行人有限元素模型之建立
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摘要
汽車撞擊行人造成的傷害佔了交通事故傷亡人數很大的比例，因此行人安全防護在各國汽車安全性研究已日漸受到重視。使用有限元素理論建立行人模型，可以在電腦中虛擬地呈現行人與車輛碰撞的各種反應，從而把握行人在碰撞後的運動情況以及傷害情況。故本論文首先採用LD-DYNA分析軟體建構可變形的有限元素行人模型；並分別以25, 32及40 km/hr不同碰撞速度衝擊有限元素行人模型，探討行人模型頭部、骨盆、膝蓋及足部各部位之位移動態軌跡以及頭部速度結果，並藉由死屍實驗來驗證本論文建構有限元素行人模型之正確性；另外本研究亦藉由車輛撞擊行人數值模擬對行人頭部、小腿、大腿、胸部、頸部及骨盆等部位進行損傷分析。採用本論文建立之行人數值模型進行車輛碰撞行人事故模擬與損傷分析，可準確地評價車輛在行人保護方面的性能，更為未來車體結構及行人安全防護裝備之設計參考。

關鍵詞：可變形行人模型，行人損傷，行人防護，車輛/行人撞擊，全尺寸行人模型

目錄
COVER CREDENTIAL AUTHORIZATION LETTER iii
ABSTRACT iv
ACKNOWLEDGMENTS v
TABLE OF CONTENTS vii
TABLE OF FIGURES x
LIST OF TABLES xiii
Chapter I INTRODUCTION 1
1.1 Motivation 1
1.2 Literature survey 5
1.3 The purpose of this study 11
1.4 The structure of this thesis 11
Chapter II ASSESSMENT METHODD OF PEDESTRIAN FRIENDLINESS OF VEHICLE 25
2.1 Impactor method 25
2.1.1 Headform to Bonnet Top Test 25
a) Purpose 25
b) Certification Tests of Headform Impactor 26
c) Test Procedure 26
d) Head Injury Criterion Definition 26
2.1.2 Upper Legform to Bonnet Leading Edge Test 27
a) Purpose 27
b) Certification Test of Upper Legform Impactor 27
c) Test Procedure 27
2.1.3 Legform to Bumper Test 28
a) Purpose 28
b) Certification Test of Upper Legform Impactor 29
c) Test Procedure 29
2.2 Full scale pedestrian model method 29
2.2.1 PMHS corridor for vehicle 29
2.2.2 PMHS trajectory corridor of body segments of pedestrian model 30
2.3 Injuries criterion for pedestrian injuries evaluaton 31
Chapter III FINITE ELEMENT MODEL OF PEDESTRIAN AND VEHICLE 43
3.1 Pedestrian model 43
3.1.1 Head 44
3.1.2 Neck 44
3.1.3 Clavicle 44
3.1.4 Arms 45
3.1.5 Chest 45
3.1.6 Abdomen 46
3.1.7 Pelvis 46
3.1.8 Hip joint 47
3.1.9 Thigh 47
3.1.10 Knee 48
3.1.11 Leg 48
3.1.12 Ankle joint 48
3.1.13 Foot 49
3.1.14 Contact interaction 49
3.2 Finite element car model 49
Chapter IV PEDESTRIAN MODEL VALIDATION RESULT AND DISCUSSION 61
4.1 PMHS validaton result 61
4.2 Kinematics of pedestrian in impact with vehicle 62
4.3 How to apply the current pedestrian model 63
Chapter V PEDESTRIAN INJURIES ANALYSIS 71
5.1 Impact environment 71
5.2 Deformable car model 71
5.3 Injuries analysis 72
5.3.1 Head injury 72
5.3.2 Neck injury 73
5.3.3 Chest injury 74
5.3.4 Waist injury 75
5.3.5 Pelvis injury 76
5.3.6 Femur injury 76
5.3.7 Tibia injury 77
5.3.8 Knee injury 78
5.3.9 Ankle injury 79
5.4 The effect of front shape of car on the injuries of pedestrian model 79
5.4.1 The effect of front shape on the pelvis injury 79
5.4.2 The effect of leading edge shape on the femur injury 80
5.4.3 The effect of bumper shape on the tibia injury 80
5.4.4 The effect of bumper shape on the knee injury 80
5.5 Summarizations 81
Chapter VI CONCLUSIONS AND FURTHER STUDIES 98
6.1 Conclusions 98
6.2 Further studies 99
REFERENCES 100

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