



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Tom J. Hiel</b>	<b>Project Number</b> <b>S0211</b>
<b>Project Title</b> <b>The Effect of Suspensions on a Car's Vertical Acceleration</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Suspension serves two purposes in a car, it use an energy absorbent material that supports the weight of the body and flexes freely to absorb harsh blows in the road (How suspensions work, 2004). The second purpose is to ensure that all four wheels of the vehicle are always in contact with the road (Physics of your Car, 2003). When a car hits an object, a force is created, measured in G#s. In this project, suspensions made of various materials were mounted onto a model car and tested to see how much vertical acceleration they could absorb. My hypothesis was "If a car is fitted with a suspension when driving over a bump, then the vertical accleration shall decrease." <b>Methods/Materials</b> To measure the vertical acceleration, a model car was created on which an accelerometer was mounted. The car rolled down a track and hit a bump. The accelerometer recorded the vertical acceleration and gave readings on the computer. Five different kinds of suspensions were tested. They were each rolled down the track five times and the average vertical acceleration was determined. <b>Results</b> The average vertical acceleration for each of the suspensions was determined as well as the percent decrease when compared to a car with no suspension. All the results have been graphed and analyzed. <b>Conclusions/Discussion</b> My hypothesis, "If a car is fitted with a suspension when driving over a bump, then the vertical acceleration shall decrease", has supported by the data. This project has several other real world applications such as the shock absorbing cartilage found between joints and cartilage.	
<b>Summary Statement</b> The focus of the project was to determine what effect suspensions had on the vertical acceleration of a car.	
<b>Help Received</b>	