NorthWest University Potchefstroom Campus Physics Department Astronomy Practicals
Christo Venter 2013-02-20

(1) Estimating the mass of globular clusters (constructing brightness profiles and obtaining tidal radii)

The students use internet data to pursue the following outcomes:
- Gain some insight into how, with very simple physics, it is possible to decide what measurements should be made to determine the physical properties of astrophysical objects;
- Obtain a basic knowledge of what globular clusters are and what the astrophysical and cosmological significance of these objects are;
- Gain some practical experience of working with FITS files;
- Gain further experience in the writing of a scientific report in article format.

(2) Atmospheric extinction coefficient determination

The students collect data from our local 16" optical telescope, pursuing the following outcomes:
- Understand the basic principals of astronomical photometry;
- Know about atmospheric and interstellar extinction and the method of Bouguer;
- Learn the importance of precision in experimental measurements which also can influence conclusions that will be made;
- Obtain further experience in scientific report writing in article format.

(3) Pulsating stars

The students collect data from our local 16" optical telescope, pursuing the following outcomes:
- Know how to do a periodic analysis on data and how to interpret it;
- Know what differential photometry is;
- Know the different types of variable stars;
- Understand the basic physics behind pulsating stars;
- Understand the practical importance of pulsating stars in astrophysics;
- Obtain further experience in scientific report writing in article format;
- Obtain experience in simple scientific programming using Octave/Matlab.

(4) Constructing an HR-diagram

The students reduce and analyse internet data of a galactic cluster. The aim of the experiment is that they obtain B and V magnitudes for as many stars as possible in an open cluster, and then construct the color-magnitude diagram. This diagram can then be used to determine the distance to and the age of the cluster.