

A LIST OF MINIMA TIMES OF SOME ECLIPSING BINARIES

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Abstract: We present 165 minima times of 91 eclipsing binaries obtained using the T35 Zekeriya Müyesseroğlu telescope at the Ankara University Kreiken Observatory.

1 Introduction

We present 165 minima times of 91 eclipsing binaries acquired between 2016 and 2019.

2 Observations, Data Reduction and Analysis

- Observatory and Telescope: 14” Schmidt-Cassegrain telescope of the Ankara University Kreiken Observatory,
- Detector and Filters: Apogee ALTA U47 CCD camera (1024 x 1024 pixels), Bessel UBVRI filters,
- Method of data reduction: Differential photometry using standard tasks of IRAF¹ package, and ASTROIMAGEJ (Collins et al., 2017),
- Method of minimum determination: PYTHON code (Bahar et al., 2015) based on the Kwee & vanWoerden method (Kwee, & van Woerden, 1956).

3 Results

Table 1 lists the minima estimates. Column 1 lists the GCVS designation of the target stars in lexical order of constellation abbreviation. Columns 2 and 3 list the heliocentric Julian dates of minima and their uncertainties. Minima times observed via more than one filter were calculated as averages weighted by the uncertainties on the minima times calculated for each of the filters. Column 4 lists the minimum type, primary (P) or

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secondary (S). Column 5 gives the filter used during the observations. Column 6 gives the initials of the observers (see Table 2).

Table 1: Times of minima of eclipsing binaries

Star Name	Time of min. HJD 2400000+	Error	Type	Filter	Obs.
AB And	58317.43292	0.00004	p	R	EB
	58000.47959	0.00016	P	R	AD
	58054.24446	0.00010	P	R	AK
	58396.25591	0.00005	S	R	AT
AD And	58083.32859	0.00010	S	R	BA
BD And	57991.34329	0.00017	S	R	EC
	58321.39184	0.00008	P	VRI	SY
BX And	58447.37364	0.00006	S	R	OY
CN And	58357.42765	0.00019	S	BVRI	KC
	58403.24285	0.00012	S	VRI	FD
	58306.52083	0.00008	S	VRI	MB
GZ And	58345.45649	0.00012	P	B	OE
LO And	58083.22561	0.00010	P	R	FJ
QX And	58097.32251	0.00034	S	R	HIC
V527 And	58138.25067	0.00012	S	R	OBE
V531 And	58362.51353	0.00011	S	R	TNK
V613 And	58002.32121	0.00030	P	R	BAG
OO Aql	58345.35576	0.00004	S	BVRI	HY
V417 Aql	58665.46407	0.00008	P	R	CS
	58299.40833	0.00009	S	VR	FA
BM Ari	58431.43760	0.00035	S	VRI	DO
BO Ari	58380.50617	0.00005	S	R	ED
BQ Ari	57728.23830	0.00018	S	VR	EU
V410 Aur	58447.47738	0.00009	P	R	OY
AC Boo	58300.40658	0.00009	S	VRI	AT
CV Boo	58548.51770	0.00007	S	R	MK
EF Boo	58311.33884	0.00003	P	R	OK
	58253.30697	0.00008	P	VRI	HT
	58271.38874	0.00010	P	VR	CS
GN Boo	57929.39341	0.00009	S	VRI	CS
	58198.57429	0.00010	P	VR	DO
GR Boo	57942.30721	0.00017	P	R	OD
	58215.57867	0.00010	S	R	OY

PU Boo	58579.49969	0.00006	S	R	HIY
TY Boo	57870.45326	0.00005	P	VRI	EBY
TZ Boo	58151.59573	0.00036	S	VRI	BA
	58278.33246	0.00009	P	VRI	DH
	58298.39207	0.00009	S	VRI	EU
AO Cam	58066.53110	0.00007	P	VRI	BSA
	58168.30408	0.00010	S	I	EME
V523 Cas	58096.27867	0.00004	S	VRI	MAU
	58364.44339	0.00002	P	R	MMY
	58403.35371	0.00004	S	R	FD
	58421.23127	0.00004	P	VRI	OK
	58430.46242	0.00005	S	R	IO
V651 Cas	57945.46200	0.00011	P	R	BS
SU Cep	57952.48084	0.00015	S	R	BS
BB CMi	58150.33751	0.00015	P	VRI	EBY
TX CnC	58138.37120	0.00009	P	VRI	AK
	58208.24775	0.00015	S	VR	OY
RW Com	58597.35817	0.00006	P	R	FA
	58262.33989	0.00010	S	VRI	BAG
RZ Com	58138.53911	0.00006	P	R	AT
	58212.33364	0.00006	P	R	DO
AW CrB	58213.47366	0.00019	S	RV	EM
	58329.33527	0.00018	S	R	IO
RW CrB	58228.46644	0.00023	P	R	FH
BO CVn	57845.47365	0.00005	P	R	EN
DF CVn	57737.56853	0.00010	S	BVRI	MMY
	58189.49951	0.00006	P	R	EB
	58548.42944	0.00023	P	R	SAK
DK Cyg	57932.50379	0.00007	P	BVRI	ZB
	58310.47603	0.00005	P	R	EB
	58332.36394	0.00009	S	VRI	EM
	58425.32548	0.00007	P	BVRI	ZNA
GO Cyg	58292.45331	0.00022	S	VRI	BK
KR Cyg	58344.46057	0.00004	P	BVRI	ME
	58306.42864	0.00004	P	R	OS
MR Cyg	58030.35251	0.00007	P	BVRI	ABT
V2154 Cyg	58038.21995	0.00018	P	BVRI	KC
LS Del	57974.35404	0.00038	S	R	AKC
	58262.50834	0.00003	S	R	ME
DG Dra	58373.34260	0.00003	S	R	SB

GM Dra	58189.55034	0.00006	P	R	EB
	58309.46418	0.00015	P	BVRI	HG
	58340.28852	0.00007	P	VRI	AT
	58658.36620	0.00023	P	R	BSO
	58298.45478	0.00014	S	VRI	HC
QW Gem	58151.37275	0.00018	P	VRI	AA
	58429.45166	0.00013	S	R	ESE
SZ Her	58252.41809	0.00002	P	BVRI	IEK
V338 Her	58238.51548	0.00004	P	R	MA
V842 Her	58237.42939	0.00015	S	VRI	DO
DF Hya	58213.32714	0.00006	P	VRI	EME
	58215.31070	0.00008	P	R	OY
FG Hya	57734.66536	0.00057	S	R	SU
PP Lac	57979.47961	0.00012	S	R	SEY
	58344.33584	0.00009	P	R	MA
SW Lac	58313.54202	0.00004	P	BVRI	OY
	58328.45406	0.00005	S	BVRI	SY
	58397.41012	0.00007	S	BVRI	OY
	58398.37207	0.00007	S	BVRI	BK
	58399.49642	0.00004	P	BVRI	IO
	58447.28436	0.00002	P	BVRI	OY
AM Leo	58166.53938	0.00007	S	R	OY
	58189.40162	0.00004	P	R	EB
	58212.26371	0.00013	S	R	DO
	58239.33303	0.00005	S	BVRI	BK
UV Leo	58166.45731	0.00004	S	VRI	OY
VW LMi	58103.51741	0.00005	S	R	DH
DZ Lyn	58238.31185	0.00020	S	R	KD
RZ Lyn	57858.36954	0.00027	S	R	AC
UV Lyn	57870.31898	0.00012	S	BVRI	JB
TZ Lyr	58658.44854	0.00023	S	R	DA
V563 Lyr	58341.39764	0.00015	P	BVRI	OK
	58378.36650	0.00012	P	BVRI	CS
	58380.39009	0.00009	S	BVRI	ABT
	58385.29919	0.00015	P	RI	AA
V592 Lyr	58339.38150	0.00016	P	R	EME
V566 Oph	58232.59094	0.00013	P	BVRI	AKC
V839 Oph	58253.52861	0.00010	P	VRI	AK
V343 Ori	58428.52245	0.00020	P	R	MK
AT Peg	58004.36220	0.00010	P	R	DA

BX Peg	58340.37255	0.00033	P	R	AT
	58356.49587	0.00005	S	RI	HK
	58271.52960	0.00005	S	R	IEK
DI Peg	58059.38241	0.00017	S	R	SL
	58329.51886	0.00003	P	VRI	IO
	58406.39582	0.00005	P	VRI	IO
	58421.34388	0.00003	P	VRI	OK
U Peg	58075.30138	0.00002	P	VRI	EC
	58340.45648	0.00007	S	VR	AT
	58368.37756	0.00004	P	R	ZB
	58403.41888	0.00010	S	VRI	FD
	58423.28187	0.00007	S	R	IO
KR Per	57729.31944	0.00006	S	BVRI	JB
	58073.46442	0.00010	P	RI	FA
	58083.42535	0.00011	P	R	ZFY
RT Per	58419.46488	0.00012	S	R	OK
V432 Per	58099.40660	0.00020	P	R	FD
	58344.53099	0.00065	S	RI	FH
	58431.35117	0.00020	P	VRI	DO
	58437.48386	0.00011	P	VRI	IO
	58520.27366	0.00012	P	R	HD
V740 Per	58099.32429	0.00019	P	R	EU
	58378.54521	0.00008	S	R	IK
	58396.45141	0.00007	S	R	AT
V881 Per	58433.39195	0.00018	S	R	OY
DV Psc	58339.47226	0.00006	P	VRI	EME
	58368.47529	0.00010	P	VRI	ZSK
DZ Psc	57963.56082	0.00017	P	R	IC
GR Psc	58369.51249	0.00005	P	R	MAU
VZ Psc	57973.48956	0.00055	S	R	TNK
OU Ser	58231.54621	0.00011	P	BVRI	ST
	58578.47162	0.00014	P	VRI	SAB
	58271.46793	0.00005	S	VR	CD
AH Tau	58151.28150	0.00008	S	VRI	AC
	58168.24756	0.00006	S	VR	EME
	58382.49125	0.00036	S	VR	BR
	58500.25540	0.00011	S	R	BS
GR Tau	58423.54886	0.00018	S	RI	IO
X Tri	58003.47125	0.00003	P	R	DDI
HH UMa	58228.34507	0.00030	P	R	SKT

	58150.50711	0.00025	P	VRI	SEB
MQ UMa	58138.46209	0.00019	S	R	OBE
W UMa	58138.57759	0.00004	P	R	DDI
	58168.43757	0.00004	S	I	EME
	58208.30690	0.00010	P	RI	OY
XY UMa	58166.37021	0.00015	S	R	OY
NN Vir	58226.49878	0.00014	S	BVRI	BE
AW Vul	58356.39555	0.00008	P	R	DH
BP Vul	57966.41503	0.00012	S	R	ES
BS Vul	57979.30047	0.00050	S	R	FD
BU Vul	57973.37362	0.00071	S	R	GG
	57974.51008	0.00088	S	R	GK

Table 2: Observers

Initials	Names	Initials	Names	Initials	Names
AA:	Ali ATEŞ	ES:	Ezgi SERTKAN	ME:	Mahmut ERDAL
ABT:	Abdullah TÜRKMEN	ESE:	Elif Şura ETİŞKEN	ME:	Murat ESENDEMİR
AC:	Abdülbaki CANKAL	EU:	Ebru UZUNÇAM	MK:	Merve KESKİN
AD:	Armağan DEMİREL	FA:	Fatih AYDIN	MMY:	Muzaffer Metehan YAĞCI
AK:	Mehmet Alperen KUL	FA:	Furkan AKAR	OBE:	Ozan Berk ER
AKC:	Ali Kasım ÇETİNKAYA	FD:	Ferdane DOĞAN	OD:	Onur DEMİREL
AT:	Anıl TEMELCİ	FH:	Ferhat HEYBELİ	OE:	Okan ERGÜL
BA:	Burak AKMAN	FJ:	Faissal JAMALI	OK:	Oğuzhan KARADENİZ
BAG:	Barış GÜLER	GG:	Gamze GÖK	ORC:	Ömer Raşit CÜCEN
BE:	Berkay ELGİN	GK:	Işık Gökçen KARSLIOĞLU	OS:	Omar SAHTO
BG:	Burak GÜRKAYNAK	HC:	Hatice ÇEVİK	OY:	Onur YÖRÜKOĞLU
BK:	Burak KETEN	HD:	Hüseyin DENİZ	SAB:	Sara BULUT
BR:	Bahire REÇBER	HG:	Hande GÜRSOYTRAK	SAK:	Serdar Ali KIR
BS:	Buse SAYAR	HIC:	Hilal ÇİFTDOĞAN	SB:	Şeymus BARUT
BSA:	Berhan Safa AZİZOĞLU	HIY:	Hiba YILDIRIM	SEB:	Selda BAŞAR
BSO:	Berkay Sinan ÖZEL	HK:	Hakan KAYIRAN	SEY:	Şengül YALGIN
CD:	Cansu DOĞANSES	HT:	Haydar TURAN	SKT:	Serkan Kaan TIRAŞ
CS:	Ceylan SOLUGAN	HY:	Hicran YILDIRIM	SL:	Seher LAL
DA:	Derya AKSU	IC:	Işıl ÇETİNKAYA	ST:	Seyma TORUN
DDI:	Didem Dilan İZCİ	IEK:	İlayda Ecem KURT	SU:	Sefacan UZUN
DH:	Derya HELVACI	IK:	İrem KARACA	SY:	Selçuk YALÇINKAYA
DO:	Doğuş ÖZUYAR	IO:	İbrahim ÖZAVCI	TNK:	Tuğba Nur KOCA
EB:	Engin BAHAR	JB:	Javit BEŞİRZADE	US:	Uğur ŞENASLAN
EBY:	Eda Burcu YORULMAZ	KC:	Kadem ÇELİK	ZB:	Zeliha BULUT
EC:	Eda ÇETİNKAYA	KD:	Kardelen DEMİRCİ	ZFY:	Zeynep Fatma YILDIRIM
ED:	Eylül DEMİR	MA:	Merve AYDIN	ZNA:	Zühre Nur ACAR
EME:	Ekrem Murat ESMER	MAU:	Muhammed Ali ÜZÜMCÜ	ZSK:	Zeynep SÜMEYYE
ENİ:	Esra Nur İNCE	MB:	Mihriban BİCİL		

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