



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

<p>Your Name (List all student names if multiple authors.) Jonathan D Grinstein</p>	<p>Science Fair Use Only</p>
<p>Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) The Dynamics Of Soap Films</p>	<p style="font-size: 2em; font-weight: bold;">J1411</p>
<p>Preferred Category (See page 5 for descriptions.) 14 - Physics & Astronomy</p>	<p>Division J Junior (6-8) J Senior (9-12)</p>
<p>Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.</p> <p>Objective: My objective was to find whether there was a detectable change in the thickness of a soap film as a function of height and time.</p> <p>Materials and Methods: A device was made to carry out the procedure. It made soap films 75 cm tall and 50 cm wide. Three solutions were used to make soap films. The first solution consisted of 10 parts water, 1 part Ajax Dishwashing Soap, and 1/6 part glycerin. The second solution had the same amount of water, but double the dishwashing soap and glycerin. The third solution consisted of 10 parts water, 1/2 part Ajax Dishwashing Soap, and 1/12 part glycerin. A white poster board was put next to the left side of the device, and a 100 watt light bulb was shone onto the white board, which reflected onto the soap film so that it and its colors could be seen. A digital video recorder was placed in front of the device on its right side, so that the soap film and its colors could be recorded. After recording each solution five times, the film was transferred to a computer where the film was analyzed. The color green was then observed and data was created from its movements.</p> <p>Results: The results of each trial were identical. Each result varied slightly depending on the use of one of the three solutions. Each observable color represents a different thickness of the film. There were different colors at different heights which indicated that the thickness varied at each height. Also, the lines of colors on the soap film moved down with time and less lines were visible as the time progressed. The soap film eventually popped which demonstrated that the film got too thin to be held together.</p> <p>Conclusion: My results strongly supported my hypothesis and allowed me to find the answer to my objective; there was a detectable change in the thickness of a soap film as a function of height and time.</p>	
<p>Summary Statement (In one sentence, state what your project is about.) To determine the thickness of a soap film and whether it changes as a function of height and time.</p>	
<p>Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. father helped build contraption. Teacher suggested revisions. Drs. Rothstein and Grinstein explained science issues.</p>	