

## INVESTIGATION OF THE SPECTRA OF SOME SEYFERT GALAXIES

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### ABSTRACT

The real and imaginary changes of shapes of emission lines in spectra of two Seyfert galaxies NGC1068 and MRK79 are examined. The spectral investigations of Seyfert galaxies (up to  $17^m.5$ ) are being carried out in Astrophysical Institute from 1968. Using the spectrograms obtained in 1986, we try to find the variability of bright emission line profiles in the spectral range 4500-7500Å during 10-15 years. The spectrograms of 15 galaxies have been measured. The noticeable differences in the shapes of lines are detected in spectra of two Seyfert galaxies. The first one - NGC1068 - is one of the nearest galaxies of this type. Four spectrograms have been obtained for this galaxy in the range of H $\beta$ -[OIII] 4959, 5007 with spectral resolution of 2.5Å. It appears that two spectrograms obtained with time interval of 2 minutes have distinct differences: there are sharp emission features in the central parts of broad profiles of H $\beta$  and [OIII]4959, 5007Å on the latter of spectrograms (Fig. 1b). The origin of these sharp features is connected with shift of entrance slit of spectrograph along the rather extensive nucleus of this galaxy. As a result the almost stellar-like region with narrow emission lines came on the slit in the second case (Fig. 1b) and was absent in the first case (Fig. 1a).

In the spectra of more distant galaxy Mrk 79 we also have noted some variable features in profiles of H $\beta$ -line and of the blend H $\alpha$ + [NII]. The H $\beta$ -shapes obtained on the different dates are shown in Fig. 2. The change of intensity of central sharp feature in H $\beta$ -profile (it is brighter in Fig. 2bc than in Fig. 2a) and appearance of narrow feature at the "red" wing of broad H $\beta$ -profile are clearly noted. The  $V_T$  of narrow feature in relation to the centre of line is equal 1000km/sec. In the Fig. 3a the profile of blend H $\alpha$ + [NII] is shown in its "usual" state, in the Fig. 3b the same lines are shown but there is addition detail at  $\lambda=6583\text{Å}$ . This detail is more intense in comparison with H $\alpha$  profile.

We consider that examining feature is not connected with increasing of brightness of [NII]6583Å, but with appearance of "red" component of H $\alpha$ -line marked earlier in H $\beta$  profile (Fig. 2). We must note that the

spectral resolution of spectrogramm at Fig. 3a is about  $2.5\text{\AA}$  and that of spectrogramm at Fig. 3b is about  $8\text{\AA}$ . However, the reality of describing features is confirmed by the fact that they have been detected (but with lower contrast) on the spectrogramms of MRK79 obtained by Osterbrock & Shuder (1982). This object is probably unstable and requires more detailed study.

#### REFERENCE

Osterbrock, P.E., and Shuder, J.M., 1982, *Ap.J. Suppl. Ser.*, 49, 149, 174.

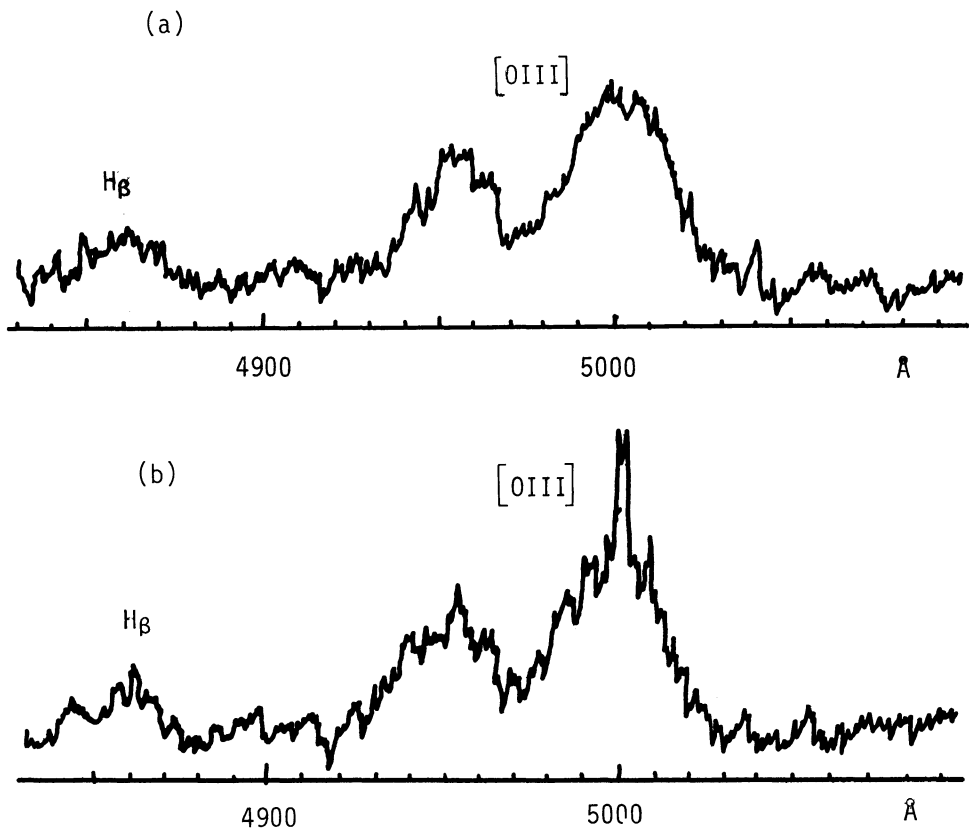


Figure 1 a,b. Intensity tracing of two spectrograms of Seyfert galaxy NGC 1068, obtained with time interval of 2 min.

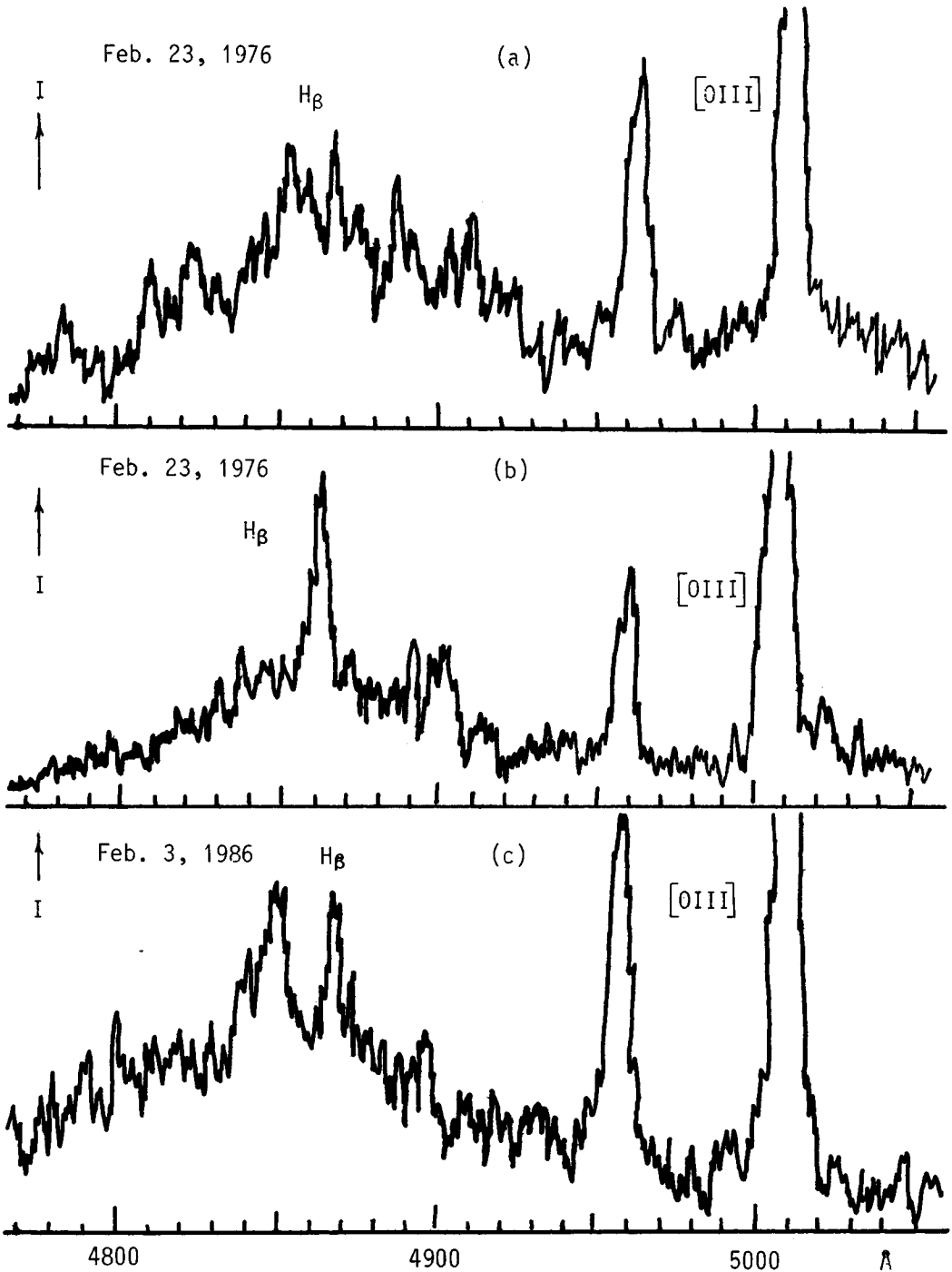


Figure 2 a,b,c. Variations of H $\beta$ -line profiles in spectrum of Seyfert galaxy MRK 79.

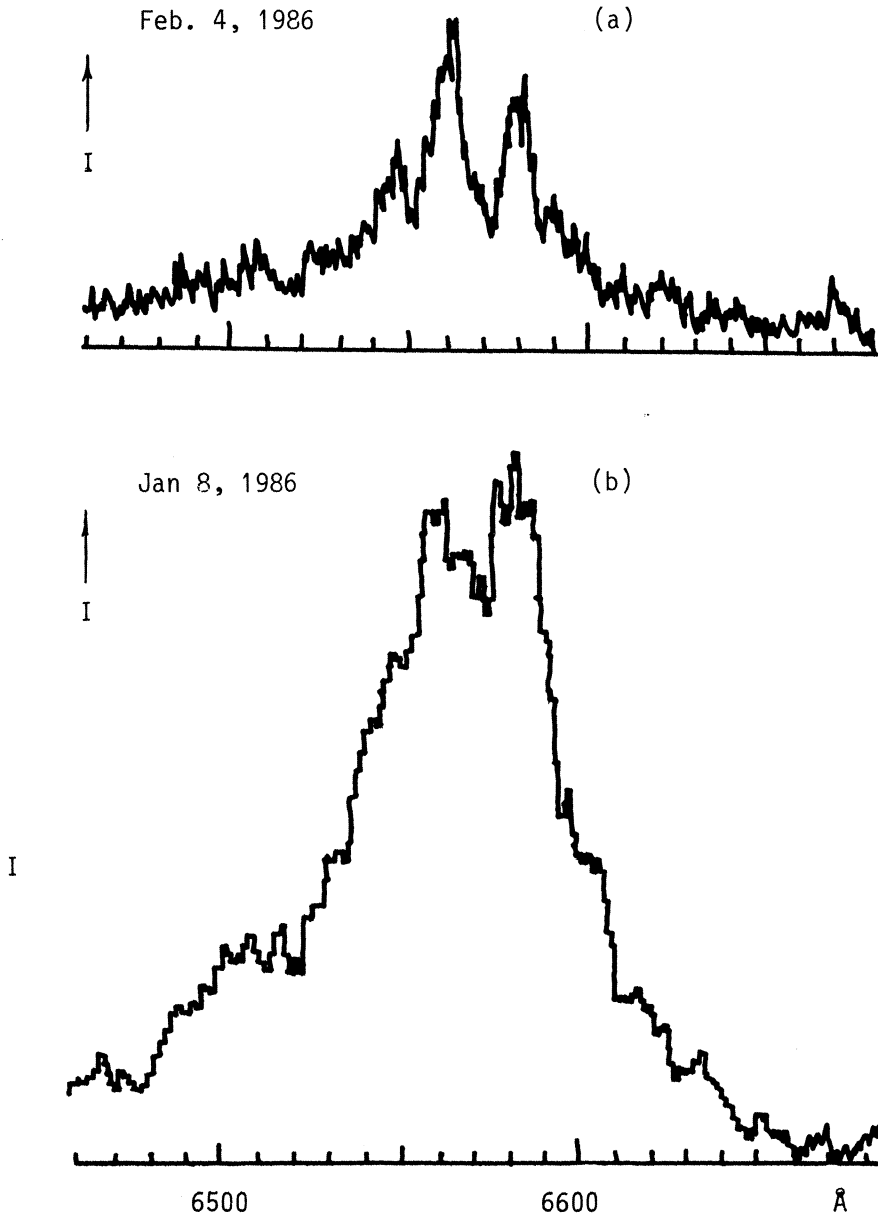


Figure 3 a,b. Variations of profile of  $H\alpha + [NII]$  lines in spectrum of MRK 79.