



External calibration of the GOCE gradiometer at acceleration level

S.M. Rispens (1) and J. Bouman (2)

(1) SRON Netherlands Institute for Space Research, Utrecht, Netherlands (s.m.rispens@sron.nl), (2) Deutsches Geodaetisches Forschungsinstitut (DGFI), Munich, Germany

A reliable and accurate gradiometer calibration is needed to ensure the scientific return of the GOCE mission. This contribution will describe a method for external calibration of the GOCE gradiometer accelerations.

A global gravity field model in combination with star sensor attitude information is used to synthesize reference differential mode (DM) accelerations. These reference DM accelerations are compared against the accelerations measured by GOCE to estimate gradiometer scale factors, internal gradiometer misalignments and misalignments between the star sensor and the gradiometer.

A simulation study shows that when the in-flight calibrated accelerations are taken as a starting point, the method can improve these accelerations in the frequency range from 0.1 to 10 mHz, just below the measurement band where the gradiometer has the lowest error level. Depending on frequency and on acceleration component, the error can be decreased by as much as a factor of ten.