

The Study of Affected Factors for Twinkle Stars

Kunlanan Lapanan ; Kel_lawrence@icloud.com
Princess Chulabhorn Science High School Mukdahan
281 Moo 6, Bang Sai Yai, Muang, Mukdahan, Thailand. 49000
Adviser : Niwat Worasan ; watpoojan@hotmail.com

Abstract

This project is the study about the factors affecting blinking stars. The study used a camera with shutter speed set to 10 seconds. The camera was panned with a constant velocity. The line of the star will show the real apparent magnitude of the star's brightness at that time. The processing and calculation will be done to obtain the standard deviation which can be referred to as the star's blink. The result of this study reveals that the star's blink is the inverse variation of the star's altitude and humidity. However, the star's blink is the direct variation of wind speed.

Introduction

When starlight passes through the Earth's atmosphere with variances, it gets refracted which makes the stars blink visible. This project is the study about the factors affecting blinking stars. The purpose of the study is to determine the relationship between the star's blink in relation to humidity, wind speed and altitude of the stars.

Research methodology

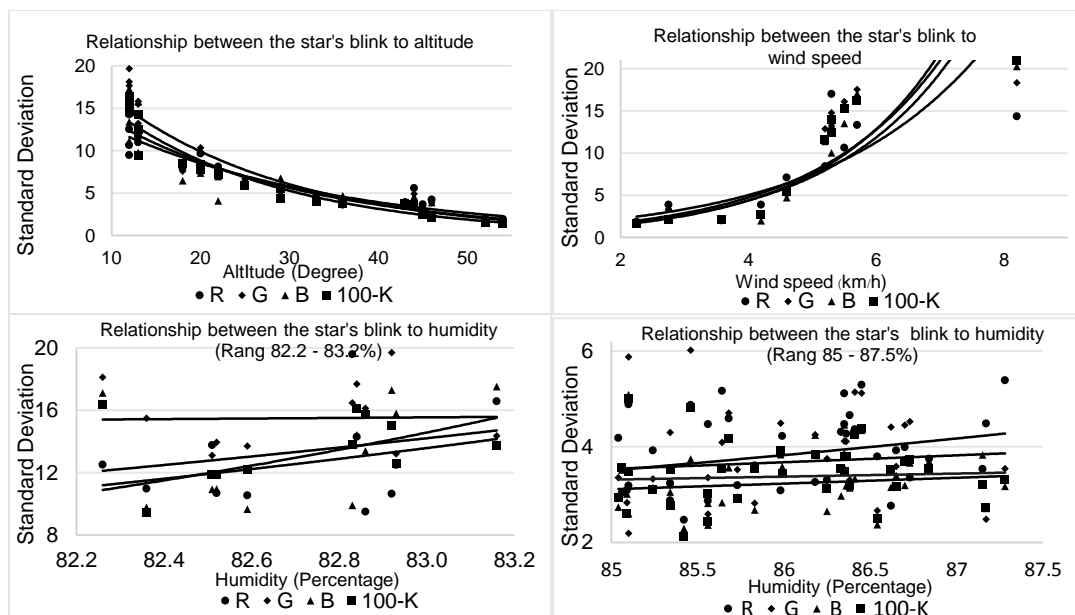
Data Collection

- Install DSLR camera together with a hygrometer, a thermometer and an anemometer for assembling as the variables while taking a photo.
- Document date, time, temperature, humidity, wind speed and altitude of the stars for analysing.
- Set shutter speed to 10 seconds for panning a camera. Pictures will show the line according to the real apparent magnitude of the star's brightness. Calculate the standard deviation from line to show the star's blink.

Data Analysis

- Calculate the standard deviation of 2 colour modes which are RGB colour and greyscale for 20 equidistant points.
- Plot graphs to show the relationship between variables and star's blink. Analyse the graphs to find the relationship of the variations.

Results and Discussion



Conclusions

This project reveals that the star's blink is the inverse variation of the star's altitude and humidity. However, the star's blink is the direct variation of wind speed.

Acknowledgement

I'd like to express my gratitude towards Mr. Niwat Worasan, Mr. Matipon Tangmatitham and the National Astronomical Research Institute of Thailand (Public Organization) for their kind co-operation and encouragement.

Reference

Matipon Tangmatitham. (2013). Astronomical Handbook. Chiang Mai, Educational Astronomic Information Service Center.