MAGNITUDE DETERMINATION OF STARS IN THE OPEN CLUSTER M46 USING CLEAR AND GREEN FILTERS

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MAY 2006

ACKNOWLEDGEMENTS

Bismillahirrahmanirrahim.....

Alhamdulillah, thanks to God for giving me enough time to complete this research successfully. There were many problems during this research, but with the patience, the entire problems were solved.

I would like to thank to my supervisor Cik Siti Jamiah Mohamad Yob for her support, advice and all of the knowledge given to me. Not forgetting thank you also to Mr Joko Satria A., from University of Malaya for helping me during the observation and to the University Malaya for giving me a change to use the observatory.

A special thank you to my lovely parents for their support in finishing this project. Thank you also to my friend Nor Yusniza Mat Shani B.Sc. (hons) Physics student for helping me to finish this report. Thank you also to Faculty of Applied Sciences. Last but not least, thank you to all the people who had been involved in this project. Thank You.

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ABSTRACT

MAGNITUDE DETERMINATION OF STARS IN THE OPEN CLUSTER M46 USING CLEAR AND GREEN FILTERS

An open star cluster is a group of up to a few thousand stars that were formed the same giant molecular cloud, and is still gravitationally bound to each other. Open star clusters are also occasionally referred to as galactic cluster because they are almost exclusively found in the plane of Milky Way. There are two methods of measuring stars brightness namely; the aperture photometry and the point spread function. To determine the brightness of the star's in this research, the method of aperture photometry were used. The aperture photometry is a method of CCD photometry for determining the star's brightness with the use of three digital annulus to measure the brightness of the star. The scale use to represent the star's brightness is magnitude. This research is done with the objective of to image an open star cluster using CCD camera, to calculate and compare the instrumental magnitude of the stars in the cluster using two filters; green filter and clear filter. M46 is the open star clusters used in this research. The instrumental magnitude of stars using clear filter are smaller than the magnitude of stars using green filter. From the value of the magnitude of the stars, the image of stars using the clear filter is brighter than the image using green filter. As a conclusion, the green magnitude is increase when the overall magnitude increases.

CHAPTER 1

INTRODUCTION

1.1 Background

Astronomy is the study of the natural environment above the atmosphere; it is one of the branches of science which studies about the stars and their space, sky with it cloud, planetary system and so on. Astronomy is a dynamic science where new discoveries regularly alter our perception of reality. It is among the oldest science with record of ancient astronomical observation dating back to the earliest civilizations such as the Babylonians, Egyptians, and Hindus. Astronomy helps us to understand how the universe works by applying the principles of physics, chemistry, and biology. Faraway galaxies show that our universe is not only expanding but the expansion is accelerating. The knowledge of astronomy is necessary to establish time, calendars, and direction. All these can be done through observation and theory.

Studies about astronomy are so wide; one of them study is stars photometry. Astronomy and astrophysics have many applications such as astrophotography, photometry, astrometry, and spectroscopy. Astrometry is the science of measuring the positions and motions of celestial objects. Normal applications include measuring the position of newly discovered variable stars, novae, and supernovae and