

Unit E – Practical 3

Image analysis of Cepheids to determine astronomical distances

Safety

There are no safety issues concerning this experiment.

Apparatus and materials

- A laptop/computer with:
 - access to the internet
 - Salsa J software and Stackreg and TurboReg plugins installed
 - 20 image files of a section of the sky on 20 different days

Introduction

In this exercise, you will analyse images of a section of the Small Magellanic Cloud and measure the variations of the luminosity of a Cepheid in order to determine the distance of this galaxy from our Sun.

Procedure

The detailed instructions for this exercise can be found on the following website:
<http://www.euhou.net/index.php/exercises-mainmenu-13/astronomy-with-salsaj-mainmenu-185/265-how-to-determine-astronomical-distances-using-cepheids>.

You will use the Salsa J image analysis software to measure the variation in luminosity of a Cepheid in the Small Magellanic Cloud and enter your answers in an Excel answer file. You will determine the period of this variation from the luminosity vs time graph and through some calculations you will determine the distance of this galaxy from our Sun.