

Contents

List of Symbols	vii
Abstract	vii
1 Periodic points, Periods and Conjugacy	1
1.1 General introduction to discrete dynamical systems	1
1.1.1 Definition and Examples	1
1.1.2 Orbits, periodic points	3
1.2 The role of $Per(f)$ in Chaos	5
1.2.1 Chaos	6
1.2.2 Devaney's definition of chaos	7
1.2.3 Li- Yorke Chaos	9
1.3 Topological Conjugacies	11
1.3.1 Dynamical properties	12
1.3.2 The shift map - An example	13
1.4 Organization of the Thesis / Synopsis	16
2 Periodic points of toral automorphisms	22
2.1 General introduction	22

2.2	Automorphisms with determinant 1 and trace 2	25
2.3	Main theorem	29
3	The set of periods of toral automorphisms	33
3.1	Examples and Motivation	33
3.1.1	Sharkovskii's Theorem	34
3.1.2	Baker's Theorem	35
3.1.3	Period sets of Unit circle S^1 in the plane	37
3.1.4	Period sets of the Y -space	40
3.1.5	Sets of periods of n -od	42
3.1.6	Period sets for Tree maps	43
3.1.7	Saradhi's result	44
3.2	Period sets of hyperbolic toral automorphisms	44
3.3	The nonhyperbolic case	49
4	A counting problem	57
4.1	Dynamically Special points	57
4.1.1	Examples and some characterization theorems	58
4.2	Counting homeomorphisms	70
4.2.1	Counting increasing homeomorphisms	71
4.2.2	Counting decreasing homeomorphisms	76
4.3	Counting continuous maps	81
4.3.1	Some basic conjugacy results	82
4.3.2	Somewhere constant maps	83
4.3.3	Nowhere constant maps	84

4.4	Main theorem	87
5	Periodic points Vs Critical points	91
5.1	Motivation	91
5.2	Main Theorem	93
A	Some open questions	97
	Bibliography	98
	Index	100

