

Starlink Project  
Starlink Cookbook 6.4

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# The CCD Photometric Calibration Cookbook

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## Abstract

This cookbook presents simple recipes for the photometric calibration of CCD frames. Using these recipes you can calibrate the brightness of objects measured in CCD frames into magnitudes in standard photometric systems, such as the Johnson-Morgan *UBV* system. The recipes use standard software available at all Starlink sites.

The topics covered include: selecting standard stars, measuring instrumental magnitudes and calibrating instrumental magnitudes into a standard system. The recipes are appropriate for use with data acquired with optical CCDs and filters, operated in standard ways, and describe the usual calibration technique of observing standard stars. The software is robust and reliable, but the techniques are usually not suitable where very high accuracy is required.

In addition to the recipes and scripts, sufficient background material is presented to explain the procedures and techniques used. The treatment is deliberately practical rather than theoretical, in keeping with the aim of providing advice on the actual calibration of observations.

## Who Should Read this Cookbook?

This cookbook is aimed firmly at people who are new to astronomical photometry. Typical readers might have a set of photometric observations to reduce (perhaps observed by a colleague) or be planning a programme of photometric observations, perhaps for the first time. No prior knowledge of astronomical photometry is assumed.

The cookbook is not aimed at experts in astronomical photometry. Many finer points are omitted for clarity and brevity. Also, in order to make the most accurate possible calibration of high-precision photometry, it is usually necessary to use bespoke software tailored to the observing programme and photometric system you are using.

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## Revision history

- (1) 25 April 1997: Version 1. Original version (JP).
- (2) 29 January 1998: Version 2. Added recipes for extracting standard stars from catalogues and calibrating instrumental magnitudes. Also re-arranged much of the existing material (ACD).
- (3) 8 June 1999: Version 3. Added material for infrared photometric systems and atmospheric transmission (ACD).
- (4) 31 August 2001: Version 4. Revised the recipes to correspond to GAIA version 2.6 and CURSA version 6.3. Added an additional label to allow external hyper-links to Appendix B.2. Also revised the references and URLs (ACD).

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Any mistakes are, of course, our own.

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