

RASNZ Conference 2008

Introduction to CCD Photometry

A full-day hands-on workshop

Conducted by Dr Tom Richards (Woodridge Observatory, Melbourne)

Friday 23rd May 2008 at the Start of the 2008 RASNZ Conference

Godley Hotel, Lake Tekapo

Overview

This workshop introduces you to the principles and practice of CCD photometry as applied to brightness measurements of variable stars and asteroids. The technique to be studied is *unfiltered differential time-series photometry*, the simplest of all CCD photometric methods yet the one most widely used by amateurs.

Goals

At the end of the course you should:

- Know the camera/scope/mount/drive characteristics needed for CCD photometry;
- Understand what software is needed for photometric work;
- Understand the problem of noise and how to live with it;
- Know how to decide on targets suitable for your system;
- Be able to prepare for and carry out an all-night imaging run on one target;
- Know what to record in your observing and processing log;
- Understand the basics of image calibration for photometry;
- Be able to take raw calibration frames and make master frames from them;
- Know how to calibrate your raw images;
- Be able to carry out a time-series photometric analysis of your images;
- Be able to analyse your results and graph them in a spreadsheet;
- Know how to send your results to international collection authorities, and collaborate with their programmes.

What do you need to bring?

1. A laptop PC with:
 - Windows 2000, XP or Vista operating system
 - 200 MB free disk space (images use an *awful* lot of space)
 - 1024 x 768 px screen resolution minimum
 - CD-ROM drive

- Microsoft Excel, Notepad, and Word or equivalent software products.
 - Don't forget your mouse and power supply!
2. A pocket calculator (or use the one on your computer);
 3. Pen and pad.

We will provide

1. A CD with the MaxIm DL/CCD telescope and camera control and image processing and photometry software system (time-limited); plus all the target images and calibration frames you will need;
2. A comprehensive printed workshop manual;
3. PowerPoint slide display via data projector (the PowerPoint file will also be on your CD);
4. Mains power cabling to your desk;
5. Morning and afternoon refreshments and lunch.

What background knowledge will you need?

1. Reasonable computing knowledge, in particular how to install a program off a CD, Windows file system handling; basic use of Word and Excel;
2. Reasonable understanding of practical astronomy and instrumentation so that you are familiar with terms like zenith distance, Angstrom, Right Ascension, focal ratio, photon, atmospheric refraction, and Airy disk.
3. And if you know what standard deviation is, and the equation for magnitudes as logs of brightness, then your maths is fine.

Workshop Fee and Registration

The cost of the workshop, all-inclusive, is to be advised. Registration details available shortly. To register your interest in this workshop please contact Pauline Loader.

[Mailto:Treasurer@rasnz.org.nz](mailto:Treasurer@rasnz.org.nz)

Places are strictly limited to 20.