The Investigation on Zero-Correlation Zone among Golay Complementary Pairs

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Abstract

A pair of sequences satisfies the property that their out-of-phase aperiodic autocorrelation functions sum to zero is called a Golay Complementary Pair(GCP). A GCP is said to be a mate of another pair if the sum of the cross-correlation functions of the corresponding sequences in these two pairs is zero everywhere. While it has been shown that there are at most 2 distinct Golay complementary mates for a GCP. We are interested in a set composed of more GCPs and it leads us to do research on the zero correlation zone of GCPs in the set.

We investigate a set of GCPs based on generalized Boolean functions and give the lower bound of the ZCZ between different GCPs in the set. Moreover, we introduced average ZCZ and proved that for some choices of permutation, the set will have a maximum average ZCZ.