

Marsh White Award  
Final Report  
Society of Physics Students  
Colorado School of Mines  
1500 Illinois Street  
Golden, CO 80401



**Family Math and Science Night**

Mitchell Elementary School 200 Rubey Drive Golden, CO 80401

April 22, 2009

The Colorado School of Mines SPS chapter has worked hard to get back on its feet. Last year a few dedicated students wanted to start a physics club and realized the best way to do this would be through the Society of Physics Students. Thus far, we have been able to do several outreach events in addition to holding an SPS zone meeting in conjunction with an American Association of Physics Teachers meeting. Our primary outreach event in both 2008 and 2009 was Family Math and Science Night at Mitchell Elementary School in Golden, Colorado.

Family Math and Science Night is an evening at Mitchell Elementary School in which math, science, and engineering games and demonstrations are set up for children and their parents to explore. There are math games set up by parent volunteers in addition to engineering games and demos. There are professionals with in careers in science giving demonstrations and answering questions about their profession. In addition, the geophysics department from Colorado School of Mines also had geology demonstrations. Our SPS chapter had some physics demos for Family Math and Science Night last year, and we were awarded \$300 for demonstrations this year.

The Marsh White funds were used to buy the following items:

Green Laser Pointer (<5 mw)	1	\$62.95	\$62.95
Vortex Bottle Connectors - Tornado in a Bottle	10	\$1.25	\$12.50
Bottle Balancer Illusion	1	\$12.95	\$12.95
Inverting Pop Tops - Red (bag of 20)	1	\$19.95	\$19.95
Boomwhacker Music Book	1	\$5.95	\$5.95
Boomwhacker Bass Set	1	\$49.95	\$49.95
Octavator End Caps	1	\$10.95	\$10.95
Air Zooka!	1	\$15.95	\$15.95
Prism Glasses - Double Axis (pkg of 10)	5	\$8.95	\$44.75
Solar Tube	1	\$16.95	\$16.95
The Mirage	1	\$34.95	\$34.95
3D Standing Wave Machine	1	\$34.95	\$34.95
Singing Rod	1	\$16.95	\$16.95
		Subtotal:	\$339.70
		Tax:	\$0.00
		Shipping & Handling:	\$27.01
		Total:	<b>\$366.71</b>

In February, our chapter received the “Makin’ Waves” SPS Outreach Catalyst Kit (SOCK) which included a set of Boomwhackers, a large spring, jello molds, and polarized sunglasses was also used for demonstrations at Family Math and Science Night. The first set of Boomwhackers was so fun; we decided to use some of the funds for more. We can now have a

full range of two octaves. These, along with the Air Zooka! , were the most popular demonstrations with the children. More than 350 children from kindergarten to 6<sup>th</sup> grade attended Family Math and Science Night and were very excited about our demonstrations. We had 17 volunteers for our demos so we were able to keep them all running simultaneously. Photographs of Family Math and Science Night can be seen below.

Pointing a laser at the hole where water is spilling out causes the laser to follow the stream.



SPS member Jessica Denning explains how the following effect is created by the critical angle of the light on the water-air boundary.

A child and her mother play “Mary had a Little Lamb” with the Boomwhackers with the help of SPS member Molly Shave.



Chapter member Ryan Browne shows children how polarized sunglasses work

SPS Media Chair, Jason Buster, helps 6 boys tug-of-war on phonebooks held together by friction.





Vice President of Inreach, Jacob Lapenna, teaches children about angular momentum.

Chapter member Daniel Wilson puts on a show with the new singing rod.



A boy shoots himself with a blast of air using the Air Zooka!

Chapter member and photographer, Zach Boerner shows a family how to read the voltage across their body.



Two children create a standing wave with a giant spring.

The members of the CSM SPS chapter had a great time volunteering and we can't wait until next year. The 16 volunteers present were:

- Molly Shave
- Charles Pearl
- Tim Lim
- Jacob Lapenna
- Jessica Denning
- Jason Buster
- Zach Boerner
- Ryan Browne
- Lewis Patterson
- Alec Westerman
- Marty Otzenberger
- Daniel Wilson
- David Vargas
- Jeremy Bundguard
- Shirley Moore
- Eric Weisgerber