



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jalahn I. Travis</b>	<b>Project Number</b> <b>J0328</b>
<b>Project Title</b> <b>The Physics of Roller Coaster Friction</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I love roller coasters and I have always wanted to learn more about how they work. My goal for the experiment was to create a model of a roller coaster track and drop a car from certain heights to see if the loss of friction stayed the same. Also, I wanted to see how high I had to drop a car to determine the effects of friction on potential energy.</p> <p><b>Methods/Materials</b> My co-authors and I built a roller coaster from a "K-Nex" roller coaster set. We duct-taped two sides of the track to shelves and used a stopwatch to determine the average time for the car to descend and ascend the track. We also used a meter stick to determine the height the car was dropped from. We used a calculator to check our work.</p> <p><b>Results</b> I used the following formula: <math>P.E. = M.G.H.</math> (Potential Energy equals Mass x Gravity x Height) for my experiment. The car was dropped ten times and we recorded the results. We found out that the car went <math>\frac{2}{3}</math> of the distance back up the track after descending from one meter. We discovered that friction takes away from potential energy by 36 percent.</p> <p><b>Conclusions/Discussion</b> We noticed that the height that the car returned to was fairly consistent during the ten times we performed the experiment. I would like to know if a 36 percent loss of friction will stay the same regardless of how high we drop the car, so we hope to continue this experiment with more trials from different heights.</p>	
<b>Summary Statement</b> My project used a model roller coaster to investigate how much friction affects potential energy.	
<b>Help Received</b> Two classmates assisted with the project but were too young to participate in this fair. Teacher helped with grammar on display. Parent helped with design of display.	