

Background of Airglow [OI] 5577^oÅ and Two-Colour Photometry

By

Bun-ichi SAITO

Department of Physics, Faculty of Science, Niigata University

(Received May 15, 1960)

Abstract

Some informations for colour of the background of the airglow [OI] 5577^oÅ line were obtained empirically, which is a continuous spectrum composed of the integrated star light, the zodiacal light and the airglow continuum.

A relation between the intensity of the airglow continuum and the one of the 5577^oÅ line was found, which is not linear, but the former varies with a power of 0.78 for the latter and this suggests that the two-body collision process of [OI] atoms is possible as the origin of the airglow continuum near 5250^oÅ.

These informations were utilized into the explicit formulation of the method of the two-colour photometry.

An information was found on the spatial distribution of the zodiacal light extending to higher ecliptic latitude.

For the calibration of the photometer, an improved method was expressed in connection with the two-colour photometry.

§1. Introduction

In the measurement of the absolute intensity of the airglow emission line, it is well known that the basic problems are classified into three groups:

- (a) the calibration of the photometer;
- (b) the subtraction of the background which is the continuous spectrum composed of the integrated star light, the zodiacal light⁽¹⁾ and the airglow continuum;
- (c) corrections for the extinction and scattering by the earth's lower atmosphere.

The two-colour photometry after Roach and Barbier [1] can be an effective method of the subtraction of the background only if its spectrum can be estimated.

⁽¹⁾ In this report, the term of "zodiacal light" is used in the sence of the reflected solar light by the interplanetary matter, which is of course intensified near the ecliptic but can not be neglected even in the higher ecliptic latitude.