

Physics Outreach: Classroom Connections

Society of
Physics
Students

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Introduction

- Summer Goal: Make physics more accessible and enjoyable to students in grade and high school
- SOCKS—SPS Outreach Catalyst Kits
- Pilot partnership: SPS and MRSEC GK-12
 - Resource/facilities sharing, exchanging ideas, networking



University of Maryland MRSEC GK 12

- Program purpose
 - Stimulate interest in science
 - Enhance education for underrepresented students
 - Develop fellows' teaching skills
- Activities
 - Weekly classroom visits
 - Day demos
 - Science camps

University of Maryland MRSEC GK 12

■ Our Interface

- Other fellows
- UM labs
- Outside speakers
- SOCK presentation

■ Summer Science Camps

- Summer Girls Camp
- Summer Science and Engineering Camp
- SOCKs use in camp



SOCKs: SPS Outreach Catalyst Kits

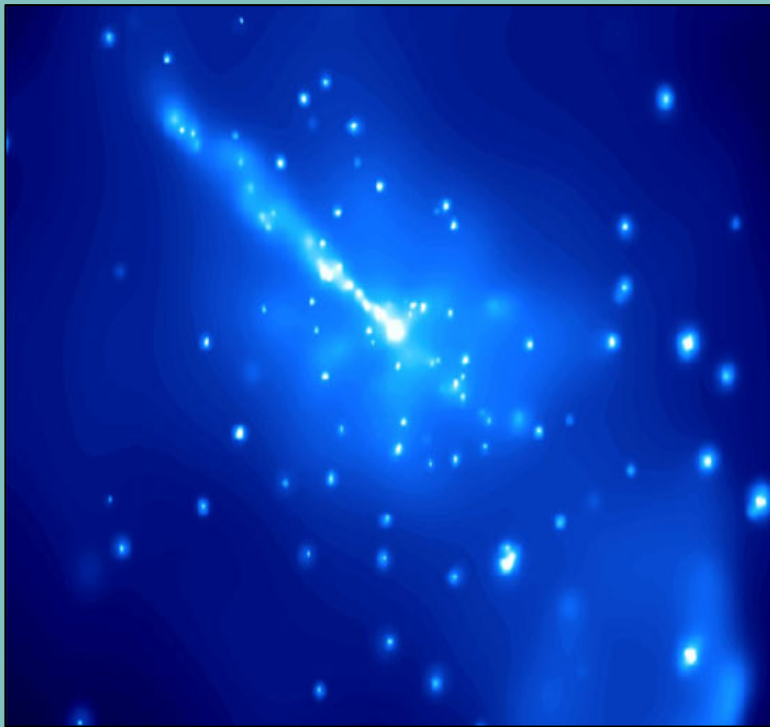
- Facilitate SPS chapters' outreach
- Demo and lesson materials
- History:
 - 1st SOCK
 - Mark Lentz, 2001 SPS intern
 - "Rainbow Room"
 - 2002 SOCK
 - Lauren Glas and Jason Tabeling, 2002 interns
 - "Dimensions in Physics"



SOCKs: Our Contribution

- Evaluation of previous SOCKs
- Selection of lessons/ activities
 - Light
 - Cylinder-dropping
- New theme: space
 - Understanding stars
 - Exploration of Mars

Understanding Stars: Possibilities for Lessons in Light



http://www.nasa.gov/multimedia/imagegallery/image_feature_71.html

- Spectra and spectroscopy
- Characteristics of light

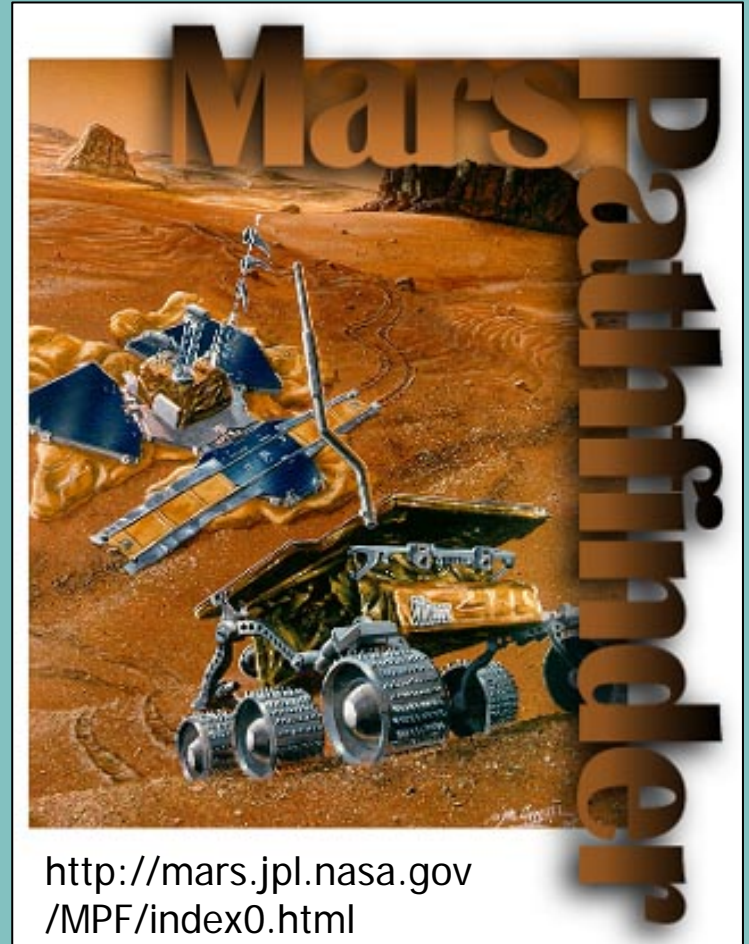
Lessons in Light: Spectroscopy



- Spectral Scavenger Hunt
 - Encourages Free inquiry
 - Conveys uniqueness of spectra
 - type of element
 - state of matter—Kirchoff
 - prism vs. diffraction gratings
 - Establishes spectroscopy as a tool
 - chemical composition of stars
 - star temperature

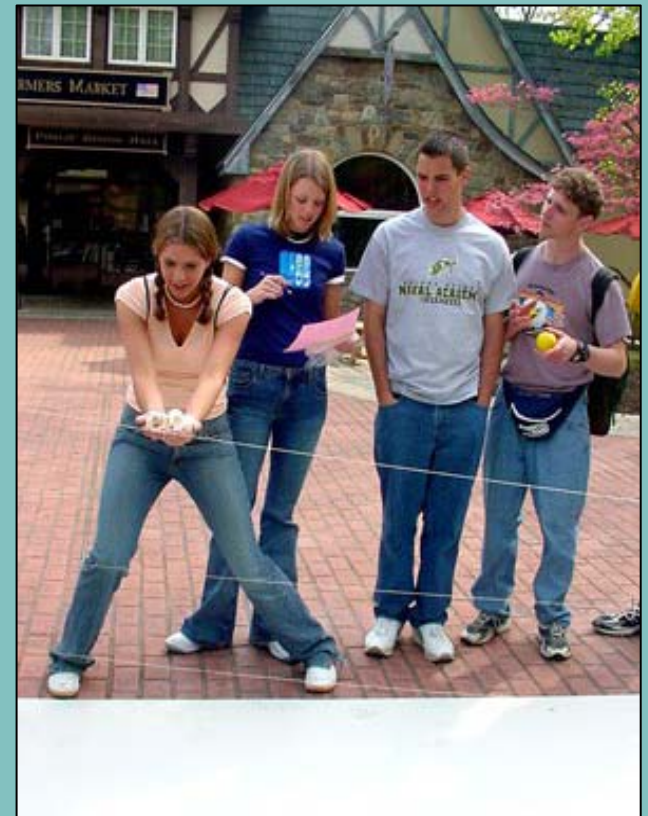
■ Exploration of Mars: Cylinder Dropping

- NASA's pathfinder mission
- New Science Experiment
- Properties & predictions:
Let's drop some cylinders



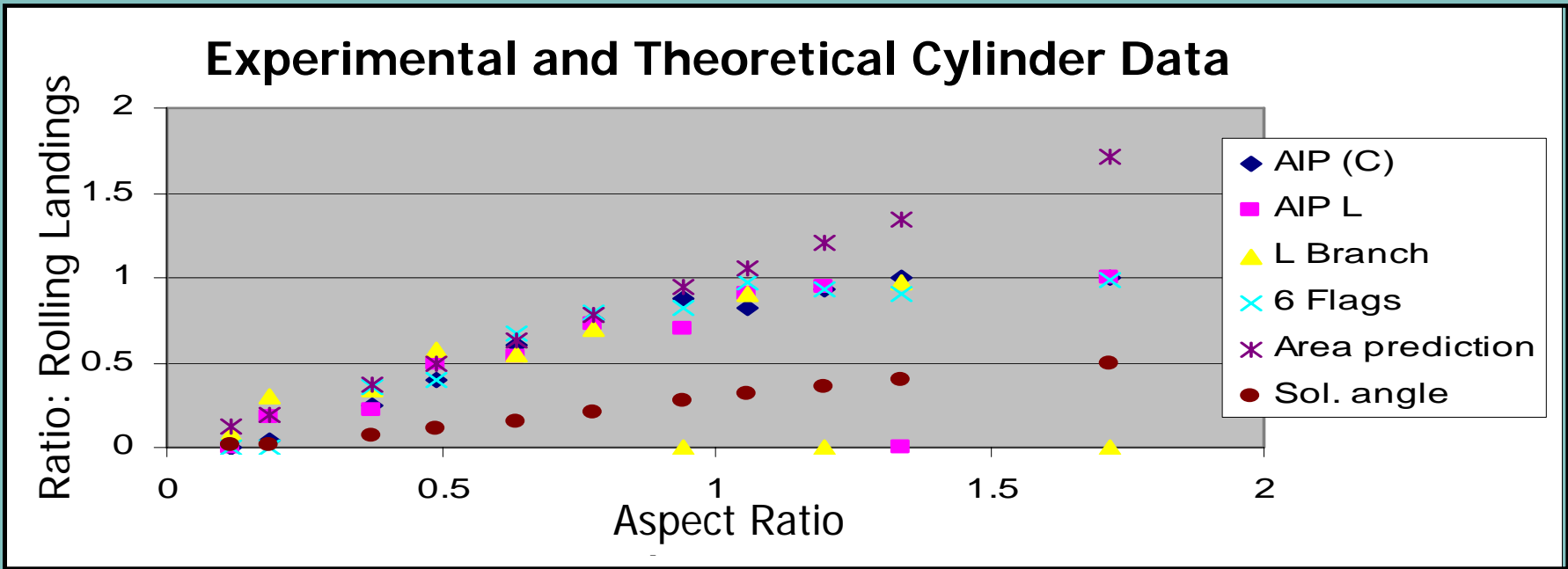
Cylinder Dropping: Lessons

- Area comparison
- Scientific method
- Tabular Analysis
- Statistics
- Adjustable for age group



Cylinder Dropping: The Science

- More complicated than area
- Weighted cylinders
- National Data Collection





The next step...

- Final decision on and implementation of SOCK contents
 - Incorporation of feedback
 - Cylinder Construction, order materials
 - Instruction Manual
- Aspirations
 - SOCKs: Inspire outreach (SPS chapters, GK-12)
 - SPS and MRSEC GK-12 relationship



Acknowledgments

- Gary White (Advisor, SPS)
- Donna Hammer (Advisor, MRSEC GK 12)
- Bradford Hill, Deepa Srikantaiah (MRSEC GK 12)
- MRSEC GK 12 fellows & staff
- Jack Hehn (Director of Education, AIP)
- Liz Dart Caron, (Intern Coordinator, SPS)
- SPS staff