

Name: _____

Date: _____

Outdoor Laboratory: Binary Stars

Introduction

A binary system is two stars that share a common center of mass...they orbit one another. Systems with two stars are most often referred to as a double star. If the system has more than two stars, it is a multiple system. Binary stars where both stars can be observed (resolved) are called *visual* binaries. However, not all visual binary stars can be observed through small optics if the angular separation is smaller than the resolving power of the optical system. A number of binary systems have stars of very different color, such as Albireo (β Cygni).

Procedure:

Use the atlas charts in the Peterson Guide to assist with the selection process. Binary stars on the atlas charts have a line drawn through them (refer to the legend at the bottom of each atlas chart).

Telescope and binocular users can make use of the included "Astronomical League Binocular Double Star List". In the list, the column "logging designation" uses either the *Bayer* designation (greek symbol) or the *Flamsteed* designation (number). Both are used in the Peterson Guide atlas charts, but the Flamsteed designation is used only when a star does not include the Bayer designation. Observe double stars with a wide separation. For instance, the angular separation between Albireo A and its companion Albireo B is only $\sim 35''$. That may be too small a separation for binoculars that magnify less than 10, but easily observable in the telescopes.

Find and log four visual binary stars. Enter the appropriate information in the log below. Under the colors column, note the colors of both stars in each double that you locate. Have your instructor verify each double star that you locate and initial the log entry.

Note: *The SFA Star Charts will not be useful for locating binary stars. Use the Peterson Guide. Find the atlas chart for a constellation above the horizon to select potential observing targets.*

Name / Designation

RA/Dec

Magnitudes

Colors

1.

2.

3.

4