OPTIMUM PULSE SHAPING FOR DELAY ESTIMATION IN SATELLITE POSITIONING (WedPmOR8)

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Abstract :

As is known, satellite positioning is based on the accurate measurement of the delay experienced by a spread−spectrum signal in the propagation from the satellite to the user receiver. The more accurate is such delay estimation, the more precise will be the determination of the user position. In this paper we derive criteria to optimize the format of the spread−spectrum signal to be used in a positioning systems. In particular, we assume bandlimitation of the signal transmitted by the satellite (as always happens in practice), and we show how to format of the chip pulse of the ranging code to minimize delay estimation variance at the receiver. The sync performance of the optimized formats are compared to the one yielded by the conventional signals that are currently used in the GPS and GLONASS systems, and to those that will be used in the forthcoming GALILEO and GPS−II systems.

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