

CONTENTS

CHAPTER I: <u>INTRODUCTION</u>	1
1.1 A Perspective	1
1.2 Earlier Work	3
CHAPTER II: <u>MATHEMATICAL FORMULATION OF THE BULK QUEUING</u>	
<u>PROBLEM</u>	9
2.1 A Class of Markov Recurrence Relations	9
2.2 The Abstract Formalism	13
CHAPTER III: <u>A NUMERICAL APPROACH TO WAITING LINE PROBLEMS</u> .	21
3.1 Numerical Methods in Queuing Theory	21
3.2 The Basic Theory	22
3.3 The Simple Queue with Limited Waiting Room	23
3.4 A Bulk Queue with Limited Waiting Room	29
3.5 Queues with Variable Arrival Rate	37
3.6 A Heuristic Experiment	42
3.7 Operational Solutions vs. Exact Results	48
CHAPTER IV: <u>CONCLUSIONS AND DIRECTIONS FOR FURTHER RESEARCH</u>	51
REFERENCES	53
APPENDIX A: <u>PROGRAM LISTINGS</u>	59
APPENDIX B: <u>ON THE ANALYSIS OF COMPUTATIONAL ERRORS</u>	67
APPENDIX C: <u>ON ANALYTIC APPROXIMATIONS</u>	82