

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

	Page
ACKNOWLEDGMENTS	6
SUMMARY	ii
SECTION 1 : INTRODUCTION	1
1.2 : Binary Sequences	2
1.3 : Generalised Barker Sequences	4
1.4 : Impulse-Equivalent Pulse Trains	6
2 : STATEMENT OF THE PROBLEM	10
2.2 : Analysis of the Problem	10
2.3 : The Randomness Constraint	11
2.4 : Modified Form of the Problem	13
2.5 : Development of the Techniques of a Functional Minimization in N-Space	16
2.6 : Combinational Structure of the Problem	22
3 : RESULTS	26
4 : CONCLUSION	27
5 : A NEW PROPOSAL SUITABLE FOR THE OPTIMUM SYNTHESIS OF BOTH ODD AND EVEN LENGTH BINARY SEQUENCES	28
REFERENCES	41
APPENDIX 1	45
APPENDIX 2	48
APPENDIX 3	20
TABLES	20
ILLUSTRATIONS	33