



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Alexandra I. File	Project Number S1907
Project Title Effects of Rotational Inertia on a Fastball	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of this project was to see what effects rotational inertia would have on the velocity of a softball pitched fastball. Another goal of the project was that by finding the results of the experiment to use the data to help younger pitchers understand more about pitching. I myself also learned a lot which was very helpful in the end. By slowly spreading the mass of the pitcher farther and farther away from their axis of rotation, the results of this project were found.</p> <p>Methods/Materials The method is this project was that pitchers from within my county would pitch five fastballs. The five pitches were a regular fastball, fastball finishing with their left arm out, fastball finishing with their right arm out, fastball finishing with their hip back, and fastball finishing doing all three of the above (left, right, hip.) A radar gun was placed behind them and at the end of each pitch the velocity was recorded. Materials used for this project were quite simple, a softball, a radar gun, a pitching area, and a pitcher.</p> <p>Results The results showed that the farther away mass was from the pitcher's axis of rotation the slower the resulting velocity would be. The left arm, and doing all three of the finishes proved to result in the slowest velocity. This was because in these two pitches the mass was farthest from the axis of rotation.</p> <p>Conclusions/Discussion The hypothesis was proven correct through this experiment. It was proven that the farther away a pitcher's mass is from their axis of rotation their resulting velocity will be much slower than if they finish tightly with all their mass closer to their axis of rotation. There were not many surprises that were encountered in the conducting of this experiment, and the results turned out very good and helpful.</p>	
Summary Statement The idea of my project was to see what effects rotational inertia would have on the velocity of a softball pitched fastball.	
Help Received Radar gun provided by my pitching coach	