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GPS Timing Synchronization: Characterization and Spatial Correlation

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Nanosecond precision timing synchronization via the Global Positioning System has become a common technique for a variety of particle physics and astrophysics experiments including, for example, large arrays of detectors for cosmic ray air showers. By using the common time-standard in GPS, time synchronization can be achieved at low cost, even over large areas in remote locations. However, in principle, synchronization accuracy is limited by atmospheric effects, especially over large distances. Here we present a new measurement of the accuracy of GPS timing synchronization, particularly as a function of distance between two receivers.

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