

TOWARDS MODELING PHASE CENTER VARIATIONS FOR MULTI - FREQUENCY AND MULTI - GNSS

Tobias Kersten and Steffen Schön
Institut für Erdmessung (IfE)
Leibniz Universität Hannover
Schneiderberg 50, D-30167 Hannover, Germany
phone: +49 511 762 5711, fax: +49 511 762 4006
mail: *kersten@ife.uni-hannover.de*

Abstract

With the Hannover concept of absolute field calibration of GNSS antennae the determination of receiver antenna Phase Center Variations (PCV) can be done routinely for the GPS and GLONASS L1 and L2 frequencies, respectively. The need of multi-GNSS and multi-frequency applications - demanded by a broader navigation community - tends to a combined estimation of receiver antenna depending properties for various frequencies and systems. This approach is only advantageous if inter-frequency and inter-system biases are known and continuously considered.

In this contribution we investigate steps towards a concept for multi-system-calibration. After a short introduction to the absolute field calibration procedure, the mathematical model as well as adjustment concept will be presented. We show that test results suggest that the receiver demodulation may have an impact on the estimated PCV.

The correlation analysis of the multi-frequency multi-GNSS approach underlines that (1) the correct consideration of the mathematical correlations between the parameters to up to 25%, (2) The receiver clock links the results from different frequencies and (3) PCV for different GNSS systems can be computed in a common adjustment since the inter-system correlations are below 1-2%.

Tobias Kersten
November 11, 2011