A Description of the Lab:

Purpose: A bit of history and a bit of science! To introduce students to the rare phenomenon of planetary transits (of Venus and Mercury) and to demonstrate the concept of parallax. Using modern methods---digital images from sites at various locations on the earth---it is possible to measure the length of the Astronomical Unit with a precision barely attainable by much more complex means during the previous transits of Venus in the 19th century.

This exercise enables students to observe images of the transit of Venus of June 8, 2004, and use measurements of those images of the sun from three terrestrial sites to determine the number of kilometers in an Astronomical Unit. The exercise uses images obtained by the GONG project. Software provided enables student to access the GONG images, display them as still images or animations, measure and record the positions of of the silhouette of the planet, plot its track across the sun, and thus determine the apparent parallax of the planet and the length of the astronomical unit. A second set of images of the transit of Mercury, May 7, 2003, is also available.

A student manual provided for this exercise describes a bit about the history of transits, the method of analysis and the operation of the software. It provides two possible ways of doing the exercise, a "Discovery Based" procedure which is open-ended, and a "Step by Step" procedure which leads students through the exercise, filling in tables and answer sheets as they go.

The downloadable file accessed on this page is a self-installing file which contains a small sample of images of the Venus transit from only two sites suitable for measurement . It can be used to determine the parallax of Venus (just barely), and will give a flavor of the exercise.

The full dataset, with a self-installing program for the software and the data, is available free of charge by writing Project CLEA, Department of Physics Gettysburg College, Gettysburg, PA 17325, (email clea@gettysburg.edu), or by filling in the request form accessed by the link on this page.