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

Author(s):
- Carles Fernández Prades (Universitat Politècnica de Catalunya, Spain)
- Pau Closas Gómez (Universitat Politècnica de Catalunya, Spain)
- Juan A. Fernández Rubio (Universitat Politècnica de Catalunya, Spain)

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.