

BVRI – OBSERVATION OF AGN NGC 4151 IN 2009-2011

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ABSTRACT. The observation of AGN NGC 4151 was completed in BVRI filters on 1.5 meter telescope of Maidanak observatory and Zeiss-600 telescope of Crimean laboratory SAI in 2009-2012. We made photometric processing of obtained CCD frames and presented the result in pictures.

Key words: AGN, CCD photometry

SyG NGC 4151 is observing as typical AGN and very variable object during 100 years (Oknyanskij 2012). We are presenting our observational data obtained on Maidanak observatory and Crimean laboratory SAI in 2009-2011. Multicolor BVRI observations of NGC 4151 was realized by 1.5 meter telescope AZT-22 of Maidanak observatory with CCD camera SNUCAM 4096*4096 cooling Crio Tiger system (-109°C) and Zeiss-600 of Crimean laboratory SAI with CCD camera VersArray 1300B 1024*1024. CCD cameras have set from Bessel filters.

First standard processing of CCD frames was made in MIDAS: creation of superflat, superdark, superbias; cleaning for cosmic rays.

Integral photometry of central region galaxy was received in circle 27.5 angular sec. We made calibration of obtained photometric data with using the coefficients of instrumental photometric system from Lim (2009), Artamonov (2010) for Maidanak observatory, D.Yu.Tsvetkov (2006) for Crimean laboratory SAI and standard stars from Doroshenko (2005). Photometric average error composes about 0.01-0.02 mag.

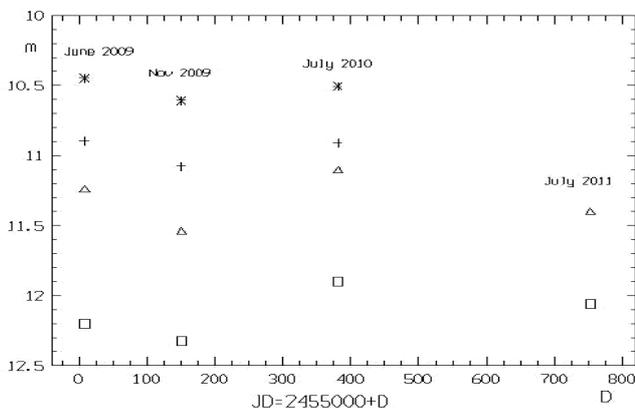


Figure 1. Average photometric data in B (square), V (triangle), R (cross), I (star) filters for NGC 4151 in 2009-2011

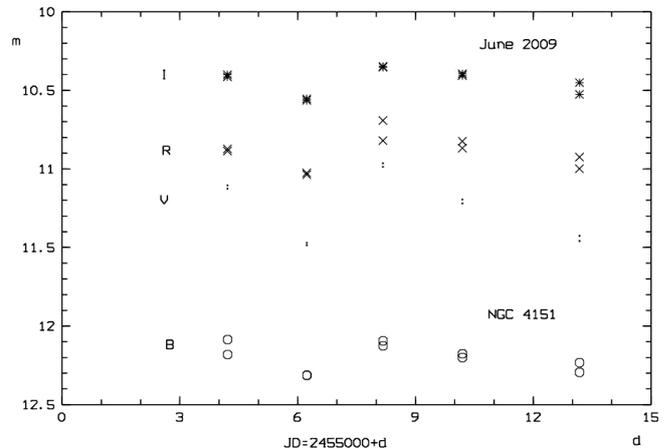


Figure 2. Average during one night photometric data for NGC 4151 in June 2009

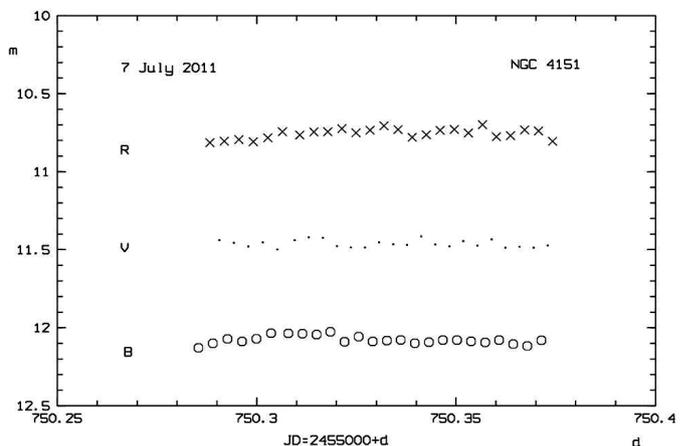


Figure 3. Variability during one night 7 July 2011 for NGC 4151

Our photometric data 2009-2011 in filter B was presented on historical light curve for NGC 4151 (see Oknyanskij, 2012). In present work we add new data in VRI filters. Observation in BVRI filters was made at 23, 25, 27, 30 June 2009: 15 November 2009: 1,4,6 July 2010, 7,11 July 2011.

Average (during one month) data in 2009-2011 shown on fig. 1. We present the light curve for June 2009 on fig. 2 and the light curve for one night 7 July 2011. We can agree

the variability on different times and with historical light curve (Oknyanskij, 2012). We see maximum in July 2010 on fig. 1. The agreement of this maximum with minimum on historical light curve shown the difference about 0.9 mag in B filters. Variability during one month June 2009 is about 0.1-0.2 mag. On fig.2. Variability during one night 7 July 2011 is in limit 0.1 mag. The behavior of light curve is similar in different filters on all figures.

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