TIME−FREQUENCY ESTIMATION IN THE COSPAS/SARSAT SYSTEM USING ANTENNA ARRAYS: VARIANCE BOUNDS AND ALGORITHMS (TueAmPO4)

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Abstract :

This paper deals with the signal processing techniques to be used in the reception of the Search And Rescue (SAR) system COSPAS/SARSAT distress beacons. The receiver unit has to estimate time delays and Doppler shifts of a set of satellite−relied replicas of the original beacon in order to compute the position where the device has been activated. The Cramer−Rao Bound (CRB), which determines the minimum variance achievable for any unbiased estimator, is computed for the problem at hand considering a receiver provided with an antenna array. Finally, we propose a new sort of beamforming which exploits temporal and spatial references achieving a performance close to the CRB with a moderate implementation effort.

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