

## CONTENTS

	Page
I. INTRODUCTION	1
1. Introduction - Background and Objective	2
2. Heavy Quarkonia - Experimental results	6
3. Heavy Quarkonia - Theoretical aspects	11
4. Supersymmetry and bound states	15
5. Summary of the work done	18
II. NON-RELATIVISTIC POTENTIAL	21
1. Introduction	22
2. Non-relativistic $Q\bar{Q}$ potential	23
3. t-quark mass and Toponium	33
4. Total and hadronic decay widths of $\chi_B^J$ states	40
5. Conclusions	42
III. FINE-HYPERFINE INTERACTION	43
1. Introduction	44
2. Breit-Fermi potential	45
3. Modified Breit-Fermi potential	49
4. Fine-hyperfine splittings	52
5. Conclusions	65
IV. EXACT RESULTS FOR HYPERFINE INTERACTION	66
1. Introduction	67
2. Some inequalities for S-state wave-functions	68
3. Mass dependent potential and decay width of $\eta_B$	72
4. Conclusions	76

V.	TWO GLUINO BOUND STATES	:	77
	1. Introduction	:	78
	2. Two gluino bound state	:	80
	3. Long-range potential and results	:	83
	4. Conclusions	:	96
VI.	REFERENCES	:	97