calibration with Radial Variance Component Estimation

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Abstract. Camera calibration plays a more and more important role in recent times. Beside real digital aerial survey cameras the photogrammetric market is dominated by a big number of non-metric digital cameras mounted on UAVs or other low-weight flying platforms. The in-flight calibration of those systems has a significant role to enhance the geometric accuracy of survey photos considerably. It is expected to have a better precision of photo measurements in the center of images then along the edges or in the corners. With statistical methods the accuracy of photo measurements in dependency of the distance of points from image center has been analyzed. This test provides a curve for the measurement precision as function of the photo radius. A high number of camera types have been tested with well penetrated point measurements in image space. The result of the tests led to a general consequence to show a functional connection between accuracy and radial distance and to give a method how to check and enhance the geometrical capability of the cameras in respect to these results.

[Conference Paper](#) (PDF, 652 KB)

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