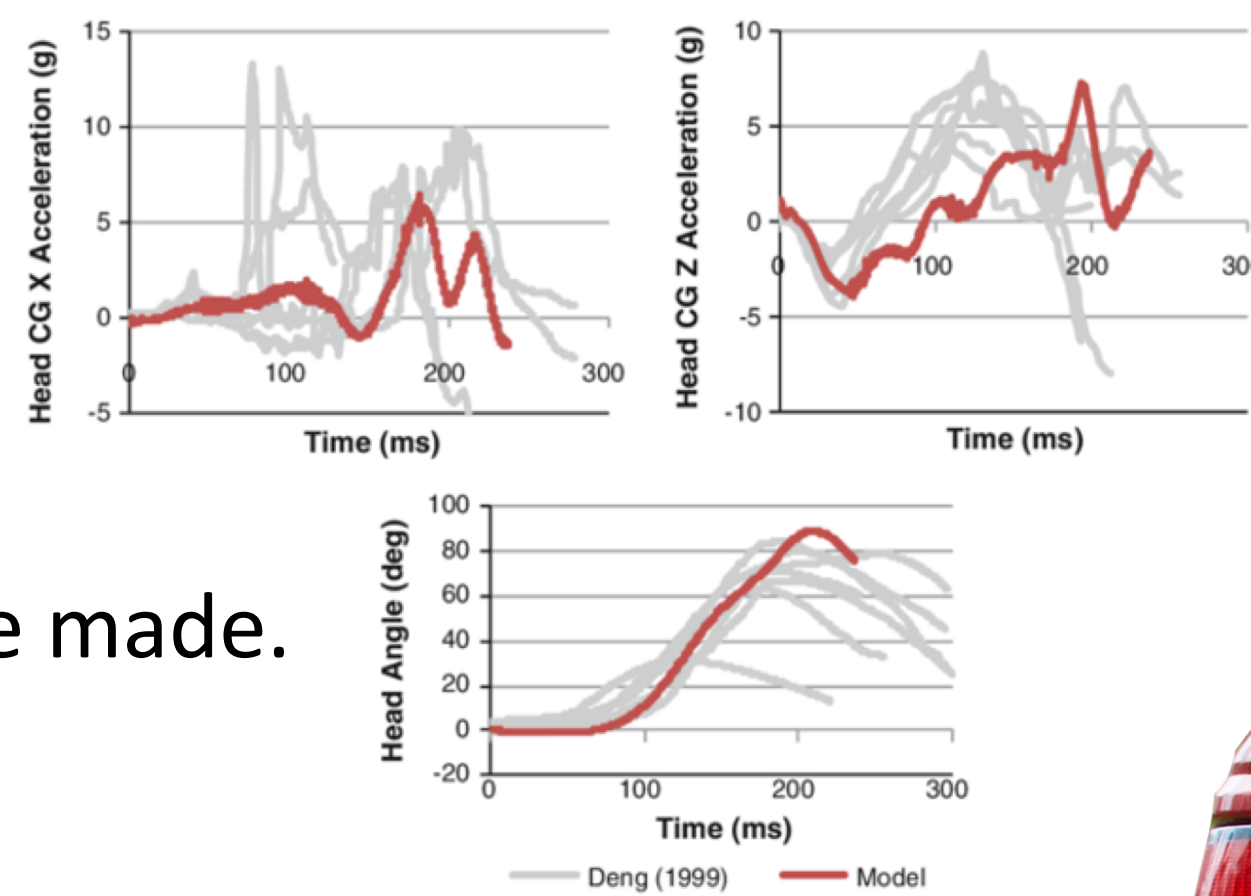


Summary

This project is a legacy project that further investigates occupant and vehicle responses to low speed rear end collisions. Data for the responses will be recorded by performing various rear end crash tests.

The results will be analyzed and then an empirical model will be made.



Analysis of occupant motion during high speed testing

Background

- Most known information on crashes are high speed
 - +40 mph
- Under **7 mph**, American bumpers are designed not to break, **transferring more force through the vehicle**
- These impacts can cause whiplash
 - Results in 1 billion dollars in insurance claims a year

Objectives

Further current knowledge on low speed collisions*:

- Create a general empirical model for low speed rear end collisions at or below **7mph**
 - Determine a relationship between occupant and vehicle responses

*Data from live crash tests will be used to validate expert witness claims in court



Acknowledgements

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Experimental Setup

- We will have a stationary car fixed with the bumper mount
- The stationary car will be hit from behind by another car traveling $\leq 7\text{mph}$
- We will have accelerometers placed on the front car and front car occupant to see their resultant responses
 - The trials will be repeated and data will be analyzed to find experimental trends



The bumper mount as seen from behind and above

Deliverables

- A general empirical model for low speed rear end collisions
- Model calculations depicting occupant and vehicle response
- Model simulations depicting occupant response to collision

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