АСТРОФИЗИКА

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Краткие сообщения

FBS 0102 - 110: A CARBON STAR WITH STRONG CH FEATURE

1. *FBS 0102 - 110.* As a faint late - type star at hight Galactic latitude, the object FBS 0102 - 110 ($\alpha_{1950} = 01^h\,02^m\,36.0^s$, $\delta_{1950} = -11°\,05'\,25''$ and $l = 133°$, $b = -73°$) has been discovered on the plates of the First Byurakan Spectral Sky Survey (FBS) and has been classified preliminarily as a carbon star of the R0 - R1 subclasses, according to the low-resolution spectra [1].

2. *Observations.* Two Grism (300 line mm^{-1}) spectra for FBS 0102 - 110 in the range 3900 - 5300 A were obtained at the 2.2m ESO telescope (12/13 and 13/14 10.1996) with spectrograph EFOSC2 (ESO Faint Object Spectrograph and Camera) using 2048 x 2048 CCD detector. The exposure time was 1800 s for each spectra. The spectra were reduced and wavelength-calibrated within the MIDAS reduction package. For calibration the Feige 110 [2] was observed as a standard.

In Fig.1 the finding chart from DSS (Digital Sky Survey from POSS1 [3])

Fig.1. Finding chart for FBS 0102 - 110 from the digital Palomar Sky Survey. North and East are indicated. The field is 5' x 5'.

is presented and in Fig.2 a,b the two CCD spectra are given for FBS 0102 - 110.

3. *Spectral features.* The spectra of FBS 0102 - 110 (Fig.2 a,b) show numerous absorption bands of carbon (C_2) and carbon containing molecules,

typical for carbon stars.

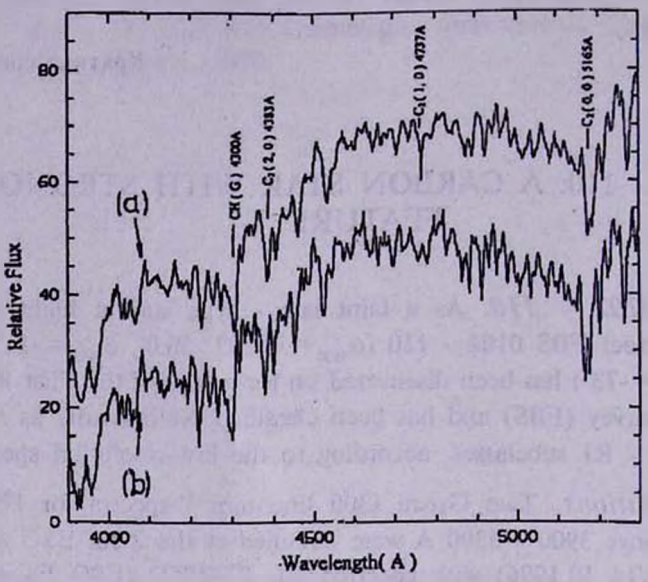

Fig.2 a,b. Two spectra for FBS 0102 - 110 in the wavelength range 3900 - 5300A (2.7A channel^{-1}). The slit width is 2.0 arcsec for spectra (a) (resolution ≈ 20A) and 1.5 arcsec for spectra (b) (resolution ≈ 15A).

The bands C_2 (2,0) 4383Å, C_2 (0,0) 5165Å Swan systems fairly well are outstanding, the C_2 (1,0) 4737Å band is very weak. The strong absorption bands (0,1) 4216Å, (3,5) 4532Å of CN molecule are observed also. The bandheads at 4642Å, 4866Å, 4905Å, 4932Å, 4976Å, 5035Å, 5192Å of SiC_2 molecule (Merrill - Sanford systems) and strong bandhead at 3952Å of C_3 molecule are present.

The more distinctive feature of the spectra of FBS 0102 - 110 is the presence of very strong bandhead at 4300Å of CH molecule, i.e. the well known G band, that allows us to distinguish this object in the group of special carbon stars - CH-stars [4].

The more exact determination of belonging of FBS 0102 - 110 to one of three subgroups of CH-stars (CH-giants, CH-subgiants and CH-like stars) with the help of characteristic criterion from works [5-7] and from the spectra (Fig.2 a,b) is connected with some problems, particularly with the estimation of radial velocity and the investigations of absorption lines of heavy elements, such as BaII 4554Å, SrI 4607Å, SrII 4077Å and 4215Å.

One may assume, that the given object is approximately at distance 4 kpc, in adoption of belonging to the group of CH-subgiants, or at distance 16 kpc, in adoption of belonging to the groups of CH-giants and CH-like stars. The visual magnitude for FBS 0102 - 110 is estimated about $15^m.1$, according to the formula presented in paper [8].

The following conditions are necessary for further clarification of the nature of the object FBS 0102 - 110.

a) Higher dispersion spectra in blue and red range for determination of belonging to one of subgroups of CH-stars and the radial velocity estimation. As a CH-star one of the most interesting question is also the possible binary nature of this object.

b) The proper motion estimation is the next importance for determination of the CH-subgroup.

FBS 0102 - 110: Углеродная звезда с сильными CH-признаками. Приведены две спектрограммы в области 3900 - 5300 А и карта идентификации для звезды FBS 0102 - 110. Установлена принадлежность этого объекта к группе CH-звезд.

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