



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

| | |
|--|---------------------------------------|
| Name(s) Aaron Avazian; Sean Phillips | Project Number S0201 |
| Project Title The Gyroscopic Effect of the Speed of a Rotating Flywheel on the Stability of a Turning Vehicle | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The experiment was conducted in order to test the effect of the speed of a rotating flywheel within a vehicle on the momentum and stability of a turning vehicle. It was hypothesized that the rotating flywheel would increase the momentum of the vehicle thus making the vehicle less stable as it changed direction.</p> <p>Methods/Materials A train car with a mounted flywheel was released at different heights on an incline with the flywheel spinning at different speeds. There were three trials for each height, and ten heights for every voltage, testing whether the train car fell off the track or continued through the turn at the bottom of the incline.</p> <p>Results The average height where the train car began to fall decreased by voltage until leveling out at 80.00 cm then, as the voltage increased, the average height increased slightly to 81.43 cm then decreased somewhat sharply to 77.50 cm before coming back up to 80.00 cm. Overall, with some exceptions, the average height of falling decreased as the voltage increased.</p> <p>Conclusions/Discussion These results supported the hypothesis and the anomalies were most likely caused by human error in the release of the train car or because the flywheel started to create a wind current. Overall this experiment supports the idea that as the speed of the flywheel increased, the resistance to change in orientation increased in the train car.</p> | |
| Summary Statement The experiment was conducted in order to test the effect of the speed of a rotating flywheel within a vehicle on the momentum and stability of a turning vehicle. | |
| Help Received Mother helped gather materials, took photographs. | |