

A Description of the Lab:

This is very lag file (~36 MB) that uses fast Internet. Clicking on icon, self-installation is executed.

Purpose: To allow students to exercise some of the measurement techniques they have learned in earlier exercises to identify unknown objects given their celestial coordinates. To simulate the open-ended discovery and analysis techniques of research astronomers.

Students can give the celestial coordinates of an "unknown", Object X. Using the techniques of observational astronomy, they are asked to identify the object and find out all you can about its physical characteristics. This is similar to the capstone exercise in a chemical analysis course, allowing students to conduct an open-ended inquiry that makes use of what they have learned in earlier laboratory exercises. There are no "fill-in-the-blanks" procedures, nor a prescribed form for the report. Students can model their reports along a number of suggested lines, or instructors and prescribe a preferred method of analysis and reporting.

The lab software contains a variety of optical telescopes of various apertures, equipped with photometer, spectrometer, and a CCD camera capable of taking images and saving them as FITS files for analysis by a program supplied with the software. It also includes a radio telescope capable of recording incoming signals at three separate frequencies.

The dataset for this exercise is a subset a more VIRTUAL EDUCATIONAL OBSERVATORY (VIREO) also produced (but not yet released) by Project CLEA which includes over 15 million objects covering the entire sky. Like the all-sky dataset, the data supplied with the OBJECT X lab includes stars, galaxies, quasars, asteroids, and pulsars in several areas of the sky. The areas of the sky selected for this exercise were chosen because they contained a wide variety of objects of interest and because they were representative of the sky as a whole.