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NGC 759: A giant elliptical with a just-forming decoupled nucleus*

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Abstract. By undertaking a spectral and photometric investigation of the central part of the bright elliptical galaxy NGC 759, we have found an optical counterpart for the circumnuclear molecular gas ring with the radius of $\sim 3''$ (~ 1 kpc) which was earlier reported by Wiklind et al. (1997). This counterpart consists of the ionized gas excited by young massive stars and of the dust. The gaseous ring exhibits fast rotation: its projected rotation velocity at $R \approx 3''$ is ~ 220 km/s. The large projected rotation velocity value together with the asymmetric appearance of the dust ring on the $(V-I)$ colour map confirm the hypothesis of Wiklind et al. (1997) about a rather high inclination of the gas rotation plane: our data favours $i \approx 40^\circ$ proposed by them for the molecular gas ring. Meantime the 2D decomposition of the galaxy images both in the V and I bands has revealed an existence of the brightness excess with respect to the de Vaucouleurs' spheroid: this extracomponent is seen in the radius range of $3''$–$16''$, its boundaries looking nearly round, and has a radial brightness distribution well-fitted by two exponential laws with different characteristic scales. We argue that two stellar disks are embedded into the bright elliptical galaxy: the outer one is seen nearly face-on and so its origin is probably related to that of the main galactic body, the inner one is inclined by $i \approx 40^\circ$ and so its origin is probably related to the circumnuclear gaseous ring. Within the radius range of their appearance the disks contributes about 10% into the integrated surface brightness.

Key words: galaxies: elliptical and lenticular, cD – galaxies: kinematics and dynamics – galaxies: photometry – galaxies: structure – galaxies: nuclei – galaxies: individual: NGC 759

1. Introduction

According to a common opinion, elliptical galaxies have the simplest visible structure among the galaxies. They contain only one structural unit, a spheroid, whose stellar population looks relatively homogeneous, old and metal-rich, and usually lacks interstellar medium. During the last years this widely-held opinion has been strongly opposed. Firstly, close inspection has revealed the presence of dust and ionized gas in more than the half of all elliptical galaxies (e.g. Roberts et al. 1991, Goudfrooij et al. 1994). Secondly, decoupled stellar cores were discovered in some elliptical galaxies: Jedrzejewski and Schechter (1988) and Bender (1988) have found a half-dozen galaxies where the central regions rotate faster and often around different rotation axes than the main bodies. Later, Bender and Surma (1992) have proved that the stellar populations in four kinematically distinct cores are prominently more metal-rich than those in the rest of the galaxies. Several more kinematically and chemically decoupled cores in elliptical galaxies have been added to the sample of Bender and Surma (1992) – see e.g. Carollo and Danziger (1994), Mehlert et al. (1998). Though not one-to-one, the decoupled cores are usually related to compact circumnuclear stellar disks embedded into spheroidal bodies of some elliptical galaxies; in almost all cases these disks are found to be younger than the common estimate of the age of elliptical galaxies, namely, are 5–8 Gyr old (Surma & Bender 1995, Sil'chenko 1997, de Jong & Davies 1997). So a natural explanation of the presence of decoupled cores in the centers of elliptical galaxies may be a hypothesis of a secondary star formation burst provoked by merging a gas-rich galaxy ("dissipative merger"). According to our statistical estimate (Sil'chenko 1994), up to 30% of all nearby ellipticals may have chemically distinct cores. Secondary star formation bursts in elliptical galaxies had to last typically for $10^8 - 10^9$ years; the low limit is caused by the need to provide a substantial magnesium enrichment in the nuclear integrated stellar population and the upper limit to preserve a high magnesium-to-iron ratio that is usually observed. So, about 0.3%–3% of all nearby elliptical galaxies may be caught just in the moment of the secondary star formation burst in their centers. Here we present the first example of an elliptical galaxy probably experiencing its decoupled core formation – NGC 759. The main global parameters of the galaxy are given in Table 1.

The unusual structure of the central region of NGC 759 has been revealed by Wiklind et al. (1997) as a result of interfer-

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* Based on observations collected with the 6m telescope of the Special Astrophysical Observatory (SAO) of the Russian Academy of Sciences (RAS) which is operated under the financial support of Science Ministry of Russia (registration number 01-43) and on observations collected with the 1m and 0.6m telescopes of the Special Astrophysical Observatory (SAO) of the Russian Academy of Sciences (RAS).

Table 1. Global parameters of NGC 759

Hubble type	E0
R_{25}	15.2 kpc
B_T^0	13.33
M_B	–20.7
$(B-V)_T^0$	1.00
$(U-B)_T^0$	0.52
$V_r(CO)$	4665 $km \cdot s^{-1}$ (Wiklind et al. 1997)
Distance	66 Mpc (H_0=75 $km \cdot s^{-1} \cdot Mpc^{-1}$)
Inclination	3.3^o

ometric observations in the CO (1-0) emission line. Though the spatial resolution of these observations, $3\farcs1 \times 2\farcs3$, is not quite sufficient to insist on details, a large mass of molecular gas, $2.4 \cdot 10^9\ M_{\odot}$, has certainly been found within a radius of $3''$. The most probable shape of the molecular gas distribution is a flat ring; it demonstrates fast rotaton, $v_{rot}^{proj} \approx 200$ km/s, consistent with the visible mass concentration to the center. The conclusion has been made that NGC 759 may represent a late stage of a merger between two gas-rich disk galaxies. If this is so, there must also be other consequences of such a catastrophic event: present star formation in the gaseous circumnuclear ring and perhaps intermediate-age stellar population and some structure peculiarities in the outer regions of the galaxy. This has stimulated us to undertake a spectral and photometric investigation of NGC 759 in the optical range. The results are presented in this paper.

2. Observations and data reduction

The spectral observations of NGC 759 were undertaken in January 1998, at the 6-meter telescope of the Special Astrophysical Observatory of the Russian Academy of Sciences. We have used the Multi-Pupil Field Spectrograph (MPFS, Afanasiev et al. 1990) in the prime focus and the long-slit spectrophotometric complex in the Nasmyth focus. The detailed parameters of the spectral observations are given in Table 2.

The Multi-Pupil Field Spectrograph allows us to obtain a set of about one hundred spectra from a rectangular area of an extended astronomical object (e.g. of a galaxy). We have obtained two such sets for the central region of NGC 759: one in the green spectral range, 4800–5400 Å, which we have used to derive a two-dimensional velocity field of stars by cross-correlating individual spectra with spectra of bright K giant stars, and another in the red, 6200–6900 Å, – it contains emission lines Hα and [N II]λ6583 which have been used to calculate a two-dimensional velocity field of the ionized gas. These observations have been performed with the reciprocal dispersion of 1.6 Å per pixel (the spectral resolution of 4–6 Å slightly varying over the frame). To calibrate the wavelength scale, we exposed separately a spectrum of the hollow cathod lamp filled with helium, neon, and argon, but the accuracy of the calibration was also checked by measuring positions of night-sky emission lines. We found no systematic velocity shifts. The typical random error of an individual measurement of a weak emission line is 40 km/s.

To refine a kinematical analysis, we have also obtained a long-slit spectrum with the Nasmyth-focus spectrograph of the 6m telescope in the red spectral range under a slightly higher spectral resolution, of about 3 Å. Unfortunately, in this spectrograph there is no rotation-field mechanism; but the short exposure time and a large distance from the culmination point during the observations have allowed us to fix the position angle of the slit at the value of $90^{\circ} \pm 2^{\circ}$. The 3 Å–resolution spectral observation has revealed a complex structure of the profiles of the emission lines Hα, [N II]λ6583, and [S II]λ6717,6731 which can be traced up to $5''$ from the center.

The photometric observations of NGC 759 were performed with the small telescopes of the Special Astrophysical Observatory – at the 1-meter and 0.6-meter Zeiss reflectors (Z1000 and Z600, respectively). The 1040×1160 CCD detector was used. The observations at the 1-meter telescope were made with binning 2×2, through $BVRI$ filters and in the photometric night, but without guiding – so only short exposures were possible. As the photometric standards, we exposed a field of the star cluster NGC 7790 which has been previously studied in VRI by Christian et al. (1985) and in BVR by Odewahn et al. (1992); it was exposed with the same exposure times and at the same zenith distance as NGC 759. Though the short exposure times have prevented surface photometry deep enough and only the measurements of the galaxy within the radius of $\sim 20''$ were relevant, this observation has allowed us to determine VRI magnitudes for a dozen stars around NGC 759 which were used later to calibrate our photometry with the 0.6-meter telescope into the standard Johnson-Cousins photometric system. The observations at the 0.6-meter telescope have been made without binning in VRI filters, with guiding – so the exposures were long enough. Unfortunately, the guiding of the telescope is imperfect, so despite guiding, the stellar images are slightly elongated, with artificial ellipticity of ~ 0.2. No photometric standards were observed with the 0.6-meter telescope. These observations appear to be deep enough: we trace surface brightness profiles almost up to the optical border of the galaxy, $R \approx 50''$. The detailed parameters of our photometric observations are given in the Table 3.

Besides our own data, we include also photometric data from the La Palma Archive: NGC 759 has been observed through the RI filters at the Jacobus Kapteyn Telescope (JKT) with the EEV 1280×1180 CCD on different dates. The standards of Landolt (1992) were used to calibrate the measurements of the galaxy and its surrounding stars into the Cousins system.

All the data, both spectroscopic and photometric, have been reduced by using the software developed in the Special Astrophysical Observatory (Vlasyuk 1993).

3. Photometric structure of NGC 759

NGC 759 is thought to be a "bona-fide" elliptical galaxy (see e.g. RC3), however the detailed CCD photometric study of this galaxy has never been published. In this section we analyse mostly the data obtained at the 0.6-meter telescope, because they are the deepest ones.

Table 2. Spectral observations of NGC 759

Date	Configuration	Exposure	Field	Scale	Spectral range	PA of long side	Seeing
21/22.01.98	MPFS+CCD 520×580	90 min	$10''.4 \times 15''.6$	$1''.30$ per lens	4700–5450 Å	96°	$2''.4$
22/23.01.98	LS+CCD 1024×1024	30 min	$2'' \times 34''$	$0''.4$ per pixel	6000–7350 Å	90°	$2''$
23/24.01.98	MPFS+CCD 1040×1160	120 min	$11'' \times 22''$	$1''.36$ per lens	6300–7300 Å	285°	$2''.2$

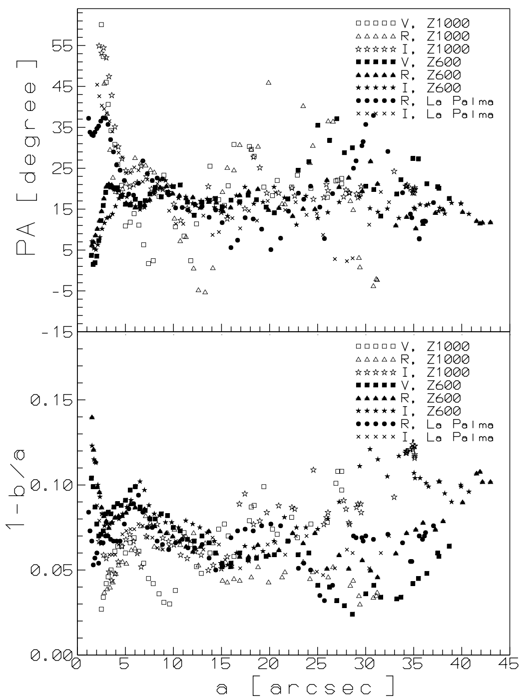

Fig. 1. Radial variations of the isophote morphological characteristics in NGC 759 according to our data and to those from the JKT La Palma

First of all we have undertaken a morphological study of the isophotes. Fig. 1 shows radial variations of the major-axis position angle and of the ellipticity. The measurements of the 0.6-meter telescope images look to be the most accurate ones and give the most extended dependencies, but in the central part they are distorted by guiding errors; the La Palma R-band data of 1994 are not so deep, but they were obtained under the best seeing, of $1''.15$, and with excellent guiding so they are considered as a reference set for the central 5″. One can see that all the measurements agree rather well in the radius range of 4″–30″. Though the galaxy is classified as E0, it is not perfectly round: the minimum ellipticity measured is 0.05, and the average one is 0.07–0.08. It is enough to measure reliably the orientation of the isophote major axis: in the full radius range the major-axis position angle looks approximately constant and is confined to the interval $PA_0 = 20° \pm 10°$.

We have constructed azimuthally averaged surface brightness profiles in the V- and I-bands by taking data along elliptical rings with the axis ratio 0.93 and orientation $PA_0 = 17°$ corresponding to the results of our morphological analysis (the I-band profile is shown in Fig. 2). We have applied the program of de Vaucouleurs-law fitting to these profiles to analyse the

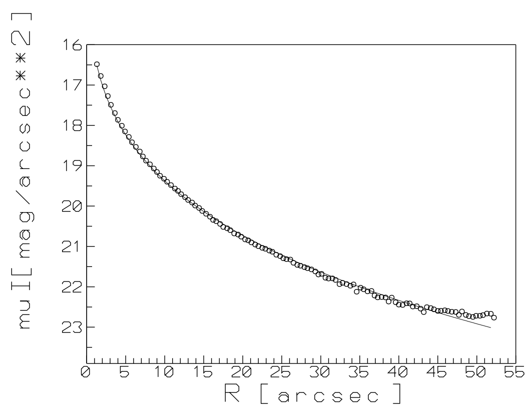

Fig. 2. Azimuthally averaged profile of the surface brightness in the I-band according to our Z600 data fitted by a single de Vaucouleurs's law. The accuracy of observational points is comparable to the size of signs

structure of the brightness distribution. The best-fitted I-band model profile obtained is also plotted in Fig. 2. The impression is that these profiles cannot be perfectly fitted only by a de Vaucouleurs' law in the full range of radii: the r. m. s. scatters of points around the model profiles are 0.05 mag in the V-band and 0.07 mag in the I-band while the accuracy of azimuthally averaged points is better everywhere than 0.035 mag; however the profiles may be characterized as spheroid-dominated. For the V-band image we have derived the de Vaucouleurs' parameters $\mu_e = 22.1 \pm 0.1$ V-mag/□″ and $r_e = 19'' \pm 1''$ (6.1 kpc); for the I-band image the fitting of the de Vaucouleurs' spheroid implies a scalelength $r_e = 18''.4 \pm 0''.5$ (5.9 kpc) and the corresponding effective surface brightness $\mu_e = 20.65 \pm 0.05$ I-mag/□″. The surface photometry of NGC 759 in the V-band was earlier made by Schombert (1986) through the photographic method; he fitted the brightness profile at $R > 3$ kpc by a de Vaucouleurs' law and had found $\mu_e = 21.6$ V-mag/□″ and $r_e = 6.9$ kpc – not too different from our results.

After obtaining the best de Vaucouleurs' model for the NGC 759 surface brightness distribution, we have subtracted the model brightness maps from the observed images and have obtained smooth and round brightness residual structures with the radius of $\sim 16''$ (Fig. 3); the mean contribution of this residual surface brightness to the total one is about 10% in both filters. Well inside this round brightness excess something more elongated, with the $PA_0 \approx 15°$, the major semiaxis of $\sim 8''$, and $b/a \approx 0.7$, can be detected. The azimuthally averaged I-band profile of the residual surface brightness is presented in Fig. 4, in the top part. In the radius range of 3″–16″ one can see two exponential segments meeting at $R \approx 8''$. Obviously, the residual

Table 3. Photometric observations of NGC 759

Date	Telescope	Filter	Exposure	Seeing	Scale
7/8.09.94	JKT	R	300 s	$1''.15$	$0''.31$
5/6.11.96	JKT	I	360 s	$2''.2$	$0''.31$
9/10.08.98	Z1000	B	180 s	$2''.7$	$0''.51$
9/10.08.98	Z1000	V	120 s	$2''.5$	$0''.51$
9/10.08.98	Z1000	R	60 s	$2''.6$	$0''.51$
9/10.08.98	Z1000	I	120 s	$2''.2$	$0''.51$
19/20.10.98	Z600	V	1800 s	$1''.55$	$0''.45$
19/20.10.98	Z600	R	1800 s	$1''.5$	$0''.45$
19/20.10.98	Z600	I	1800 s	$1''.6$	$0''.45$

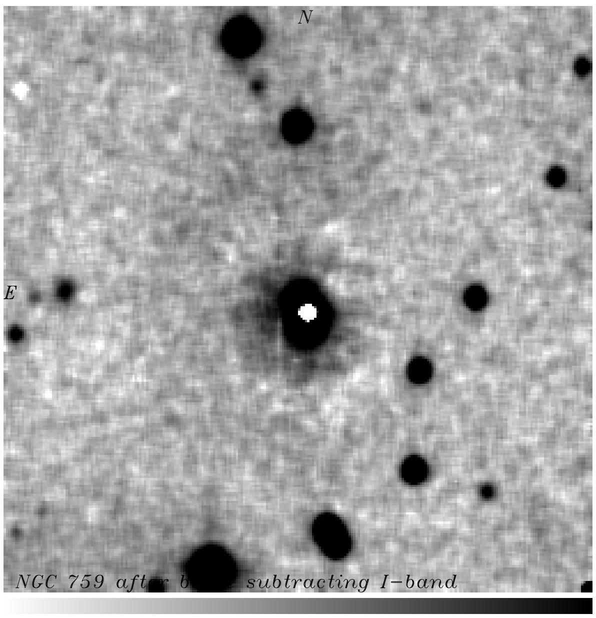

Fig. 3. The residual brightness map in the I-band after subtraction of the best-fit de Vaucouleurs' model. The full dimensions of the field shown is $115'' \times 115''$.

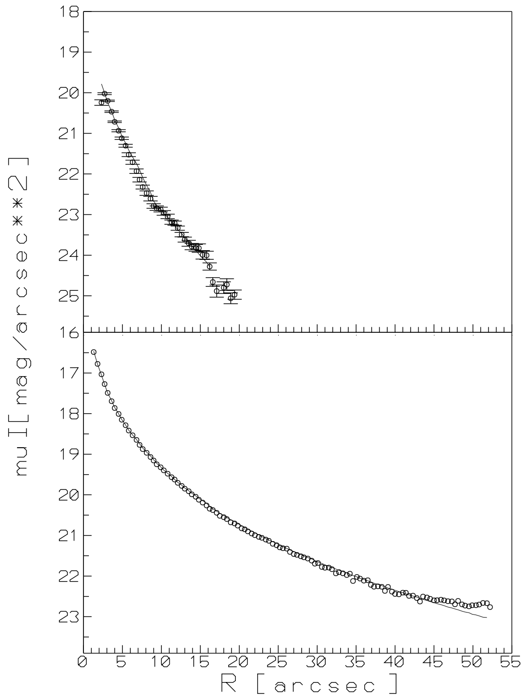

Fig. 4. The azimuthally averaged profile of the surface brightness residuals after subtracting the pure de Vaucouleurs' spheroid which we have fitted by two exponential laws (top) and the azimuthally averaged profile of the total surface brightness in the I-band according to our Z600 data fitted by a composite model bulge+two disks (bottom).

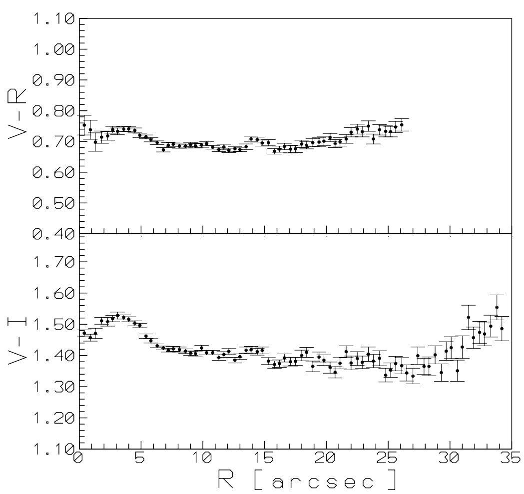

Fig. 5. Azimuthally averaged colour profiles

structure represents two stellar disks whose appearance in the V-filter inside $R = 5''$ is strongly affected by dust. The parameters of fitting by two exponential laws applied to the I-band residual brightness profile are:

- in the radius range of $8''$–$14''$ $\mu_0 = 20.8$ I-mag/□″ and $r_0 = 5''.0$ (this disk is seen under $i = 21.5^\circ$ to provide the ellipticity of 0.07),
- and in the radius range of $3''$–$8''$ $\mu_0 = 18.8$ I-mag/□″ and $r_0 = 1''.9$ (this disk is seen under $i = 40^\circ$ to provide the ellipticity of 0.3).

If we assume the distance to NGC 759 to be 66 Mpc (Wiklind et al. 1997), we obtain the stellar disks with the radii of 2.6 and 5 kpc and the exponential scalelengths of 0.6 and 1.6 kpc, respectively. The final fitting result in the frame of the composite I-band model is plotted in the bottom part of Fig. 4.

Fig. 5 presents azimuthally averaged profiles of the $(V - R)$ and $(V - I)$ colour distributions. Besides the smooth colour gradients in the main body of the galaxy, one can see a prominent feature – a sharp bump at $R = 3''.5$. The colour image detail corresponding to this peak (Fig. 6) looks like a red semi-ellipse with the major axis aligned in $PA \approx 20^\circ$. The asymmetry of the feature obviously related to the line of nodes implies that the dust ring is inclined with respect to the symmetry plane of the galaxy. The ellipticity of this structure, $1 - b/a \approx 0.2$, is consistent with the flat ring inclination of 40°; curiously, just the same inclination of the circumnuclear molecular gas ring has been suggested by Wiklind et al. (1997) from dynamical arguments, and the inner stellar disk is seen under a similar inclination. We think that the red semi-ellipse on the $(V - I)$

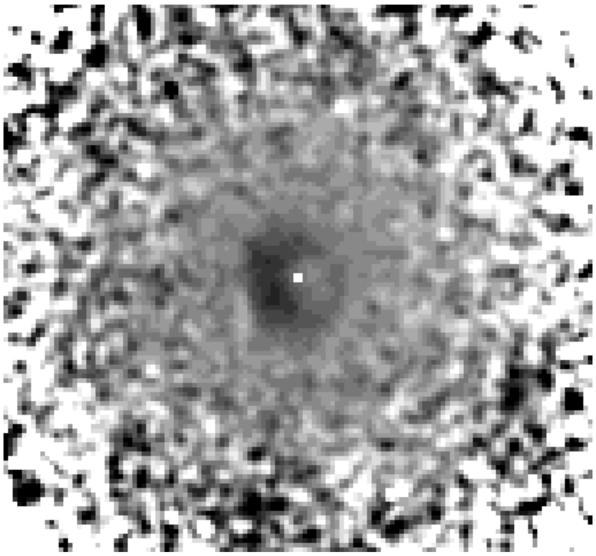

Fig. 6. The gray-scaled $(V-I)$ map of the central part of NGC 759: dark regions correspond to the redder ones. North is up, east is to the left, the total map dimensions are $57''.6 \times 57''.6$. The artificially white square marks the nucleus of the galaxy.

map results from a flat ring-like dust concentration related to the molecular gas ring with the inner radius of $1''$ and the outer radius of $3''$ reported by Wiklind et al. (1997). This suggestion is also confirmed by the central ($R < 5''$) depression of the V surface brightness profile of the disk component.

4. Kinematics of stars and ionized gas in the center of NGC 759

Fig. 7 presents isovelocity maps for the stars and ionized gas in the center of NGC 759 which have been obtained with the Multi-Pupil Field Spectrograph.

First of all, one must note that the stellar rotation in the very center of NGC 759 is much faster than one could expect for the E0-type galaxy. It may be that the stellar core of NGC 759 is dynamically decoupled. The direction of the maximum central line-of-sight velocity gradient ("the dynamical major axis") is $PA_0 = 22°$; it coincides with the photometric major axis (Fig. 1), and this coincidence signifies that we see clear evidence of regular axisymmetric rotation. The low limit of the rotation angular velocity defined by projection effects is 66 km/s/kpc. Such a high central velocity gradient is typical rather for an early-type disk galaxy.

The rotation of the ionized gas in the center of NGC 759 is even more striking. Its projected angular rotation velocity reaches 235 km/s/kpc; the whole velocity field (Fig. 7b) looks like a solid-body rotating disk with a radius of $\sim 3''$ while $v_{rot} \sin i$ is 220 km/s at the edge of this disk. This estimate agrees very well with the projected rotation speed of the molecular gas torus having the same radius of $\sim 3''$ which has been reported by Wiklind et al. (1997). However as we have somewhat higher spatial resolution than Wiklind et al. (1997) had, we estimate the orientation of the dynamical major axis of gas rotation more precisely: our value $PA_0 = 18°$ agrees with the stellar dynamical and photometric major axis orientations.

Additional evidence for the fast rotation of the circumnuclear ionized gas is given by our long-slit spectrum in $PA = 90°$. This cross-section is taken by 70° to the dynamical major axis. The emission lines in the vicinity of the nucleus consist of two components separated by some 300 km/s. The appearance of two discrete peaks of emission-line profiles argues an existence of the hole in the gaseous disk emission surface brightness in the very center of the galaxy – here a clear analogy to the double-horned CO-line profile obtained during the single-dish CO observations of NGC 759 (Wiklind et al. 1997) is seen.

5. Star formation in the circumnuclear gaseous disk

When Wiklind et al. (1997) obtained a ring-like distribution of the molecular gas in the center of NGC 759, they had calculated a radial dependence of the gravitational stability parameter, $\Sigma_{gas}/\Sigma_{crit}$, demonstrating a maximum, close to 1, at $R \approx 2''$, and had concluded that there may be a ring of star-forming H II regions with the same radius in this galaxy. The significant present star formation in NGC 759 had also been implied by its prominent FIR luminosity: it has $L_{fir}/L_B = 0.3$ (Wiklind et al. 1995) which is higher by an order of magnitude than a typical L_{fir}/L_B ratio for elliptical galaxies and exceeds by a factor of two the maximum ratios found by Goudfrooij & de Jong (1995) for their complete RSA sample of nearby elliptical galaxies. Now we can confirm the supposition of Wiklind et al. (1997) by a direct two-dimensional observation of the emission-line ratio distribution.

Fig. 8 gives a comparison of the spectra in the vicinity of Hα between the nucleus and the ring with the radius of $2''.7$ and the width of $1''.4$. One can see that while in the nucleus the intensities of the emission lines Hα and [N II]λ6583 are roughly equal which is a signature of substantial contribution from the LINER-like nucleus, in the three-arcsecond ring the Hα is twice as strong as [N II] – it is typical for a star-forming site where massive stars ionize the gas (Veilleux & Osterbrock 1987). We can estimate roughly the star formation rate by using the integrated Hα flux. First of all, we have summed the individual element spectra from our MPFS frame over the area of $7'' \times 8''$ centered onto the nucleus which contains noticeable Hα emission. We then calculated an equivalent width of the Hα emission line in the integrated spectrum, showing that it is equal to 4.1 Å. As we must also take into account the presence of Hα absorption we add some 2 Å to this value (because it is a typical Hα absorption-line equivalent width for old stellar populations; see for example our model calculations, Balinskaya & Sil'chenko, 1993) and obtain 6 Å. Next we calculate a V magnitude in the same aperture by using our photometric data, showing it to be 14.7 mag. Through transforming this estimate into energetic units by a standard way (Allen 1973), we obtain $L_{H\alpha}(7'' \times 8'') = 1.65 \cdot 10^{40}$ erg/s. This Hα luminosity corresponds to the total star formation rate of $0.13\,M_\odot$ per year if we use the calibration of Kennicutt et al. (1994). The uncertainty of this estimate may be a factor of 2–3; however it is quite inconsistent with the estimate of $7\,M_\odot$ per

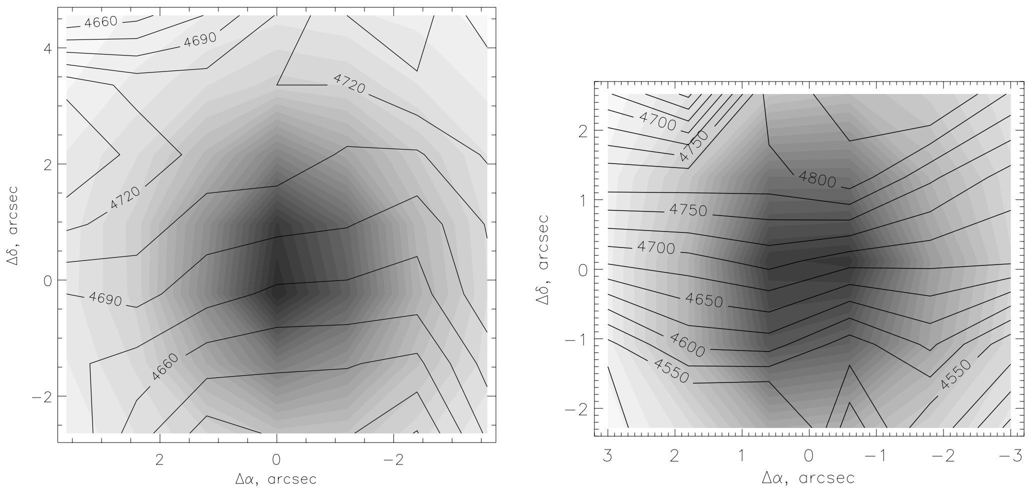

Fig. 7. Two-dimensional line-of-sight velocity fields for the stars (*a*) and for the ionized gas (*b*) in the center of NGC 759

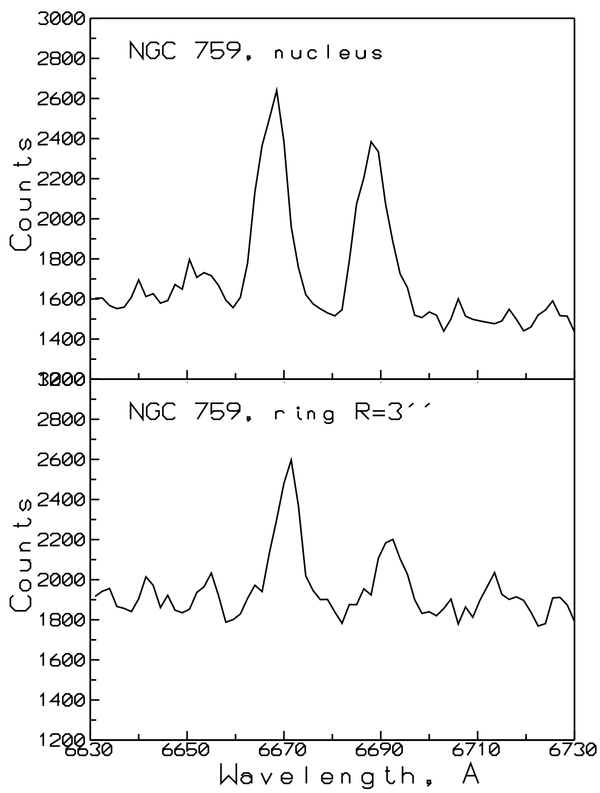

Fig. 8. Emission-line spectra of the nucleus and of the 3″–ring of NGC 759

year made by Wiklind et al. (1997) from the IRAS luminosity of NGC 759. The discrepancy of these two estimates probably results from the ambiguous nature of IRAS flux in elliptical galaxies: e.g. dust mass in elliptical galaxies estimated from L_{fir} is larger by an order of magnitude than dust mass estimated from optical observations (Goudfrooij et al. 1994). There were suggestions that dust which produces FIR radiation in elliptical galaxies may be mostly the dust in the envelopes of highly evolved stars (red giants), and not the dust heated by young stars. As NGC 759 only has upper limits for S_{12} and S_{25}, this may be the case.

6. Discussion and conclusions

By undertaking a spectral and photometric investigation of the central part of the bright elliptical galaxy NGC 759, we have found an optical counterpart for the circumnuclear molecular gas ring with $R \approx 3''$ (1 kpc) which was reported by Wiklind et al. (1997). This counterpart consists of the ionized gas excited by young massive stars as well as of dust. The gaseous ring exhibits fast rotation: its projected rotation velocity at $R \approx 3''$ measured by us is equal to about 220 km/s and agrees perfectly with the result of Wiklind et al. (1997) for the molecular gas ring. This large projected rotation velocity value together with the asymmetric appearance of the dust ring on the $(V - I)$ colour map confirm the hypothesis of Wiklind et al. (1997) about a rather high inclination of the gas rotation plane: our data favours $i \approx 40°$ proposed by them for the molecular gas ring. Meantime the 2D decomposition of the galaxy images both in the V and I bands has revealed an existence of the brightness excess with respect to the de Vaucouleurs' spheroid: this extracomponent is seen in the radius range of 3″–16″and consists of two exponential disks with different inclinations. The more outer disk is seen almost face-on and has structural parameters typical for ordinary disk galaxies: $\mu_0 = 20.8\, I$-mag/□″ and $r_0 = 1.6$ kpc. The innermost stellar disk, if it is intrinsically round, is inclined by $\sim 40°$, just as the circumnuclear gaseous ring; this morphological estimate of the disk inclination is consistent with its visible fast rotation untypical for E0 galaxies. The visible orientation of its line of nodes, $PA_0 \approx 20°$, agrees also with the dynamical major axis derived by us from the two-dimensional stellar velocity field of the central part of NGC 759. The structural parameters of the innermost disk, $\mu_0 = 18.8\, I$-mag/□″ and $r_0 = 0.6$ kpc, are more appropriate to compact inner disks of luminous elliptical galaxies (Iodice et al. 1999).

Having structural parameters of NGC 759, it would be interesting to look what place it occupies among other elliptical galaxies, particularly, on the "Fundamental Plane". We have plotted NGC 759, with its $R_e \approx 6$ kpc and $\mu_e \approx 23.1\ B$-mag/□″, in Fig. 4 from the paper of Capaccioli et al. (1992) where the Kormendy' relation for a lot of early-type galaxies is presented and have assured that it follows the sequence for the family of bright ellipticals, in accordance to its $M_B = -20.7$. So the galaxy is well relaxed even if it has experienced a recent merging.

But we know now that NGC 759 possesses also stellar disks, in addition to the de Vaucouleurs' spheroid. Iodice et al. (1999) have reported recently results of 2D decomposition for the images of early-type galaxies in the nearby clusters Virgo and Fornax. They have found that $\sim 25\%$ of elliptical galaxies demonstrate inner exponential stellar disks; tight correlations between their μ_0 and h, and also between R_e and h are detected. The innermost disk in NGC 759 with its $\mu_0 \approx 21$ B-mag/$\square''$ and $h = 0.6$ kpc, follows the $\mu_0 - h$ relation for the disks within ellipticals which is presented by Iodice et al. (1999) in their Fig. 3. Moreover, its scalelength satisfies the $R_e - h$ dependence for the family of inner disks inside *bright* ellipticals (their Fig. 4) though it is still one of the most extended among a dozen such disks (perhaps it is because NGC 759 is four times farther from us than Virgo and Fornax clusters and our estimate of h_{in}, $1''.9$, is close to our spatial resolution limit). The latter dependence is treated by Iodice et al. (1999) as evidence of coupling during disk and spheroid formation; however the high inclination of the innermost stellar disk, consistent with the inclination of the circumnuclear gaseous ring, allows us to suggest that the innermost stellar disk is related to a recent gas accretion event and star formation in the $3''$-ring around the nucleus. Besides the innermost inclined disk we also see a more extended face-on disk. Its origin probably is not related either to a recent merger, nor to the circumnuclear gaseous ring. The lack of relation is proved by different orientations of the 1-kpc gaseous ring and of the 5-kpc stellar disk: the former is inclined by $i \approx 40^\circ$ and the latter is seen face-on, hence their rotation momenta must be decoupled. Taking into account all of the above, we would like to conclude that the circumnuclear gaseous ring in NGC 759 is not a relic of a merger of two large spiral galaxies; such a merger does not seem to provide a survival of the extended face-on stellar disk. More likely, this ring may be a consequence of a tidal encounter between the elliptical galaxy NGC 759 and a large spiral galaxy which was accompanied by a substantial gas accretion.

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