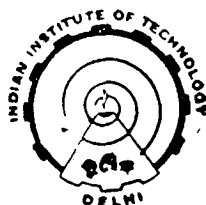


Continuous Phase Modulation (CPM) : Optimum Signals and Performances

A thesis submitted to
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DOCTOR OF PHILOSOPHY

by
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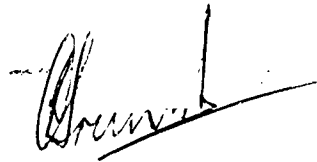


Department of Electrical Engineering,
Indian Institute of Technology, Delhi
1987

CERTIFICATE

This is to certify that the thesis entitled, "CONTINUOUS PHASE MODULATION (CPM) : OPTIMUM SIGNALS AND PERFORMANCES", which is being submitted by K.R.RAVEENDRA for the award of the degree of Doctor of Philosophy of the Indian Institute of Technology, Delhi, is a record of bonafide research work carried out by him under my guidance and supervision.

The candidate has fulfilled the requirements of all the regulations relating to the degree. The results contained in the thesis have not been submitted to any other University/Institute for the award of a degree or diploma.



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To
Amma
Appa
and my Mentor

ABSTRACT

This thesis represents a thorough investigation into the properties of digital Continuous Phase Modulation (CPM) signals, their optimum properties and the performances of their corresponding receivers. Broadly, two subclasses of CPM, multi-h CPM and Continuous Phase Chirp (CPC) signals, have been studied. The channels considered are Gaussian and non-Gaussian, employing both coherent as well as non-coherent receiver types. Optimum (power-efficient) signaling schemes have been obtained using the criteria of minimum error probability and Euclidean distance. Spectral comparisons of various signals have been made. From the point of view of easy implementation, simplifications have been effected in the structures of optimum receivers and a decision-directed receiver has been proposed and analysed.

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TABLE OF CONTENTS

ABSTRACT	iv
ACKNOWLEDGEMENTS	v
1. INTRODUCTION TO THE THESIS	1
2. COHERENT DETECTION OF MULTI-h CPM IN GAUSSIAN NOISE	
2.1 Introduction	23
2.2 Description of multi-h CPM signals	25
2.3 Problem formulation and receiver structures	29
2.4 Performance bounds	35
2.5 Numerical results and discussion	38
2.6 Conclusions	44
3. NONCOHERENT DETECTION OF MULTI-h CPM IN GAUSSIAN NOISE	
3.1 Introduction	88
3.2 Problem formulation and derivation of the optimum and suboptimum receiver structures	89
3.3 Performance analysis	91
3.4 Numerical results and discussion	98
3.5 Conclusions	102
4. COHERENT DETECTION OF M-ARY CONTINUOUS PHASE CHIRP (CPC) SIGNALS IN GAUSSIAN NOISE	
4.1 Introduction	132

4.2	CPC-System description	134
4.3	Optimum coherent maximum likelihood receiver	137
4.4	Performance analysis of the optimum coherent receiver	138
4.5	Some distance properties of M-ary CPC signals	142
4.6	Numerical results - Error probability bounds	148
4.7	Conclusions	152
5.	NONCOHERENT DETECTION OF M-ARY CONTINUOUS PHASE CHIRP (CPC) SIGNALS IN GAUSSIAN NOISE	
5.1	Introduction	172
5.2	Optimal noncoherent receiver structure	172
5.3	Performance analysis	175
5.4	Numerical results and discussion	179
5.5	Conclusions	183
6.	COHERENT DETECTION OF MULTI-MODE CONTINUOUS PHASE CHIRP (CPC) SIGNALS IN GAUSSIAN NOISE	
6.1	Introduction	194
6.2	Signal description and properties	194
6.3	Receivers and performances	198
6.4	Some distance properties of multi-mode CPC signals	203
6.5	Numerical results and discussion	208
6.6	Conclusions	210

7.	POWER SPECTRA OF CONTINUOUS PHASE CHIRP (CPC) SIGNALS	
7.1	Introduction	221
7.2	Brief signal description	221
7.3	Direct method of Spectrum Calculations	224
7.4	Numerical results and discussion	231
7.5	Conclusions	233
8.	THRESHOLD DETECTION AND NON-GAUSSIAN NOISE ENVIRONMENT	
8.1	Introduction	243
8.2	Optimum and suboptimum threshold receivers	244
8.3	Performance measure and improvement factors	247
8.4	Robustness of optimum and suboptimum receivers	253
8.5	Noise models	255
8.6	Numerical results and discussion	259
8.7	Conclusions	263
9.	COHERENT THRESHOLD DETECTION OF CONTINUOUS PHASE MODULATED (CPM) SIGNALS IN NON-GAUSSIAN NOISE ENVIRONMENT	
9.1	Introduction	290
9.2	Optimum and suboptimum threshold receivers for CPM	291
9.3	Performance analysis	296

9.4	Numerical results and discussion	299
9.5	Conclusions	306
10.	NONCOHERENT THRESHOLD DETECTION OF CONTINUOUS PHASE MODULATED (CPM) SIGNALS IN NON-GAUSSIAN NOISE ENVIRONMENT	
10.1	Introduction	332
10.2	Optimum and suboptimum noncoherent threshold receivers for CPM	333
10.3	Performance analysis of noncoherent threshold receiver for CPM signals	343
10.4	Numerical results and discussion	349
10.5	Conclusions	354
11.	HEURISTIC DECISION-DIRECTED DETECTION OF CPM	
11.1	Introduction	384
11.2	Decision-directed detection algorithm	386
11.3	Performance analysis of decision-directed receiver	389
11.4	Numerical results and discussion	397
11.5	Conclusions	399
12.	CONCLUDING REMARKS AND SUGGESTIONS FOR FURTHER WORK	
12.1	Introduction	410

12.2	Summary of results	410
12.3	Suggestions for further work	423
	APPENDIX A2	427
	APPENDIX B2	429
	APPENDIX C3	434
	APPENDIX D3	436
	APPENDIX F9	442
	APPENDIX G10	445
	REFERENCES	449