

SPECTRA OF NUCLEUS OF NGC 6240

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ABSTRACT. The results of spectrophotometry of two nuclei of NGC 6240 are presented. One of them has properties of Sy 2 nucleus, the other seems to be a complex of HII regions.

1. INTRODUCTION.

NGC 6240 is considered as one of rare ultraluminous super-starburst galaxies (Rieke et al, 1985; Joseph and Write, 1985; Young et al, 1981; Fairlough, 1986) with double nucleus on radio maps (Condon et al, 1982) and I and r large scale CCD camera images (Friede and Schulz, 1983). It is identified with rather powerful radiosource Pks 1650+24=4C 2.44 (Caswell and Wills, 1967). Sy 2 properties of the nucleus of this galaxy have been reported (Fosbury and Wall, 1979; Arkhipova and Esipov, 1979; Zasov and Karachentzev, 1979). NGC 6240 is the most distant galaxy with molecular features (Young et al, 1981; Baan et al, 1985). The neutral hydrogen absorption is also detected in this galaxy (Heckman et al, 1984).

Here, the results of spectral observations of NGC 6240 are presented.

2. OBSERVATIONS AND SOME RESULTS

10 spectrograms of NGC 6240 were taken by means of the 6 m telescope with UAGS and image tube at 24-26 June 1984. The spectrograms cover spectral region 3600-7000 Å, dispersion - 100 Å/mm, the scale on the plates is 17"/mm, spectral resolution is about 3 Å. Slit positions are shown in photograph of NGC 6240 obtained in prime focus of the 2.6 m telescope of the Byurakan Observatory (Fig. 1).

The central region consists of two parts with quite different spectra (Fig. 2 a, b). One (A) has a strong continuum with emission and absorption lines, the other (B) has

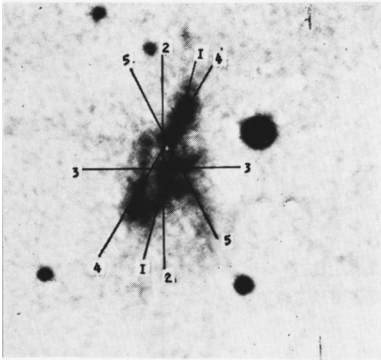


Fig.1 Slit positions during the spectral observations.

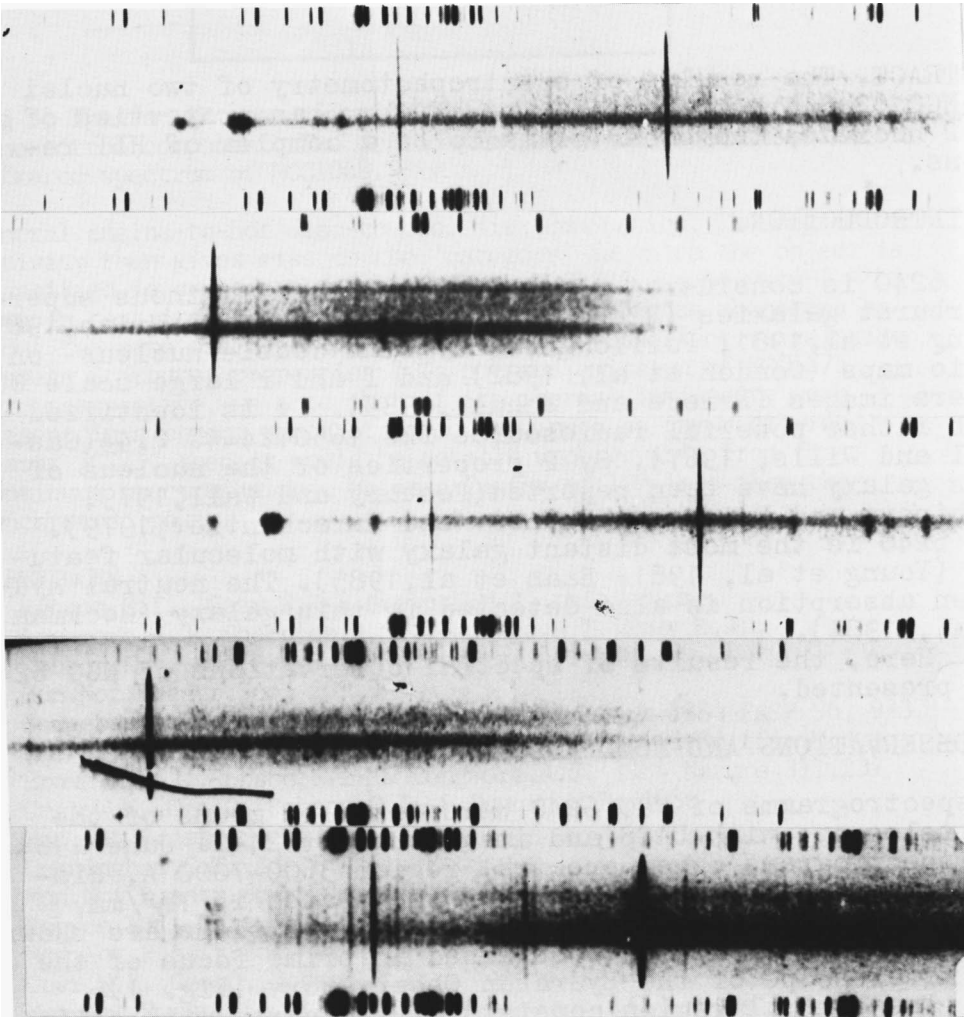


Fig.2 Spectrae of NGC 6240 obtained with slit positions 1(a), 2(b), 4(c).

prominent emission lines only on the extremely weak continuum. The distance between them is about 2", which corresponds to the distance of two components of the nucleus in radio (Condon et al. 1982), I and r (Fried and Schulz, 1983).

Both permitted and forbidden emission lines in the spectrum of A are broad with FWHI 750 km/s. Emission lines of region A are inclined. The diameter of this region is about 1.7 kps ($H=75$ km/s Mps). The line width in B spectrum are the same as the instrumental, the diameter of this region is nearly 2 kps.

Spectrophotometry of two components of the nucleus of NGC 6240 were carried out. Relative intensities of emission lines in the spectrum of both A and B regions and equivalent widths of absorption lines in the spectrum of A region are presented in Andreasian and Khachikian, (1986).

Spectrophotometric properties of region A (Andreasian and Khachikian, 1986) are very close to that of Sy2 nucleus, while region B has spectral properties of HII regions. So reported earlier Sy 2 properties of the NGC 6240 nucleus are intrinsic only in region A, while region B probably is a huge complex of HII regions. Internal absorption is significant in both A and B regions: $5^m.21$ and $3^m.81$ respectively.

Some other regions in peripheries of NGC 6240 with emission lines in their spectrum are detected on the spectrograms with slit positions "4" and "5".

3. SUMMARY.

Two regions in the central part of NGC 6240 with different spectral properties are detected on the spectrograms obtained with 6 m telescope. Most of all, these regions correspond to those detected on radio maps (Condon et al, 1982) and I, r images (Fried and Shulz, 1983). Sy 2 properties reported earlier (Fosbury and Wall, 1979; Arkhipova and Esipov, 1979; Zasov and Karachentzev, 1979) are characteristic for only one component of the nucleus the other has spectral properties of HII regions. Internal absorption in both A and B regions is significant.

All results of detailed spectrophotometry of NGC 6240 are consistent with starburst origin of NGC 6240 suggested on the basis of other studies (Rieke et al, 1985; Joseph and Write, 1985; Young et al, 1981; Fairlough, 1986).

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