

TABLE OF CONTENTS

DECLARATION.....	i
ACKNOWLEDGEMENT.....	ii
ABBREVIATIONS AND SYMBOLS	iii
ABSTRACT	v
TABLE OF CONTENTS	vii
CHAPTER I	1
1.1 Background.....	1
1.2 Problem Formulation	5
1.3 Research Objective	5
1.4 Research Contribution	6
1.5 Research Organization.....	11
CHAPTER II	13
LITERATURE REVIEW AND FUNDAMENTAL THEORY	13
2.1 Overview of femtocell	13
2.2 Metaheuristic Optimization Algorithm Overview	14
2.3 Resource Allocation in Femtocell network	16
2.4 Bacterial Foraging Optimization Algorithm.....	22
2.5 Handling Discrete Problems in Bacterial Foraging Optimization	25
CHAPTER III.....	27
RESEARCH METHODOLOGY	27
3.1 System Model	28
3.2 Power Gain Calculation.....	29
3.3 Resource Block in Femtocell Network.....	33
3.4 Problem Formulation	33
3.5 Application of BFO Algorithm in the Resource Block Allocation	38
3.5.1 BFO Modification	39
3.5.2 Guidelines for Algorithm Parameter Choices	43
3.5.3 Fitness Evaluation	44
3.5.4 Pseudocode of Discretely Modified BFO	44
3.6 Particle Swarm Optimization Comparison	47

CHAPTER IV	49
SIMULATION RESULTS	49
4.1 Simulation Model	49
4.2 Benchmark Algorithm	50
4.2.1 Rastrigin Function	50
4.2.2 Rosenbrock Function	51
4.2.3 Sphere Function	52
4.3 SINR Convergence Analysis	54
4.4 Performance Analysis	59
CHAPTER V	65
CONCLUSION AND RECOMMENDATION	65
5.1 Conclusion	65
5.2 Future Works	65
REFERENCES	67