

# Noise Characterization in BeiDou-3 Multi-Frequency Observables

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## SUMMARY

The increasing number of BeiDou Navigation Satellite System (BDS) satellites, improvements in satellite technology, and signal design are constantly expanding the application areas of the Global Navigation Satellite System (GNSS). With the modernization of BDS, multiple satellites broadcast new frequencies and signals required for precise point positioning (PPP) performance. In this study, the noise characteristics of the BDS-3 signals are investigated along with those of the Global Positioning System (GPS) and Galileo. In addition, the paper evaluates the contribution of interoperable signals to PPP performance. The results illustrate that the noise in BDS-3 modernized signals is comparable to that of the other navigation systems. In the case of PPP, GPS and Galileo perform slightly better than BDS-3. Thus, the less noisy BDS-3 signals could have a positive impact on PPP as the tracking stations with such signals densify.