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THE BEHAVIOUR OF THE H_{α} EMISSION LINE IN THE SPECTRUM OF SEYFERT GALAXY NGC4151 FROM 1976–1999

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Spectral observations of Seyfert galaxies have been carried out at Fessenkov Astrophysical Institute of Kazakhstan (AFI) since 1970. The first spectrograms of about 48 objects have been measured and the radial velocities and absolute magnitudes of the galaxies have been derived. Some years ago, when the strong variability of spectra of Seyfert galaxies became known, we began a regular spectral monitoring program of 50 objects in this class (Table 1).

The number of spectrograms obtained are given in brackets. In total, 2651 spectrograms were obtained in the red region of the spectrum and 1517 spectrograms in the blue.

1 OBSERVATIONS AND RESULTS

All the observations were carried out with the original slit spectrograph, equipped with a three-cascade image-tube, and attached to the 70-cm reflector at AFI.

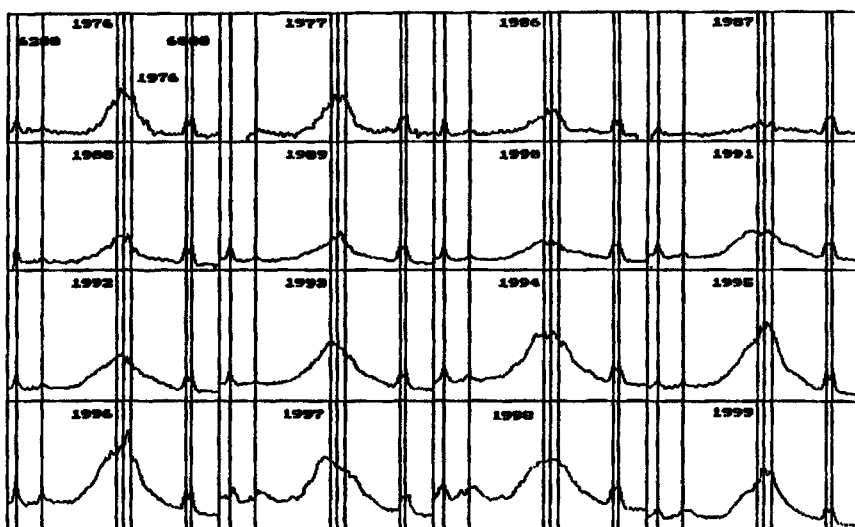
The spectra cover the wavelength range 3700–8400Å and have a resolution 2.5Å or 5.0Å depending on the dispersion used. The spectrograms were measured with the microdensitometer AMD-1 (at AFI), whilst for those films with the highest density the PDS 1010A microdensitometer of the Royal Greenwich Observatory was used. The program involved resolving the blend of the sharp and broad components of H_{α} and two [NII] (6548–6584Å) lines.

2 THE RESULTS OF OBSERVATIONS SEYFERT GALAXY NGC 4151

About 160 spectrograms of this object have been recorded in the red wavelength region. The results, in the range 6280–6800Å, were averaged over the each of fol-

Table 1. List of Seyfert Galaxies, Studied in Fessenkov Astrophysical Institute.

Objects from Markarian List	
1(36); 3(278); 6(38); 9(22); 10(22); 34(27); 50(5); 78(17); 79(19); 124(8); 176(7); 205(12); 231(16); 273(16); 279(6); 290(13); 304(45); 313(39); 335(69); 348(29); 352(24); 372(14); 374(22); 376(20); 382(16); 474(12); 478(10); 486(11); 504(10); 506(21); 507(12); 530(47); 618(13); 704(18); 705(22); 734(9); 766(18); 817(11); 841(12); 1040(8); 1048(11); 1095(44).	
Objects from NGC	
1068(490); 1275(181); 3227(47); 3516(59); 4151(465); 4939(9); 5548(91); 7469(64).	
Objects from other lists	
I ZW 1 (21); II ZW 136 (70); III ZW 2 (19); 3C 120 (14).	

**Figure 1**

lowing periods: 1976, 1977, 1986–1999. There are emission lines of [OI] $\lambda\lambda 6300, 6364\text{\AA}$, H_{α} , $\lambda 6563\text{\AA}$, [NII], $\lambda\lambda 6548, 6584\text{\AA}$ and [SII], $\lambda\lambda 6717, 6731\text{\AA}$ in this wavelength range. The same spectra, after extracting the sharp H_{α} component and [NII] lines are shown in Figure 1, (1–16).

We assume that the [SII] emission lines $\lambda\lambda 6717, 6731\text{\AA}$ are formed in large regions, far from the centre of galaxy, so their intensity will not change significantly over tens of years and were therefore taken to be constant. The scale of graphics was chosen such that the integral intensity of the sum of two [SII] emission lines $\lambda\lambda 6717, 6731\text{\AA}$ would be constant.