

TIMES OF MINIMA OF THE ECLIPSING BINARY V0674 LYR

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Abstract: We present 43 times of minima for the W Ursae Majoris type eclipsing binary V0674 Lyr. The observations were obtained using the Zeiss-600 telescope at the Maidanak astronomical observatory in Uzbekistan from 2018 to 2020.

1 Introduction

Observations of the times of minima of an eclipsing binary will make it possible to study such systems better, refine their parameters, and find possible periodic evolutionary changes occurring in them. In this regard, such observations provide essential information for future studies. Here we present new times of minima for EW type eclipsing binary V0674 Lyr discovered by Pejcha¹ (2004).

2 Observation, Data reduction and analysis

- Observatory and Telescope: Zeiss-600 (North), 60-cm Cassegrain telescope of the Maidanak astronomical observatory, Uzbekistan.
- Detector and Filters: FLI 1K CCD camera, Bessel R filter.
- Data reduction: Preprocessing of the data (bias, dark and flat subtraction) was performed using standard tasks of IRAF² package, and differential photometry was performed using the C-munipack³ Ver. 2.1.32 package (Motl, 2021).
- Method of minimum determination: The function proposed by Mikulášek (2015) and realized in the software for time calculation MAVKA⁴ Andrych, Andronov & Chinarova (2020) were used for minima times calculations.

¹ - <http://var.stro.cz/pejcha/newvar>

² - <https://iraf.net/>

³ - <http://c-munipack.sourceforge.net/>

⁴ - <https://uavso.org.ua/mavka/>

3 Results

Observed times of minima are listed in the Tab.1. Columns 1 and 2 of the table list the heliocentric Julian dates of minima and their uncertainties, and the third column lists the minima type (primary – I, secondary - II).

The types of minima were deduced according to the ephemeris provided by Hambsch (2007):

$$\text{Min. } I_{HJD} = 2454249.495 + 0.300374 \times E \quad (1)$$

This ephemeris was used to determine epochs and build (*O-C*) diagram Fig.1. Since the (*O-C*) diagram shows a negative slope, the epochs of minima times presented here and published by Pejcha (2005), Hambsch (2007), Andronov, Tkachenko & Chinarova (2016) were fitted by the least-squares method to refine linear ephemeris:

$$\text{Min. } I_{HJD} = 2454249.495(2185) + 0.3003715(2) \times E \quad (2)$$

Table 1: Times of minima of eclipsing binary V0674 Lyr

Time of minima HJD 2400000+	Error	Type of minima
58365.18801	0.00021	I
58368.19116	0.00022	I
58642.43157	0.00016	I
58649.33880	0.00049	I
58650.39040	0.00036	II
58654.44485	0.00075	I
58661.35231	0.00025	I
58664.35762	0.00022	I
58665.40708	0.00020	II
58666.31012	0.00028	II
58666.45854	0.00018	I
58668.41053	0.00022	II
58669.31189	0.00040	II
58669.46246	0.00046	I
58670.36495	0.00030	I
58671.26524	0.00027	I
58671.41667	0.00033	II
58673.21795	0.00030	II
58677.27286	0.00037	I
58679.22495	0.00043	II
58684.33096	0.00028	II
58688.23641	0.00033	II
58689.43779	0.00030	II

58690.18966	0.00025	I
58691.24021	0.00024	II
58692.44110	0.00023	II
58692.29188	0.00024	I
58693.19191	0.00051	I
58694.24428	0.00033	II
58728.18593	0.00032	II
58729.23715	0.00034	I
58739.29950	0.00047	II
58748.16039	0.00027	I
58754.16744	0.00033	I
58765.13076	0.00046	II
58774.14238	0.00036	II
58782.10253	0.00028	I
58820.09857	0.00036	II
59083.22612	0.00054	II
59083.37623	0.00047	I
59160.12161	0.00036	II
59168.08110	0.00049	I
59169.13229	0.00057	II

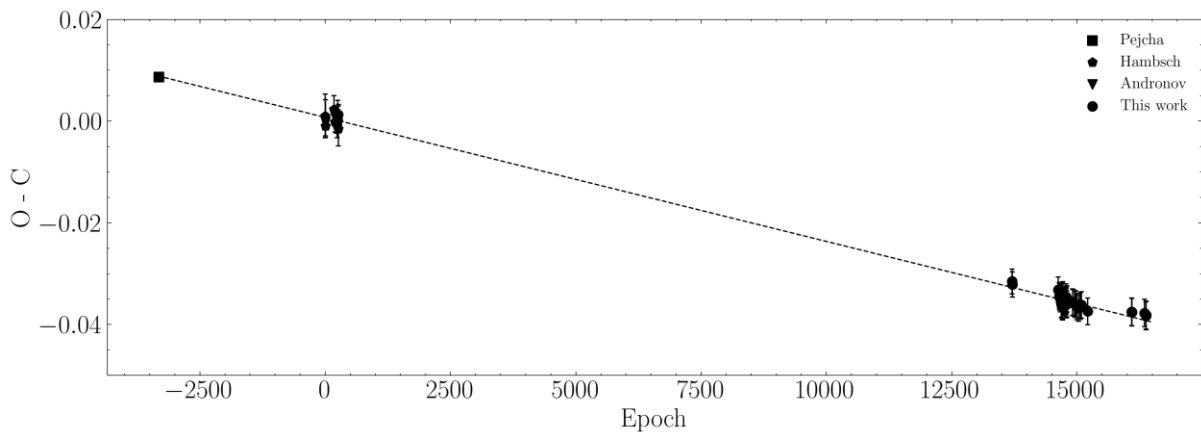


Figure 1: The ($O-C$) diagram of the V0674 Lyr constructed using times of minima obtained in this work and published by other authors. Dashed line represents linear fit to the data.

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