
Studying the effect of variable time spacing on Orthogonal Costas Frequency Modulation Pulses.

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Abstract

In recent studies the Orthogonal matrix is applied to form matrix of orthogonal phase coding, then this matrix is applied on any coherent train of identical radar pulses to remove most of recurrent side-lobe of ACF near the main-lobes, and make the recurrent lobes lower than in the coherent pulse train. Costas array are also used in frequency coding of Radar signal to increase the delay resolution, and to decrease the recurrent side-lobe.

The present work shows the results of applying the two techniques at coherent pulse train with variable spacing between the pulses to achieve ACF with all the properties of the orthogonal phase coding and Costas Coding, and to reduce the recurrent side-lobe to a level less than the recurrent side-lobe of ACF of orthogonal phase coding or Costas frequency coding.

Keywords: Orthogonal Matrix, Auto Correlation Function ACF, AF Ambiguity Function, Costas Signal, LFM Linear Frequency Modulation.

For the paper in Arabic see pages(253-269) .

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