

## INTERNATIONAL YEAR OF ASTRONOMY 2009 GALILEO ACTIVITY

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### CAST A SHADOW

From *Galileo for Kids: His Life and Ideas* by Richard Panchyk (Chicago Review Press, 2005). There is extensive background information and many more activities in this book recommended by the National Science Teachers Association (NSTA).

### Background

Galileo first believed that sunspots were shadows cast by nearby planets. Then he noticed that the spots were not regular in shape. In this activity you will look at the shadow of a round objects and compare to sunspot shapes.

### Materials

- Orange (as round as you can get)
- Knitting needle (at least 8 inches long)
- Piece of 30" x by 40" foam board
- Flashlight
- Measuring tape
- Black permanent marker
- 2 friends

### Activity

Poke a small hole in the orange and stick the knitting needle into the hole, so you can hold the needle and have the orange fixed to the end without it falling off. Lean the foam board against a wall so it is as close to parallel to the wall as possible. Have one friend kneel down and hold the needles with his or her arm extended in front of the foam board. Kneel in front of the orange at a distance of 2 feet. Shine the light directly at the ball at the same eight. Have your second friend trace and color in the outline of the shadow. Now, have the first friend move his or her arm slightly so it is in front of a clean part of the foam board. Change the angle of the flashlight, and have friend number two again draw the shadow that is cast. Do this a few times using different angles and distances

### Background and Extensions

- The Galileo Project Sunspot page:  
<http://galileo.rice.edu/sci/observations/sunspots.html>
- Exploratorium Sunspots page: <http://www.exploratorium.edu/sunspots/>
- Windows to the Universe Sunspots page:  
<http://www.windows.ucar.edu/tour/link=/sun/atmosphere/sunspots.html>

IYA2009 is modern astronomy's quadricentennial and an international celebration of numerous astronomical and scientific milestones. It marks the 400<sup>th</sup> anniversary of Galileo's first use of a telescope to study the skies and Kepler's publication of *Astronomia Nova*.

- The Stanford Solar Center has background information and an experiment about Galileo's observation of sunspots.  
<http://solar-center.stanford.edu/sunspots/galileo.html>
- Teacher's Domain – Galileo: Sunspots  
<http://www.teachersdomain.org/resource/ess05.sci.ess.eiu.galileosun/>

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