SPECTRAL OBSERVATIONS OF BRIGHT QUASARS AT NAO ROZHEN

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Abstract.

Optical spectra of two newly discovered bright quasars - MCG+08.17.060 and RXS J11401+4115, obtained with the 2-m RCC telescope at NAO Rozhen are shown and analysed. The spectra are published for the first time. Various parameters of the brightest emission lines along with accurate redshifts are measured and presented.

1. Introduction

We started a program of spectral observations of relatively newly discovered bright quasars, suitable for spectral observations at the 2-m class telescopes (i.e. the 2-m telescope at NAO Rozhen). Despite the number of quasar surveys, claiming relative completeness, which has been performed in the recent years, there are still many bright quasars, apparently missed in these surveys. Some of these quasars, discovered just recently, have no published spectra. In this work we present spectra for two quasars – MCG+08.17.060 and RXS J11401+4115. Both quasars are relatively nearby ($z \cong 0.05 - 0.07$, see also Tab. 1) and relatively bright ($V \cong 14\text{-}15^m$). The objects were selected from the latest Veron-Cetty & Veron (2003) quasar catalog.

2. Observations and reductions

The spectral observations of MCG+08.17.060 were performed on 19 March 2004 with the Photometrics AT200 CCD camera (1024 x 1024 pixels) and the focal reducer FORERO attached to the RC focus of the 2-m telescope. A grating prism (300 lines per mm) and 130 μm slit were used. This combination yields a resolving power $\lambda/\Delta\lambda = 250$ or about 20 Angstroms. Two 2400 sec exposure frames of the object were obtained and

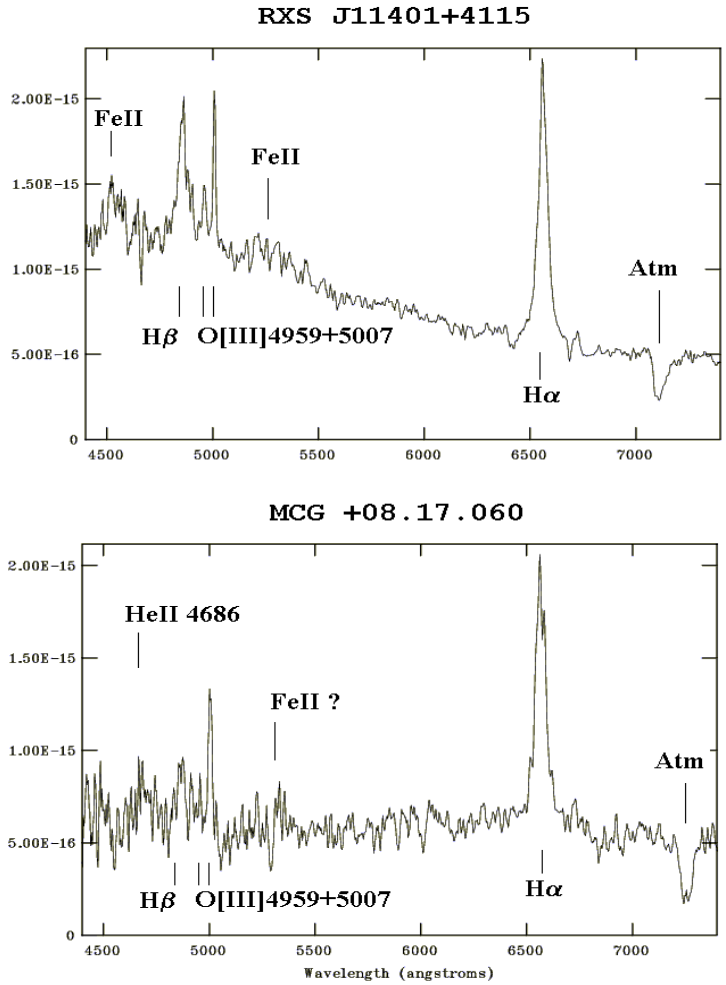
combined to form the final spectrum. Two 600 sec exposure frames of a spectrometric standard - Feige 34 were obtained immediately after the quasar. The second objects, RXS J11401+4115 was observed on 20 March 2004 under the same conditions. Three 2400 sec exposure frames of the object were obtained and combined to form the final spectrum.

The spectra have been reduced using standard IRAF routines. Due to the absence of standard wavelength calibration spectra (e.g. He+Ar) the wavelength calibration has been performed based on the night-sky emission lines, allowing an accuracy of about 2-3 Angstroms. For the flux calibration a standard star (Feige 34) has been used. The redshift-corrected spectra covering 4400 – 7400 Angstroms range are shown in Fig. 1. No correction for the atmospheric absorption, redward of Hα has been applied. No correction for the instrumental profile has been performed to correct the measured widths of the lines as well; this probably accounts for the most of the [OIII] width (Tab. 1).

3. Results

Object	**MCG+08.17.060**			**RXS J11401+4115**		
Coord.	09 13 46.0 +47 42 00			11 40 03.4 +41 15 05		
z	0.0524 +/-0.0005			0.0708 +/- 0.0003		
Lines	EW	FWHM	Flux	EW	FWHM	Flux
H alpha	114	3400	8	198	2700	11.3
H beta	-	-	-	45		5.3
FeII	-	-	-	~ 55	-	-
[OIII]	25	980	1.5	9	2800	730

The redshift of the objects has been measured using Hα and O[III]λ5007. The strongest lines has been identified and measured (Tab. 1). The equivalent width (EW) of the lines is measured in Angstroms, the FWHM – in km/s, and the flux – in units of 10^{-14} erg/s.cm^2. RXS J11401+4115 shows significant FeII multiplet emission around Hβ, which is not surprising taking into account that this object is X-ray selected and has relatively narrow Hydrogen lines (e.g. Sulentic et al., 2000). An emission



signature, probably corresponding to HeII 4686 is seen in the noise of the MCG+08.17.060 spectrum.

References

Sulentic J. W., Marziani P., Dultzin-Hacyan D., 2000, ARAA, 38, 521
Veron-Cetty M.-P., Veron P., 2003, A&A, 412, 399