

Influence of Doppler Bin Width on GNSS Detection Probabilities

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The acquisition stage in GNSS receivers determines Doppler shifts and code phases of visible satellites. Acquisition is thus a search in two continuous dimensions, where the digital algorithms require a partitioning of the search space into cells.

We present analytic expressions for the acquisition performance depending on the partitioning of the Doppler frequency domain. In particular, the impact of the number and width of Doppler bins is analyzed. The presented results are verified by simulations.

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