ON OPTIMUM SYNTHESIS OF APERIODIC BINARY SEQUENCES BY ITERATIVE METHODS

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Summary

A functional minimization approach over a discrete and non-convex set of points in N-space has been adopted to obtain 'good' aperiodic binary sequences. In order to achieve this goal iterative procedures based upon the well known enumerative technique and combinational structure of the problem have been developed and applied to obtain 'good' binary sequences of different kind up to lengths 101. Although functionals of the form $\sum_{K=1}^{N-1} K^{\alpha} [C(K)]^{m}$, K is the time shift in terms of the number of binary elements and C(K) the corresponding autocorrelation function, have been considered; the method is quite general and could be used for any functional suitable for any given application. By this method, it has been found possible to minimize the functionals by orders of magnitude in N/2 steps, with maximum sidelobes around $\sqrt{N}$, where N is the code length.

CONTENTS