

**HTI**

**ELECTRICAL ENGINEERING COURSE**

**DIPLOMA PROJECT**

**POWER ELECTRONICS**

**FOR BUMPER CARS**

**CONSTANTINOS IOANNIDES**

**1989**



Objectives :

1. To study technical problems associated with bumper cars used in luna parks.
2. To suggest certain solutions to the above problems.
3. To design, construct and test a chopper and control and safety circuits for controlling a D.C. motor.

## TABLE OF CONTENTS

### CHAPTER 1

D.C. Voltage choppers .....	1
Thyristor choppers .....	5
Transistor choppers .....	5
Power MOSFET choppers .....	8

### CHAPTER 2

D.C. Motor control .....	11
Starting D.C. motors .....	12
Variable resistance method .....	13
B-Emf method .....	13
Definite time method .....	16
Inching .....	16
Braking motors .....	18
External braking .....	18
Internal braking .....	19
Dynamic braking .....	19

### CHAPTER 3

Block and circuit diagram of the system ...	22
---	----

CHAPTER 4

Design and calculations .....	23
Operation of the chopper circuit .....	23
Operation of the control circuit .....	24

CHAPTER 5

Testing - Results - Conclusions .....	29
---------------------------------------	----