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PERFORMANCE EVALUATION OF THE BDS-3 ONBOARD ATOMIC CLOCK

Abstract

In order to evaluate the performance of the onboard atomic clock of BDS-3, multi-GNSS observation of the global distributed iGMAS and IGS / MGEX stations are collected, and the BDS/GPS combined precise orbit determination and clock estimation are conducted. The frequency stability of GPS and BDS-3 onboard atomic clocks is analyzed with the resulting clock products. For GPS satellites, the frequency stabilities evaluated using the achieved clock products are very close to those using the IGS clock products, which shows that the achieved satellite clock products are comparable to IGS clock products in quality. For BDS-3 satellite, the daily frequency stabilities (Allan deviations) of onboard rubidium clock are better than 2.4×10^{-14} . Except for C34 and C35, the daily frequency stabilities of onboard hydrogen clock are 3.8×10^{-15} to 6.0×10^{-15} , which are very close to those of the clocks of GPS BLOCK IIF satellites.