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SPECTROPHOTOMETRIC OBSERVATIONS OF Mrk 817: PRELIMINARY RESULTS

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Abstract. The preliminary results of the image analysis of Mrk 817 observed with narrow-band filters is presented. The observations were made with the 2 m telescope at the National Astronomical Observatory Rozhen. The extensive structure in the continuum, He II and [OIII] lines was investigated in order to see the sign of the outflow in the extended region.

1. INRODUCTION

The galaxy Mrk 817, a Seyfert 1.5 galaxy, has been observed spectroscopically several times. One of the special features of its lines is that narrow [OIII] lines show very extensive blue part as shown in the Fig. 1. (Popović and Mediavlilla, 1997; Popović et al., 2004). This indicates an outflow in the narrow-line region, that is, in principal, large enough to be resolved in near AGNs. The aim of this work is to explore the extensive structure in different narrow spectral bands in order to see a sign of the outflow in the extensive region of this active galaxy.

2. OBSERVATIONS AND DATA REDUCTION

The presented observations are a part of the program for observing four Active Galactic Nuclei in narrow and broad-band filters at the National Astronomical Observatory Rozhen, Bulgaria (see Popović et al. in this proceedings). They were made in January 2004 with the 2 m Ritchey-Chrétien-Coudé telescope. In the Ritchey-Chrétien focus of the telescope, the equivalent focal length is 16 m and the field-of-view is one square degree with a scale $12.89''$/mm. The telescope is equipped with a

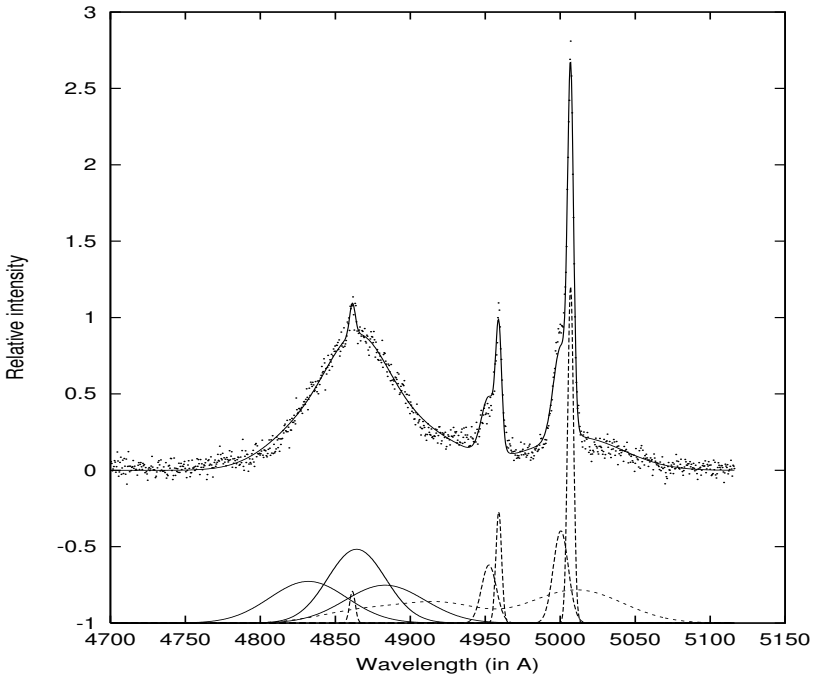

Figure 1: Decomposition of Hβ line of Mrk 817. The dots represent the observation and solid line is the best fit. The Gaussian components are shown at the bottom. The dashed lines at the bottom represent the Fe II template, [OIII] and Hβ narrow lines.

Photometrics AT200 CCD camera with 1024×1024 px array, with 1 px $= 0.32''$ and field $5.45' \times 5.45'$. The set of narrow-band filters in Rozhen Observatory (diameter 45 mm) used in these observations is given in Table 1.

Table 1: Narrow-Band Filters

λ_c [nm]	τ_{max} [%]	FWHM [nm]	Emission
468.1	0.607	18.8	HeII, 4686
500.9	0.726	22.3	[OIII], 4959,5007
575.5	0.644	23.5	Continuum
653.0	0.685	20.8	H_α, 6563
673.2	0.672	21.0	[SII], 6717, 6734

The galaxy was observed in the narrow bands [OIII] ($\lambda = 4959/5007$ Å), He II ($\lambda = 4686$ Å), and the continuum (see Table 2). Observations in other bands are planned for the near future.

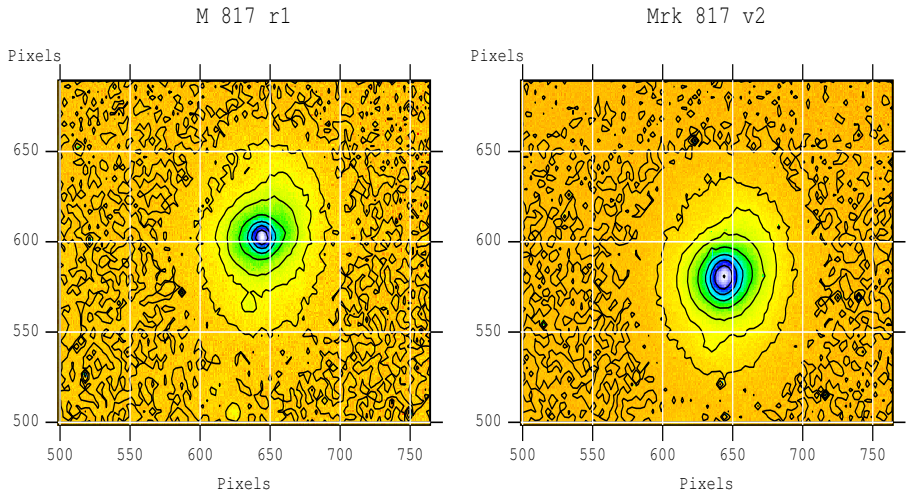

Figure 2: Seyfert galaxy Mrk 817 observed in the continuum (left) and the [OIII] (right) filter.

Table 2: Observations of Mrk 817

RA DEC	Redshift	Date of observation	Spectral line	Number of images	Exposure time [s]
$14^h36^m20^s.5$	0.031455	16-Jan-04	HeII	2	1200
$+58°48'14''.6$		16-Jan-04	[OIII]	2	1200, 1500
		16-Jan-04	Continuum	2	600

Standard reduction procedures including bias subtraction, trimming and flat-fielding were performed with the help of the IRAF software package.

3. PRELIMINARY RESULTS

We observed the galaxy Mrk 817 with 2 m telescope in order to resolve the outer regions of this active galaxy. With a combination of narrow-band filters we tried to confirm the existence of the outflow in the narrow-line region, detected previously with spectral analysis.

On all images the presence of the spiral arms is obvious and it is clear that the observed galaxy is vertically extended (see Figs. 2 and 3). We should also notice that the size of the galaxy varies in different spectral bands, being the biggest in the [OIII] line and the smallest in He II line.

The images taken in [OIII] filter show more intensive and wider central region of the galaxy. This can be in correlation with the previous spectral results (see the extended [OIII] lines in Fig. 1). More detail analysis should be applied and will be discussed elsewhere.

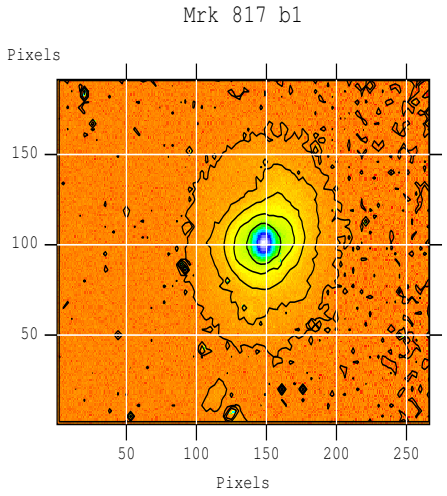

Figure 3: Seyfert galaxy Mrk 817 observed in the HeII filter.

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