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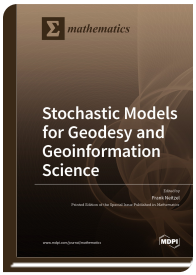
Special Issue Reprint

Stochastic Models for Geodesy and Geoinformation Science



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In geodesy and geoinformation science, as well as in many other technical disciplines, it is often not possible to directly determine the desired target quantities. Therefore, the unknown parameters must be linked with the measured values by a mathematical model which consists of the functional and the stochastic models. The functional model describes the geometrical–physical relationship between the measurements and the unknown parameters. This relationship is sufficiently well known for most applications. With regard to the stochastic model, two problem domains of fundamental importance arise: 1. How can stochastic models be set up as realistically as possible for the various geodetic observation methods and sensor systems? 2. How can the stochastic information be adequately considered in appropriate least squares adjustment models? Further questions include the interpretation of the stochastic properties of the computed target values with regard to precision and reliability and the use of the results for the detection of outliers in the input data (measurements). In this Special Issue, current research results on these general questions are presented in ten peer-reviewed articles. The basic findings can be applied to all technical scientific fields where measurements are used for the determination of parameters to describe geometric or physical phenomena.

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