## Calibration of Terrestrial Laser Scanners

Kalibrierung terrestrischer Laserscanner

For the calibration of terrestrial laser scanners, a functional calibration model comparable to the one of a total station is needed. After delivery a terrestrial laser scanner can be calibrated by estimating the parameters of the functional calibration model based on a self-calibration in a point field. The development of an optimal calibration field has not yet been completed; its configuration is presently in the focus of research. This study gives an overview of the task of calibrating terrestrial laser scanners based on a description of laser scanner specifications, test procedures and their error causing imperfections.

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## Survey Configuration for Terrestrial Laser Scanning

Aufnahmekonfiguration für Terrestrisches Laserscanning

This article gives an introduction into the subject of viewpoint planning in the context of terrestrial laser scanning. The vital task of viewpoint planning is mostly considered intuitively yet. However, optimisation of the acquisition configuration cannot be conducted based on assumed object coordinates, as these would change in dependence to the chosen viewpoint. Hence, it is discussed how laser scans can be simulated based on predefined viewpoints and a given 3D model. Afterwards the task of viewpoint planning is observed from two perspectives namely regarding the achievable precision in the field as well as from an economic point of view in the context of data acquisition.

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## Spatio-temporal Correlations of Terrestrial Laser Scanning

Raumzeitliche Korrelationen beim terrestrischen Laserscanning

The correlations in terrestrial laser scanning on the scientific level are investigated. Summarized are recent approaches to model correlations, to develop measurement scenarios for the determination of correlations as well as to identify the influence of the correlations on estimation procedures. In conclusion challenges are remaining concerning both the complete synthetic modelling and the development of appropriate measurement scenarios to determine correlations in an empirical way. Additionally, spatio-temporal correlations have to be modelled. This will open the field for the integration of modelled correlations into the deformation analysis process.

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