



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Matthew D. Sandoval</b>   | <b>Project Number</b><br><br>36813 |
| <b>Project Title</b><br><b>The Effect of the Magnitude of RR Lyr on Its Temperature</b>  |                                    |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b><br/>The objective of this study was to determine if there is a relationship between the magnitude of RR Lyr and its Temperature</p> <p><b>Methods/Materials</b><br/>Telescope, CCD Camera, Alpy Spectrometer, ISIS Spectroscopy Software, CCDSoft. Took a series of RR Lyr spectra along one pulsation cycle along with calibration images. Also took a series of photometry images and calibration images to use differential photometry and compare the temperature to the magnitude.</p> <p><b>Results</b><br/>There was a direct relationship between the temperature and the magnitude of RR Lyr.</p> <p><b>Conclusions/Discussion</b><br/>The results of this study support the research done by Sir Arthur Eddington and his theory of why variable stars pulsate. The direct relationship may provide a method for determining the temperature of RR Lyr based on its magnitude.</p> |                                    |
| <b>Summary Statement</b><br>I found that there was a direct relationship between the magnitude and temperature of RR Lyr.  |                                    |
| <b>Help Received</b><br>My mentor, Robert Buchheim, provided the telescope as well as other materials and software for my project. He also taught me how to do the data reduction on the images.   |                                    |