

TABLE OF CONTENTS

PREFACE	v
1. BRAID GROUPS	3
1.1. Definition of the braid groups	5
1.2. Configuration spaces	11
1.3. Braid groups of manifolds	15
1.4. Braid group of the plane	17
1.5. Braid group of the sphere	34
1.6. Survey of 2-manifold braid groups	35
2. BRAIDS AND LINKS	37
2.1. Closed braids and links	38
2.2. Markov's theorem	48
2.3. The conjugacy problems in Artin's braid group	69
2.4. The algebraic link problem.....	94
3. MAGNUS REPRESENTATIONS	102
3.1. Free differential calculus	103
3.2. Magnus representations	110
APPENDIX TO CHAPTER 3: PROOF OF THEOREM 2.10	144
4. MAPPING CLASS GROUPS	148
4.1. The natural homomorphism from $M(g,n)$ to $M(g,0)$	150
4.2. The Mapping class group of the n -punctured sphere	161
4.3. Generators for $M(g,0)$	165
4.4. Lifting and projecting homeomorphisms	181
4.5. Survey: mapping class groups of 2-manifolds	189
5. PLATS AND LINKS	192
5.1. Representing a link by a plat	192
5.2. The algebraic plat problem.....	202
5.3. The link problem for 4-plats	205
APPENDIX: RESEARCH PROBLEMS.....	216
BIBLIOGRAPHY	221
INDEX	227