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Titel des Beitrags: Reliable GPS+BDS RTK positioning with partial ambiguity resolution

Abstract: Reliable carrier phase positioning requires the occurrence of incorrect integer ambiguity estimates to be limited to a maximum tolerable rate. In various simulation studies, partial ambiguity resolution (PAR) techniques were shown to be beneficial, since it is more likely that a subset of all ambiguities can be reliably resolved rather than the full set. Consequently, they allow for improved positioning capabilities such as faster solutions or a higher availability of instantaneous centimeter level coordinate estimates. We analyze the impact of PAR on the performance of single and combined GPS and BDS single epoch dual-frequency real-time kinematic (RTK) positioning. It will be demonstrated that we can expect a wider range for reliable instantaneous RTK positioning when using PAR techniques. Real global navigation satellite system data from a 22.4 km baseline is used to verify the benefit of PAR. The availability of centimeter level positioning results will be shown to be significantly increased compared to conventional full ambiguity resolution.

Stichworte: Multi-GNSS; Integer ambiguity resolution; Partial fixing; Real-time kinematic (RTK); Fixed failure rate

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