

# Advanced Astronomical Observations Report 01: Selecting Open Cluster and Prepare for LOT Observations.

Due Date: 01 March 2017

**GOAL:** The goal for the Lulin observation on March 03-04 is to observe open cluster(s) with LOT. Students are required to produce meaningful color-magnitude diagrams (CMD) for the given open cluster. Students will learn about taking imaging data using LOT, reducing the data with IRAF, extract the photometry (magnitudes) for the sources in the images, photometrically and astrometrically calibrate these sources, and finally produce the CMD.

## Preparation

1. Select 1-2 suitable open clusters that can be observed on March 03-04, 2017, from Lulin Observatory. Have backup open clusters<sup>1</sup> ready in case of conflict of observing time (or bad weather in partial night). The WEBDA database is a good place to start.
  - Use the following website to plan out your observation – <http://catserver.ing.iac.es/staralt/>
  - When your target will be rising or setting? When can it be observed from Lulin Observatory? Recall it is better observe your target when its altitude is above 30°.
2. Select suitable Landolt standard stars (Landolt 2009) at various airmass. You can use the following website to help you pick suitable Landolt standard stars: <http://catserver.ing.iac.es/staralt/>
  - How to find out the information about Landolt standard stars?
3. Combine the planning for open cluster(s) and standard stars observations
  - Which filters do you need for the observation?
  - Plan out the sequence of your observations, e.g., open cluster → standard stars and etc.
  - Estimate the exposure time (how to do this?) and total time needed.

## Content in the Report

Students are asked to write a 1-2 page report that include the following two main parts.

1. Introduction and basic information: [5%]
  - A short paragraph intruducing, or gives a brief background, of the chosen open cluster(s). Also mention why you choose this open cluster.

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<sup>1</sup>E.g., pick 1-2 open clusters that can be observed before and after midnight.

- Include a Table that list out the basic information of the selected open cluster(s), such as RA/DEC, age, distance and etc.

2. Literature studies: [10%]

- Find out some information of the selected open cluster(s) by means of literature search, e.g. using NASA ADS, and give summaries what has been done to the open cluster(s) in the past (e.g., what telescopes+instruments have been used to observed the open cluster, and what are the main results).
- Include the CMD for the open cluster(s) from published papers.