

## Utah State University Marsh White Outreach Award Report 2011

Since receiving its Marsh White 2011 Award in February, the USU SPS Outreach program has participated in 14 separate events impacting 5200 attendees, with an average of 10 SPS outreach-guides per event. See Appendix.

The theme of this year's Award—wave demonstrations—was chosen in response to Utah Education Department's identification of wave phenomena as the least well understood topic in pre-college science education in the State.

The wave package we have assembled to date includes two 12 ft slinkies, a Chladni plate kit, and a Rubens' tube. The slinkies and Chladni plate kit were purchased; the Rubens' tube was designed and built by the Chapter's members from bought and donated materials. We also received a mechanical oscillator and a frequency generator as gifts from a private benefactor.

To build the Ruben's Tube 20 SPS members held a 4 hr Rubens' Tube Party one Saturday that involved cutting, machining, and drilling in the Department's metal shop, plus pizza—not in the shop. Follow on shop work by four members (involving another 20 person-hrs) finished the job.

The various pieces of apparatus have been used so far at outreach shows at several elementary schools and at USU for a group of homeschooled youngsters, at "Microwave Day" during celebration of "Geek Week" on campus, and at the annual Physics Day at Lagoon Amusement Park event. The SPS Outreach team is developing curricula to be used with the apparatus for audiences of different backgrounds.

### Budget:

- 2 12 ft slinkies \$30
- 1 Chladni Plate Kit \$89
  
- Construction material for Rubens' tube: \$185
  - 1 10 ft, 4" diameter steel electrical piping
  - 1 10 psi regulator
  - hosing, connectors, drill bits, salt crystals (to color the flame)

Total cash expenditures: \$304

Additional support for project from gifts: 1 mechanical oscillator, 1 frequency generator, metal for pipe cap that we milled and tapped. Estimated value > \$1000.

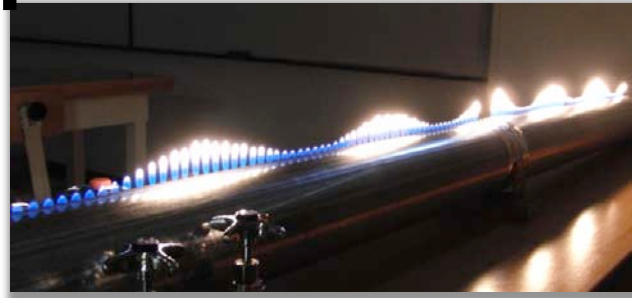
To the wonderful members of the Society of Physics Students:

Thank you so much for all you did to make our Hillcrest Elementary School After-school Science Club possible this year! Our son, Jason, learned so much, and really loved the hands-on chance to play with science! THANKS! You are making a big difference for the future and today with your service!

Sincerely,  
Julie Duersch, Logan, UT, May 27, 2011



Chrissie making sparks fly



The tube aglow



Danielle and Charlie and young physicists



Gifts for the project

**Appendix**

<b>Date</b>	<b>Activity</b>	<b>People Attended</b>	<b>SPS Members</b>
<b>June</b>			
06/05/10	USU Aviation Department Outreach	200	7
<b>July</b>			
07/24/10	Logan City State Celebration Outreach	1680	16
<b>September</b>			
09/08/10	Science Club at Hillcrest	20	3
09/10/10	Child and Family Day on the Quad Outreach	300	5
09/22/10	Science Club at Hillcrest	20	4
<b>October</b>			
10/08/10	Aggie Blue Night Sky	300	21
10/09/10	Haunted Lab Prep	14	14
10/21/10	Haunted Lab Prep	12	12
10/25/10	ASUSU Halloween Carnival Outreach	200	7
10/28/10	Cache High School Dell Keck	18	3
10/28/10	Professor Triplett's Physics class Outreach	300	4
10/29/10	Haunted Labs	1200	38
<b>November</b>			
11/10/10	Science Club at Hillcrest	20	5
11/11/10	Mt. Logan Middle School Career Fair Outreach	75	4
11/22/10	Demo Day in the TSC Outreach	50	6
<b>December</b>			
12/08/10	Science Club at Hillcrest	25	4
12/15/10	South Cache Middle School Outreach	20	3
12/17/10	Mount Logan Middle School Outreach	350	7
<b>January</b>			
01/18/11	Summit Elementary School Outreach	30	4
01/21/11	Science Extravaganza Hillcrest Elementary School	300	10
<b>February</b>			
02/03/11	SPS Demo activity	8	8
02/09/11	Science Club at Hillcrest	30	2
02/17/11	Planning Meeting with Hot Chocolate Doughnuts and Bouncy Balls	10	10
<b>March</b>			
03/08/11	Cedar Ridge Middle School Outreach	30	3
03/04/11	Providence Elementary Outreach	700	5
03/15/11	Microwave Day in the TSC Outreach	100	5
03/16/11	Adams Elementary Science Fair	200	3
03/17/11	Bouncy Ball Drop Outreach/Fun	3000	20
03/18/11	Judges Providence Elementary Science Fair	50	2
03/19/11	Society of Hispanic Professional Engineers/ Coop Outreach	400	10
03/29/11	MESA Club Outreach	12	3
<b>April</b>			
04/13/11	Science Club at Hillcrest	30	2
04/20/11	Edith Bowen Judges for Science Fair	20	3
05/13/11	Physics Day at Lagoon	500	20
<b>May</b>			
05/27/11	Home schooled children Rubens' Tube Demo	10	2
<b>Total</b>		<b>10234</b>	<b>275</b>