

The 2019 AAVSO RR Lyrae Ephemeris

The AAVSO RR Lyrae Ephemeris provides the predicted time of maximum for RR Lyrae and Delta Sct type stars in the AAVSO RR Lyrae observing program. These times appear in Universal Time in the body of the ephemeris table. The time is rounded to the nearest half hour, providing sufficient accuracy to plan observing sessions while, hopefully, leaving sufficient doubt about the exact time in order to eliminate anticipatory bias. This ephemeris is designed for use by observers at American longitudes.

The top rows of the ephemeris table list the name of the star. Directly below the star's name are its approximate maximum and minimum magnitudes. These magnitudes are taken from the 4th edition of the GCVS and may be visual, photographic, or V.

Gerard Samolyk, AAVSO Short Period Pulsator Section

REFERENCE

Kholopov, P. N., *et al.* 1985, *General Catalogue of Variable Stars*, Fourth Edition, Moscow.

Below that, in the row labeled "RISE". This is the approximate time required for the star to rise from minimum to maximum, in hours.

CCD observations of RR Lyrae type stars at all phases of their lightcurves are encouraged. This ephemeris can be used as a guide to determine what portion of the lightcurve is observable on a given night.

The numbers in the left-most column are the "double date" - the evening and the following morning - for the event times listed in the corresponding row. For example, 5-6 corresponds to the evening of the 5th and the morning of the 6th of the month. January 0-1 is the evening of December 31 and the morning of January 1.

AAVSO RR Lyrae Ephemeris for January 2019

all times in U.T.

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	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	VX
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	9.9
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	10.4
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2
0- 1	1.0				6.0	10.5		8.5	12.0			6.5	7.5	10.5	5.0	7.0	4.0				3.0	2.5	
1- 2		1.0	2.5	0.0	1.0	8.0	7.5				6.0	8.0			7.0	10.0			1.0	0.5	1.5	7.5	
2- 3					5.0	6.0						9.5		9.5	9.5					8.5	0.5	2.5	
3- 4	3.0	5.0			9.0	4.0		11.0				11.0			11.5	2.5				5.5	11.0	7.0	
4- 5	0.5		4.5		4.0	2.0	8.0					12.5	10.5	8.0		6.0	1.0	2.5			9.5	2.0	
5- 6					8.0	10.5		8.0					8.5		3.0	9.0	3.5	1.0		0.0	8.5	6.5	
6- 7	5.5	2.0	1.0		3.0	8.5			7.0	6.0				7.0	5.5	12.0		10.5	2.0	8.0	7.5	1.5	
7- 8	3.0				7.0	6.5	8.5					8.0			7.5						6.5	6.5	
8- 9		6.0			2.0	4.5		10.5				9.5	6.0		10.0	4.5					5.0	1.5	
9-10			3.0		6.0	2.0				10.5		7.5			12.0	7.5	0.5		0.5	10.5	4.0	6.0	
10-11	5.0				1.0	0.0	9.0	7.5	6.0	11.5		9.0	9.0			10.5	3.0			8.0	3.0	1.0	9.0
11-12	2.5	3.5			5.0	9.0			7.0		6.0	11.0		12.0	3.5			2.5	2.5		2.0	5.5	
12-13			5.0	0.5	9.5	7.0			7.5			12.5			5.5	3.0		1.0			0.5	0.5	
13-14					4.0	4.5		10.0	8.0					11.0	8.0	6.0		10.5		10.0	11.0	5.5	
14-15	4.5	1.0	1.5		8.5	2.5			9.0						10.5	9.0			1.0	7.5	10.0	0.5	
15-16	2.0				3.0	0.5			9.5				9.5	10.0	12.5	12.0	2.5				8.5	5.0	9.5
16-17		5.0			7.5	9.5		13.0	10.0		6.0		7.5		1.5	2.0	5.0				7.5	0.0	
17-18			3.5		2.0	7.5			10.5			7.5		8.5	4.0	5.0				10.0	6.5	4.5	
18-19	4.0				6.5	5.0	7.0	9.5	11.5	7.5		9.0			6.0	8.0		2.5		7.0	5.5	9.5	
19-20	1.5	2.5			1.0	3.0			12.0	9.0		10.5		7.5	8.5	11.0		1.0	2.0		4.0	4.5	
20-21			5.5		5.5	1.0			10.0			12.0	10.0		10.5		2.0	10.5			3.0	9.0	9.5
21-22		6.5			0.0	10.0	7.5	12.5		11.0	6.0		8.0		13.0	3.5	4.5			9.5	2.0	4.0	
22-23	3.5		2.0		4.5	7.5			12.0						2.0	6.5			0.5	7.0	1.0	8.5	
23-24	1.0			1.0	8.5	5.5		9.0							4.5	9.5					11.0	3.5	
24-25		4.0			3.5	3.5	8.0							12.5	6.5	12.5					10.0	8.5	
25-26			4.0		7.5	1.5					7.0	11.0		9.0	2.0	1.5	2.5			9.0	9.0	3.5	10.0
26-27	3.0				2.5	10.0		11.5			6.0	8.5	9.0	11.5	11.0	5.0	4.0	1.0		6.5	8.0	8.0	
27-28	0.5	1.0	0.5		6.5	8.0	8.5					10.0			8.0			10.5	1.5		6.5	3.0	
28-29			6.0		1.5	6.0		8.5				11.5		10.0	2.5	11.5				1.0	5.5	7.5	
29-30	5.5	5.5		0.5	5.5	4.0			6.0	7.0					5.0					9.0	4.5	2.5	
30-31	2.5		2.5		0.5	2.0	9.0		7.0	8.5				9.0	7.0	4.0	1.0		0.0	6.0	3.0	7.5	10.0

	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1				9.5	9.5	5.0	11.0	4.5				5.0	0.5		2.5	
1- 2		10.5		11.0	10.5		10.5		9.5	12.5	3.5	7.0				
2- 3					11.5	11.5	10.0	10.5				8.5	0.5		1.5	
3- 4						5.5	9.5	8.5	6.5	12.5		2.5				9.5
4- 5				3.5			9.0	6.0	12.5		4.0	4.5			0.0	8.0
5- 6	10.0			5.5		12.0	8.0	4.0			9.0	6.5				6.5
6- 7	8.5			7.0	3.5	6.0	7.5		9.5	5.5		8.5		11.0		5.0
7- 8	7.0			9.0	4.5		7.0	10.0			4.0	2.0		11.5		3.5
8- 9		13.0	9.5	11.0	6.0	12.5	6.5	8.0	7.0	6.0	9.0	4.0	12.5	12.0		
9-10				12.5	7.0	6.5	6.0	5.5	13.0			6.0		0.5	2.0	
10-11					8.0		5.5	3.5		6.0	4.5	8.0				10.0
11-12		12.0			9.5		5.0		10.0		9.5	1.5			1.0	8.5
12-13	11.0		10.0	5.0	10.5	7.0	4.5	9.5		6.5		3.5	11.5			7.0
13-14	9.5			7.0	11.5		4.0	7.5	7.0		5.0	5.5	1.5			5.5
14-15	8.0	11.0		8.5			3.5	5.0		7.0	10.0	7.5				4.0
15-16	7.0			10.5		7.5		2.5				1.0				
16-17			10.5	12.0					10.0	7.5	5.5	3.0	11.0		2.5	
17-18					3.5			9.0			10.0	5.0	0.5			10.5
18-19					5.0	7.5		6.5	7.5	8.0		7.0			1.5	9.0
19-20				4.5	6.0			4.5			5.5	0.5				7.5
20-21	11.0		10.5	6.5	7.0					8.5	10.5	2.5			0.5	6.0
21-22	9.5			8.0	8.0	8.0	11.5	10.5	10.5			4.5				4.5
22-23	8.0			10.0	9.5		11.0	8.5		9.0	6.0	6.5				
23-24				12.0	10.5		10.5	6.0	7.5		11.0	8.5				
24-25		12.5			11.5	8.5	10.0	4.0		9.5		2.0				11.0
25-26							9.5				6.5	4.0	12.5		2.0	9.5
26-27				4.5			9.0	10.0	11.0	10.0	11.0	6.0				8.0
27-28		11.5		6.0		9.0	8.5	8.0				8.0			1.0	6.5
28-29	10.5			8.0	3.5	3.0	8.0	5.5	8.0	10.0	6.5	1.0		10.5		5.0
29-30	9.0			9.5	5.0		7.5	3.5			11.5	3.5	12.0	11.0		3.5
30-31	7.5	10.5		11.5	6.0	9.5	7.0			10.5		5.5	1.5	11.5		

	SW	XX	AT	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	VX	AR	
	AND	AND	AND	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER	HER	
MAX	9.3	10.3	10.8	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	9.9	10.6	
MIN	10.8	11.6	11.5	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	10.4	11.6	
RISE	2	3	3	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2	2	
0- 1				4.5			11.0	7.5	9.5	6.0		9.5		9.5	7.0	3.5				2.0	2.5	8.0	6.5	
1- 2		2.5		9.0	8.5	6.0		8.0	10.5	4.5	5.0	7.5	8.0	11.5	10.0						1.0	7.0	5.0	
2- 3				3.5	6.5		8.0	9.0	11.5		6.5	5.5		1.0			0.5		8.5	11.5	2.0			
3- 4	2.0			8.0	4.5			9.5			8.0		6.5	3.0	2.5		10.5		6.0	10.0	6.5			
4- 5		0.0	1.0	2.5	2.0	6.5		10.0			9.5			5.5	5.5	0.0	8.5			9.0	1.5	10.5		
5- 6				7.0	0.0		10.5	11.0		6.0	11.0	10.0	5.5	7.5	8.5	3.0	7.0				8.0	6.5	8.0	10.5
6- 7		4.0		1.5	9.0			11.5		4.5	12.5	8.0	13.0	10.0					8.0	7.0	1.5		9.0	
7- 8	1.5		3.0	6.0	7.0	7.0	7.5	12.0				6.0		12.0	1.0				5.5	5.5	6.0		7.5	
8- 9				0.5	4.5				5.5				11.5	1.0	4.0						4.5	1.0	6.0	
9-10		1.5		5.0	2.5				6.5		4.5			3.5	7.5						3.5	5.5	10.5	
10-11				9.0	0.5	7.5	10.0		8.0	6.0	6.0	10.5	10.5	6.0	10.5	2.0	10.5		8.0	2.5	1.0	8.5		
11-12	1.5			4.0					9.0	4.5	7.5	8.5		8.0			8.5		5.0	1.0	5.5			
12-13			1.5	8.0	7.0	5.0	7.0		10.0		9.0	6.5	9.5	10.5	3.0		7.0	0.5			0.0	0.5		
13-14				3.0	5.0	8.0	13.0		11.0		11.0			12.5	6.0				10.5	10.5	5.0		10.0	
14-15	3.5	3.0		7.0	3.0			4.5	12.0		12.5		8.0	1.5	9.0				7.5	9.0	0.0	10.5	8.5	
15-16	1.0		3.5	2.0	1.0	5.5	9.5	5.0		6.0				4.0		1.5			5.0	8.0	4.5	8.5	7.5	
16-17				6.0		8.5		5.5		4.5		9.0	7.0	6.0	1.5		0.5			7.0	9.5		6.0	
17-18		0.5		1.0	7.5		6.5	6.5			4.0	7.0		8.5	4.5		10.5		10.0	6.0	4.5			
18-19	3.0			5.0	5.5	5.5	12.5	7.0			6.0	5.0	6.0	11.0	7.5		8.5		7.0	4.5	9.0			
19-20	0.5	4.5		9.0	3.5	9.0		7.5	5.0		7.5				10.5		7.0		4.5	3.5	4.0			
20-21			2.0	4.0	1.5		9.0	8.0	6.0	6.0	9.0			2.0	0.0	1.0				2.5	8.5	9.0		
21-22				8.0		6.0		9.0	7.5	4.5	10.5	10.0	12.0	4.5	3.0				9.5	1.5	3.5		10.0	
22-23	2.5	1.5		3.0	8.0		6.0	9.5	8.5		12.0	8.0		6.5	6.5				7.0	0.0	8.5		8.5	
23-24			4.0	7.0	6.0		12.0	10.0	9.5			5.5	11.0	9.0	9.5		0.5		4.0	10.5	3.5		7.0	
24-25				2.0	4.0	6.5		11.0	10.5					11.0			10.5			9.5	8.0		5.5	
25-26			0.0	6.0	1.5		8.5	11.5	11.5	6.5			10.0	0.5	2.0	0.5	8.5	1.0	9.5	8.0	3.0	9.0		
26-27	2.0			1.0				12.0		5.0	5.5	10.5		2.5	5.0	3.0	7.0		6.5	7.0	7.5			
27-28		3.0		5.0	8.5	7.0	5.5				7.0	8.5	8.5	5.0	8.0				4.0	6.0	2.5			

	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1				7.0	3.5	6.0	9.5	11.0		7.0	7.5		12.0		
1- 2			2.0	8.0		5.5	7.5		11.0		0.5				10.0
2- 3	9.5	9.0	4.0	9.5	9.5	5.0	5.0	8.0	3.5	2.5	2.5	11.0			8.5
3- 4			5.5	10.5	4.0	4.5	3.0		11.5	7.5	5.0				7.0
4- 5			7.5			4.0	0.5	5.0	3.5		7.0				5.5
5- 6	8.5		9.0		10.0	3.5	9.0	11.5	12.0	2.5	0.0			0.5	4.0
6- 7	12.5	9.5		1.5	4.0	3.0	7.0		4.0	7.5	2.0	10.0			2.5
7- 8				2.5		2.5	4.5	8.5	12.5		4.0				
8- 9			1.5	3.5		2.0	2.0		4.5	3.0	6.5				10.5
9-10	11.5		3.5	5.0	4.5	1.5	11.0	5.5		8.0	8.5				9.0
10-11		9.5	5.5	6.0			8.5	11.5	5.0		1.5	9.5			7.5
11-12			7.0	7.0			6.0			3.5	3.5	12.5			6.0
12-13	10.5		9.0	8.5	5.0		4.0	8.5	5.5	8.5	5.5				4.5
13-14				9.5			1.5				8.0				3.0
14-15		10.0		10.5			10.0	5.5	6.0	4.0	1.0	8.5			1.5
15-16	9.5				5.5	10.0	8.0	12.0		8.5	3.0	12.0			11.0
16-17			3.0			9.5	5.5		6.5		5.0		8.5		9.5
17-18			5.0	1.5		9.0	3.5	9.0		4.0	7.0		9.0		8.0
18-19	8.5	10.0	6.5	2.5	6.0	8.5	1.0		7.0	9.0	0.5		9.5		6.5
19-20		7.5	8.5	3.5		8.0	9.5	6.0			2.5	11.0	10.0		5.0
20-21			10.5	5.0		7.5	7.5	12.0	7.5	4.5	4.5		10.5		3.5
21-22				6.0	6.5	7.0	5.0			9.5	6.5		11.0	0.5	2.0
22-23	12.0	10.5		7.0		6.5	3.0	9.0	7.5		0.0		12.0		
23-24		8.0	2.5	8.5		6.0	0.5			5.0	2.0	10.5			10.0
24-25			4.5	9.5	6.5	5.5	9.0	6.0	8.0	9.5	4.0				8.5
25-26	11.0		6.5	10.5	1.0	5.0	7.0	12.5			6.0				7.0
26-27			8.0			4.5	4.5	3.5	8.5	5.0	8.0				5.5
27-28		8.0	10.0		7.0	3.5	2.0	9.5		10.0	1.5	9.5			4.0

AAVSO RR Lyrae Ephemeris for March 2019

all times in U.T.

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	SW	XX	AT	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW	VX	
	AND	AND	AND	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER	HER	
MAX	9.3	10.3	10.8	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5	9.9	
MIN	10.8	11.6	11.5	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8	10.4	
RISE	2	3	3	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2	2	
0- 1			2.5	9.5	6.5		11.5			2.0	8.5	6.5		7.0			9.5		5.0	7.5	7.0			
1- 2				4.0	4.0	4.5			3.5		10.0	4.5	7.5	9.5	0.5				9.0	3.5	2.5			
2- 3	1.5	0.5		8.5	2.0	7.5	8.0	2.5	4.5	6.5	11.5				3.5				6.5	2.5	7.0	7.0	9.0	
3- 4				3.0				3.0	5.5	5.0			6.5	1.0	6.5		10.0		3.5	1.5	2.0		7.0	
4- 5				7.5		5.0	5.0	3.5	7.0	3.5		9.0		3.0			8.5				6.5	7.0		
5- 6			0.5	2.0	6.5	8.0	11.0	4.5	8.0	2.0	3.5	7.0	5.0	5.5			7.0		8.5	10.5	2.0			
6- 7	1.0			6.5	4.5			5.0	9.0		5.0	5.0	12.5	7.5	2.5		5.5		6.0	9.5	6.5	7.0		
7- 8		2.0	12.0	1.0	2.5	5.0	7.5	5.5	10.0	6.5	6.5		4.0	10.0	5.5				3.0	8.5	1.5		9.5	
8- 9				5.5		8.5		6.5	11.0	5.0	8.0		11.5	8.5						7.0	6.0	7.0	7.5	
9-10							4.5	7.0	12.5	3.5	9.5	9.5		1.5					8.5	6.0	1.0			
10-11	0.5			4.5		5.5	10.5	7.5		2.0	11.0	7.5	10.0	3.5	1.0		10.0		5.5	5.0	5.5	6.5		
11-12				8.5	5.0	9.0		8.5				5.5		6.0	4.0		8.5		3.0	4.0	1.0			
12-13		3.5		3.5	3.0	3.0	7.0	9.0	3.0	6.5		3.5	9.0	8.0	7.0		7.0				2.5	5.5	6.5	9.5
13-14			1.0	7.5	1.0	6.0		9.5	4.0	5.0	3.0			10.5		1.5	5.5	10.0	8.0	1.5	0.5		7.5	
14-15				2.5			4.0	10.0	5.0	3.5	4.5	10.5	8.0						5.5	0.5	5.0	6.5	5.5	
15-16		0.5	12.5	6.5		3.5	9.5	11.0	6.5	2.0	6.0	8.5		1.5	2.5				2.5	11.0				
16-17				1.5	5.5	6.5		11.5	7.5		7.5	6.0	6.5	4.0	5.5				10.5	9.5	4.5	6.5		
17-18				5.5	3.5		6.5	12.0	8.5	6.5	9.0	4.0		6.5	8.5		10.0		7.5	8.5			10.0	
18-19					1.0	4.0	12.5		9.5	5.0	11.0		5.5	8.5		1.0	8.5		5.0	7.5	4.5	6.5	7.5	
19-20				4.5		7.0	3.5		10.5	3.5	12.5			11.0	1.5		7.0		2.0	6.5	9.0		5.5	
20-21		2.0		9.0			9.0		12.0	2.0		9.0	4.5		4.5		5.5		10.0	5.0	4.0	6.5		
21-22			1.5	3.5	6.0	4.5		2.5			2.5	7.0	11.5	2.0	7.5			9.5	7.5	4.0	8.5			
22-23				8.0	3.5	7.5	6.0	3.0		6.5	4.0	5.0	3.5	4.5					4.5	3.0	3.5	6.5	10.0	
23-24				2.5	1.5		12.0	3.5		5.0	6.0		10.5	6.5					2.0	2.0	8.5		8.0	
24-25				7.0		5.0		4.5	3.5	3.5	7.5			9.0	3.0		10.0		10.0	0.5	3.5	6.5	6.0	
25-26	1.5			1.5		8.0	8.5	5.0	4.5	2.0	9.0	9.5	9.5		6.0		8.5		7.0	11.0	8.0			
26-27				6.0	6.0			5.5	6.0		10.5	7.5			9.0		7.0		4.5	10.0	3.0	6.5		
27-28				0.5	4.0	5.0	5.5	6.5	7.0	6.5	12.0	5.5	8.5	2.5			5.5			8.5	7.5		10.5	
28-29		1.0	11.5	5.0	2.0	8.5	11.5	7.0	8.0	5.0		3.5		5.0	1.5				9.5	7.5	3.0	6.5	8.0	
29-30	1.0		2.0	9.0				7.5	9.0	3.5	2.5		7.0	7.0	4.5				6.5	6.5	7.5		6.0	
30-31				4.0		5.5	8.0	8.5	10.0	2.0	4.0	10.0		9.5	7.5				4.0	5.5	2.5	6.0		

	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	RV
	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	UMA
MAX	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	10.1
MIN	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	11.2
RISE	2	1	1	2	2	3	2	2	2	2	3	1	2	2	3
0- 1	11.0	10.0			1.5	1.0	3.0	11.0		9.0	0.5	3.5			2.5
1- 2	9.5			0.5	2.5		2.5	8.5	6.5		5.5	5.5			1.0
2- 3	8.0			2.5	4.0	7.5	2.0	6.0		9.5		7.5			10.5
3- 4	7.0	9.0	8.5	4.0	5.0	1.5	1.5	4.0	3.5	1.5	1.0	1.0	8.5		9.0
4- 5	5.5		6.0	6.0	6.0		1.0	1.5	9.5	10.0	6.0	3.0	12.0		7.5
5- 6	4.0			7.5	7.0	8.0	0.5	10.0		2.0		5.0			6.0
6- 7		8.0			8.5	2.0		8.0	7.0	10.5	1.0	7.0			4.5
7- 8		12.5	9.0		9.5			5.5		2.5	6.0	0.5	8.0		3.0
8- 9	11.0		6.5			8.5		3.5	4.0	11.0		2.5	11.0	7.0	1.5
9-10	9.5	7.0		2.0		2.5		1.0	10.0	3.0		1.5	4.5	7.5	11.0
10-11	8.0	11.5		3.5				9.5			6.5	6.5		8.0	9.5
11-12	6.5		9.0	5.5	1.5			7.5	7.0	3.5		8.5	7.0	8.5	8.0
12-13	5.0		6.5	7.5	2.5	3.0		5.0			2.0	2.0	10.5	9.0	6.5
13-14	3.5	10.5			4.0		8.0	3.0	4.0	4.0	7.0	4.0		9.5	5.0
14-15					5.0		7.5	0.5	10.0			6.0		10.5	3.5
15-16			9.5		6.0	3.0	7.0	9.0		4.5	2.0	8.0		11.0	2.0
16-17	10.5	9.5	7.0	1.5	7.0		6.5	7.0	7.5		7.0	1.5	9.5	11.5	0.5
17-18	9.0			3.5	8.5		6.0	4.5		5.0		3.5		12.0	10.0
18-19	7.5			5.0	9.5	3.5	5.5	2.0	4.5		2.5	5.5			8.5
19-20	6.5	8.5	10.0	7.0			5.0	11.0	10.5	5.0	7.5	7.5			7.0
20-21	5.0		7.0	8.5			4.5	8.5	1.5			1.0	9.0		5.5
21-22	3.5					4.0	4.0	6.0	7.5	5.5	3.0	3.0	12.0		4.0
22-23		7.5			1.5		3.5	4.0			8.0	5.0			2.5
23-24		12.0	10.0	1.0	2.5		3.0	1.5	4.5	6.0		7.0			1.0
24-25	10.5		7.5	3.0	4.0	4.5	2.5	10.5	10.5		3.5		8.0		10.5
25-26	9.0	6.5		5.0	5.0		1.5	8.0	1.5	6.5	8.0	2.5	11.0		9.0
26-27	7.5	11.0		6.5	6.0		1.0	5.5	8.0			4.5			7.5
27-28	6.0		10.5	8.5	7.0	5.0	0.5	3.5		7.0	3.5	6.5			6.0
28-29	4.5		8.0		8.5			1.0	5.0		8.5	8.5	7.0		4.5
29-30	3.0	10.0			9.5			9.5	11.0	7.5		2.0	10.5		3.0
30-31				1.0		5.5		7.5	2.0		4.0	4.0			1.5

AAVSO RR Lyrae Ephemeris for April 2019

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	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	XZ	DM	RW	XZ	RR	TW	VX	AR
	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CYG	CYG	DRA	DRA	GEM	HER	HER	HER
MAX	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.1	11.2	11.0	9.6	10.7	10.5	9.9	10.6
MIN	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.5	12.7	12.0	10.3	11.9	11.8	10.4	11.6
RISE	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	3	2	2	3	2	2	2	2
0- 1						9.0		9.0	11.5		5.5	8.0	6.0			10.0		1.0	4.0				
1- 2				3.0	4.5	3.0	5.0	9.5		6.5	7.0	6.0				8.5	7.5	9.0	3.0	2.0	6.0	10.5	10.0
2- 3		10.0	9.5	7.0	2.5	6.0	11.0	10.0	1.0	5.0	8.5	4.0	5.0	3.0	3.5	7.0		6.5	2.0	6.5		8.5	8.5
3- 4				2.0			2.0	11.0	2.0	3.5	10.0	2.0		5.5	6.5	5.5	9.5	3.5		2.0	6.0	6.0	7.0
4- 5				6.0		3.5	7.5	11.5	3.0	2.0	11.5	11.0	3.5	7.5		3.5			11.0	6.5		4.0	6.0
5- 6						6.5			4.0			8.5	11.0					9.0	10.0	1.5	6.0		4.5
6- 7				5.0	5.0		4.5		5.5	6.5	2.0	6.5	2.5		2.0		8.5	6.0	9.0	6.0		10.5	3.0
7- 8			11.0		3.0	4.0	10.5	1.0	6.5	5.0	3.5	4.5	10.0	1.5	5.0	10.0		3.5	7.5	1.0	6.0	8.5	1.5
8- 9				4.0		7.0	1.5	2.0	7.5	3.5	5.0	2.5	1.5	3.5		8.5			6.5	5.5		6.5	
9-10						1.0	7.0	2.5	8.5	2.0	6.5		8.5	6.0		7.0		8.5	5.5		6.0	4.5	10.0
10-11	1.0	10.5		3.0		4.5		3.0	9.5		8.0	9.5		8.0		5.5		5.5	4.5	5.5			8.5
11-12				7.0		7.5	4.0	4.0	11.0	6.5	9.5	7.5	7.5		3.5	3.5	9.0	3.0	3.0		6.0		7.0
12-13				2.0	3.5	1.5	10.0	4.5		5.0	11.0	5.0			7.0				2.0	5.0		9.0	5.5
13-14			10.0	6.0	1.0	4.5		5.0		3.5		3.0	6.5	2.0				8.0	1.0		6.0	6.5	4.0
14-15				1.0		8.0	6.5	5.5	1.5	2.0	1.5	1.0		4.0		10.0	7.5	5.5	11.0	5.0		4.5	2.5
15-16				5.0		2.0		6.5	2.5		3.0	10.0	5.0	6.5	2.5	8.5		2.5	10.0		6.0		1.0
16-17						5.0	3.5	7.0	3.5	6.5	4.5	8.0		8.5	5.5	7.0		10.5	9.0	4.5			11.0
17-18				4.0	3.5	8.5	9.5	7.5	5.0	5.0	6.0	6.0	4.0			5.5		8.0	8.0		6.0	9.0	9.5
18-19		10.5			1.5	2.5		8.5	6.0	3.5	7.5	4.0	11.5			3.5		5.0	6.5	4.0		7.0	8.0
19-20			9.5	3.0		5.5	6.0	9.0	7.0	2.0	9.5	1.5	3.0	2.0	1.0		8.5	2.5	5.5		6.0	4.5	7.0
20-21				7.5		9.0		9.5	8.0		11.0	10.5	10.0	4.5	4.0			10.0	4.5	4.0			5.5
21-22				2.0		3.0	3.0	10.5	9.0	6.5		8.5	2.0	7.0	7.0	10.0		7.5	3.5		5.5		4.0
22-23				6.5	4.0	6.0	9.0	11.0	10.5	5.0	1.0	6.5	9.0			8.5		4.5	2.0	3.5		9.0	2.5
23-24	1.5	9.0		1.0	2.0			11.5	11.5	3.5	2.5	4.5				7.0		2.0	1.0		5.5	7.0	1.0
24-25			11.0	5.5		3.5	5.5			2.0	4.0	2.5	8.0		3.0	5.0	9.5	10.0	11.5	3.0		5.0	11.0
25-26						6.5	11.5		1.0			6.0		2.5	6.0	3.5		7.0	10.5		5.5		9.5
26-27		11.0		4.5			2.5	1.0	2.0	6.5	7.5	9.0	7.0	5.0				4.5	9.0	3.0			8.0
27-28					4.5	4.0	8.5	2.0	3.0	5.0	9.0	7.0		7.0			8.0	1.5	8.0		5.5	9.5	6.5
28-29				3.5	2.5	7.0		2.5	4.5	3.5	10.5	5.0	5.5		1.5	10.0		9.5	7.0	2.5		7.5	5.0
29-30						1.0	5.0	3.0	5.5	2.0		3.0				4.5	8.5		7.0	6.0	5.5	5.0	3.5

	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1	4.5		2.5				5.0	8.0	8.0		6.0		7.0		11.0
1- 2	9.0	8.0	4.5				3.0				8.0	6.5	7.5		9.5
2- 3		5.5	6.0	1.5	5.5			5.0	8.5	4.5	1.5	9.5	8.5		8.0
3- 4				2.5			9.0				3.5		9.0		6.5
4- 5	8.0			4.0			7.0	2.0	9.0		5.5		9.5		5.0
5- 6		8.5		5.0	6.0		4.5	8.5	1.0	4.5	7.5	5.5	10.0	8.5	3.5
6- 7		6.0		6.0			2.5					9.0	10.5		2.0
7- 8	7.0		2.0	7.5				5.5	1.5		3.0		11.0		
8- 9	11.0		4.0		6.5	6.0	8.5			5.0	5.0		11.5		10.0
9-10		9.0	6.0			5.5	6.5	2.5	2.0		7.0	5.0			8.5
10-11	6.0	6.0				5.0	4.0	8.5				8.0			7.0
11-12	10.0					4.5	1.5		2.5	5.5	2.5	11.5			5.5
12-13					1.0	4.0		5.5			4.5			9.0	4.0
13-14	5.0	9.0		1.5		3.5	8.0		2.5		6.5				2.5
14-15	9.0	6.5	2.0	2.5		3.0	5.5	2.5		5.5	8.5	7.5			1.0
15-16		4.0	3.5	4.0	1.5	2.5	3.5	9.0	3.0		2.0	10.5			10.5
16-17			5.5	5.0		2.0	1.0			1.0	4.0				9.0
17-18	8.0	9.5		6.0		1.5		6.0	3.5	6.0	6.0				7.5
18-19		7.0		7.5	2.0		7.5				8.0	6.5			6.0
19-20		4.0					5.0	3.0	4.0	1.5	1.0	9.5	5.0		4.5
20-21	7.0						3.0	9.0		6.5	3.5		5.5		3.0
21-22	11.5	9.5	1.5		2.0				4.5		5.5		6.0	8.5	1.5
22-23		7.0	3.0				9.0	6.0		1.5	7.5	5.5	7.0		11.0
23-24	6.0	4.5	5.0				7.0		5.0	6.5		9.0	7.5		9.5
24-25	10.5			1.5	2.5		4.5	3.5			2.5		8.0		8.0
25-26		10.0		3.0			2.5	9.5	5.5	2.0	5.0		8.5		6.5
26-27	5.0	7.5		4.0					7.0	7.0		5.0	9.0		5.0
27-28	9.5	5.0		5.0	3.0		8.5	6.5	6.0			8.0	9.5		3.5
28-29			1.0	6.0			6.5			2.5	2.0	11.5	10.0	9.5	2.0
29-30		10.5	3.0	7.5			4.0	3.5	6.5	7.5	4.0		10.5		

AAVSO RR Lyrae Ephemeris for May 2019

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	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	XZ	DM	RW	XZ	RR	TW	VX
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CYG	CYG	DRA	DRA	GEM	HER	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.1	11.2	11.0	9.6	10.7	10.5	9.9
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.5	12.7	12.0	10.3	11.9	11.8	10.4
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	3	2	2	3	2	2	2
0- 1				10.0	2.5		4.5	11.0	4.0	6.5				4.5			7.0	6.5	4.0	4.5	2.0		3.0
1- 2			9.5	8.0			7.5	2.0	4.5	7.5	6.5	2.5	10.0		3.0		5.0			3.5		5.5	
2- 3		11.0			1.5		1.5	7.5	5.0	8.5	5.0	4.0	8.0	3.5	5.5		3.5	9.0	9.0	2.5	2.0		9.5
3- 4	10.5					3.0	4.5		6.0	10.0	3.5	5.5	5.5	10.5		3.0	2.0		6.5			5.5	7.5
4- 5							8.0	4.5	6.5	11.0	2.0	7.0	3.5	2.0					3.5		1.5		5.5
5- 6					4.5		2.0	10.5	7.0			8.5	1.5	9.5			10.0	7.5		10.5		5.5	3.0
6- 7			8.0	9.5			5.0		7.5		6.5	10.0	10.5				8.5		9.0	9.5			
7- 8	10.0			7.5	3.5		8.5	7.0	8.5	1.5	5.0		8.5	8.5	3.5	2.0	7.0	10.0	6.0	8.0		5.5	10.0
8- 9							2.5		9.0	2.5	3.5		6.5		6.0	5.0	5.0	6.0	3.5	7.0			7.5
9-10			10.0		2.5		5.5	4.0	9.5	4.0	2.0	2.0	4.5	7.0			3.5			6.0		5.5	5.5
10-11		9.5					9.0	10.0	10.5	5.0		3.5	2.0				2.0	8.5	8.5	5.0			3.5
11-12	9.5			10.5	1.5		3.0		11.0	6.0	6.5	5.0		6.0					6.0	3.5		5.0	
12-13				8.5			6.0	6.5		7.0	5.0	6.5	9.0		2.0	3.5	10.0		3.0	2.5			10.0
13-14									8.0	3.5	8.0	7.0	5.0	4.0			8.5	7.0		1.5	5.0	5.0	8.0
14-15			8.5		5.0	1.5	3.5	3.5		9.5	2.0	9.5	5.0		6.5		7.0		8.0				6.0
15-16	9.0	11.0					6.5	9.5		10.5			3.0	3.5			5.0	9.5	5.5	10.5	4.5	5.0	3.5
16-17					4.0				2.0		6.5					2.0	3.5	5.5	2.5	9.5			1.5
17-18			10.5	10.0			4.0	6.0	2.5		5.0	1.5	9.5	2.5		5.0	2.0			8.5	4.0	5.0	10.5
18-19				8.0	3.0		7.0		3.0		3.5	3.0	7.5	10.0	2.5			8.0	8.0	7.0			8.0
19-20			7.0			2.0		3.0	4.0	2.0	2.0	4.5	5.5	1.5	4.5		10.0		5.0	6.0	4.0	5.0	6.0
20-21					2.0		4.0	9.0	4.5	3.5		6.0	3.5	8.5	7.0		8.5		2.5	5.0			4.0
21-22							7.5		5.0	4.5	6.5	7.5	1.5			4.0	6.5	6.5	10.5	4.0	3.5	5.0	1.5
22-23			9.0				1.5	5.5	6.0	5.5	5.0	9.5	10.5	7.5			5.0		7.5	2.5			10.5
23-24		10.0		9.0	5.0		4.5		6.5	6.5	3.5	11.0	8.0				3.5	9.0	5.0	1.5	3.0	5.0	8.5
24-25				7.5		2.5	8.0	2.5	7.0	7.5	2.0		6.0	6.5	2.5		2.0		2.0				6.0
25-26			11.0		4.0		2.0	8.5	8.0	9.0			4.0		5.0	2.5			10.0	10.5	3.0	5.0	4.0
26-27	10.0						5.0		8.5	10.0	6.5	2.5	2.0	5.0			10.0	7.5	7.0	9.5			2.0
27-28			7.5		3.0		8.5	5.0	9.0	11.0	5.0	4.0	11.0				8.5		4.5	8.5	2.5	5.0	10.5
28-29				10.5			2.5	11.0	9.5		3.5	6.0	9.0	4.0			6.5	10.0	2.0	7.5			8.5
29-30				8.5	2.0	2.5	5.5	2.0	10.5		2.0	7.5	7.0				5.0	6.0	9.5	6.0	2.0	5.0	6.5
30-31	10.0		9.5				9.0	8.0	11.0	1.5		9.0	4.5	3.0	3.0	4.0	3.5		7.0	5.0		9.5	4.5

	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1	2.0	8.5	7.5	4.5		3.5		1.5				6.5	4.0	11.0	8.0	10.0
1- 2			5.0							6.5	3.0		7.5			8.5
2- 3	10.5	3.0	2.5						6.5			1.5	10.5		7.0	7.0
3- 4	9.0	7.5	10.5			4.0		5.5				3.5				5.5
4- 5	7.5		8.0				4.0	3.5	4.0		3.0	5.5	3.5			4.0
5- 6	6.5		5.5		1.5		3.5						6.5			2.5
6- 7	5.0	6.5	3.0	2.5	3.0	4.5	3.0						10.0			
7- 8	3.5	11.0		4.5	4.0		2.5		7.0		3.5	3.0			9.0	10.5
8- 9	2.0		8.5		5.0		2.0	5.0				5.0		3.0		9.0
9-10		5.5	5.5			4.5	1.5	3.0	4.0				6.0	3.5	7.5	7.5
10-11	10.5	10.0	3.0							4.0			9.0	4.0		6.0
11-12	9.0											2.5		4.5	6.5	4.5
12-13	7.5	4.5	8.5					7.0	7.0			4.5		5.5		3.0
13-14	6.0	9.0	6.0	2.0				4.5			4.0	6.5	5.0	6.0		1.5
14-15	4.5		3.5	4.0				2.5	4.5	1.5			8.5	6.5		11.0
15-16	3.0	3.5										2.0		7.0		9.5
16-17	1.5	8.0	9.0		1.5				1.5	2.0	4.5	4.0		7.5	8.5	8.0
17-18			6.5		3.0			6.5	7.5			6.0	4.5	8.0		6.5
18-19	10.0	2.5	4.0		4.0			4.0		2.5			7.5	8.5	7.0	5.0
19-20	8.5	7.0			5.0			2.0	4.5		5.0	1.5	10.5	9.0		3.5
20-21	7.0		9.5	1.5						3.0		3.5		9.5		2.0
21-22	6.0		6.5	3.5					1.5			5.5	3.5	10.0		
22-23	4.5	6.0	4.0					6.0		3.5	5.0		6.5	10.5		10.0
23-24	3.0	10.5						3.5					10.0		9.0	8.5
24-25	1.5		9.5						5.0	4.0		3.0				7.0
25-26		5.0	7.0								5.5	5.0	2.5		8.0	5.5
26-27	10.0	9.5	4.5				4.0		2.0	4.0			6.0			4.0
27-28	8.5		2.0		1.5		3.5	5.0					9.0		6.5	2.5
28-29	7.0	4.0	10.0	3.0	3.0		3.0	3.0		4.5	6.0	2.5				
29-30	5.5	8.5	7.5		4.0		2.5		5.0			4.5				10.5
30-31	4.0		4.5		5.0		2.0			5.0		6.5	5.0	2.5		9.0

	SW	XX	AT	SW	TZ	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW	VX
	AND	AND	AND	AQR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER	HER
MAX	9.3	10.3	10.8	10.5	11.2	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5	9.9
MIN	10.8	11.6	11.5	12.1	12.8	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8	10.4
RISE	2	3	3	1	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2	2
0- 1	7.0	9.0				3.0			3.0	6.5	10.5	2.5					2.0	8.5	4.0	4.0	2.0	4.5	2.0
1- 2			6.0			6.0	4.5		4.0	5.0			2.0					4.5		3.0		9.5	
2- 3							10.5		5.0	3.5		9.5					10.0		9.5			4.5	9.0
3- 4	9.5			10.0		3.5			6.0	2.0	2.5	7.5			3.0		8.5	7.0	6.5			9.5	6.5
4- 5			8.0	8.0		6.5	7.5	2.0	7.0		4.0	5.5	8.0				6.5		4.0	11.0		4.5	4.5
5- 6		10.0		6.0	3.0			2.5	8.5	6.5	5.5	3.5		3.5			5.0	9.5		10.0		9.5	2.5
6- 7						4.0	4.0	3.0	9.5	5.0	7.0		7.0				3.5	5.5	9.0	8.5		4.5	
7- 8	9.0		10.0		2.0	7.0	10.0	4.0		3.5	8.5	10.0					2.0		6.5	7.5		9.5	9.0
8- 9		7.5						4.5		2.0	10.0	8.0	5.5			10.5		8.0	3.5	6.5		4.5	7.0
9-10			6.5	9.0		4.0	7.0	5.0				6.0					10.0	4.0		5.5		9.5	4.5
10-11				7.0		7.5		6.0		7.0		4.0	4.5	2.0			8.5		8.5	4.0		4.5	2.5
11-12	8.5			5.0			3.5	6.5	2.5	5.5	2.0	2.0		4.0			6.5	6.5	6.0	3.0		9.5	
12-13			8.5			4.5	9.5	7.0	3.5	4.0	3.5	10.5	3.5				5.0		3.0	2.0		4.5	9.0
13-14		9.0				8.0		8.0	4.5	2.5	5.0	8.5				10.0	3.5	8.5				9.0	7.0
14-15			5.0	10.5	3.5	2.0	6.5	8.5	5.5		6.5	6.5	2.0				2.0	5.0	8.5			4.5	5.0
15-16	8.0		10.5	8.5		5.0		9.0	6.5	7.0	8.0	4.5							5.5	10.0		9.0	3.0
16-17				6.5	2.5	8.5	3.0	9.5	8.0	5.5	9.5	2.5		2.5	2.0		10.0	7.0	3.0	9.0		4.5	
17-18			7.0			2.5	9.0	10.5	9.0	4.0			8.5	4.5			8.0	3.5		7.5		9.0	9.5
18-19	10.0	10.5				5.5			10.0	2.5		9.5				9.5	6.5	9.5	8.0	6.5		4.5	7.5
19-20	7.5					8.5	5.5					7.0	7.0				5.0	6.0	5.5	5.5		9.0	5.0
20-21			9.0	9.5		3.0				7.0	3.0	5.0					3.5		2.5	4.5		4.5	3.0
21-22		8.0		7.5		6.0	2.5			5.5	4.5	3.0	6.0				2.0	8.0	10.5	3.0		9.0	
22-23	9.5		5.5	6.0			8.5		2.0	4.0	6.0			3.0				4.5	7.5	2.0		4.0	9.5
23-24	7.0					3.5		2.0	3.0	2.5	7.5	10.0	5.0				10.0		5.0		3.0	9.0	7.5
24-25						6.5	5.0	2.5	4.0		9.5	8.0					8.0	6.5	2.0			4.0	5.5
25-26			7.5	11.0	2.5			3.5	5.0	7.0	11.0	6.0	3.5		2.5		6.5		10.0	10.0	2.5	9.0	3.0
26-27	9.0	9.0		9.0		3.5	2.0	4.0	6.0	5.5		3.5					5.0	9.0	7.5	9.0		4.0	
27-28				7.0		7.0	8.0	4.5	7.5	4.0			2.5				3.5	5.0	4.5	8.0	2.0	9.0	10.0
28-29			9.5	5.0				5.0	8.5	2.5	2.5	10.5		3.0			2.0		2.0	6.5		4.0	7.5
29-30						4.0	4.5	6.0	9.5		4.5	8.5						7.5	10.0	5.5	2.0	9.0	5.5

	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1	2.5	3.0	2.0						2.0				8.5	3.5		7.5
1- 2		7.5	10.0					4.5				2.0		4.0	8.5	6.0
2- 3			7.5					2.5				4.0		4.5		4.5
3- 4	9.5	2.0	5.0			2.0			5.5				4.5	5.0	7.5	3.0
4- 5	8.0	6.5	2.5										7.5	5.5		
5- 6	6.5	10.5	10.5						2.5		2.0		11.0	6.0	6.0	
6- 7	5.5		8.0			2.5		4.0				3.5		6.5		9.5
7- 8	4.0	5.5	5.5					2.0					3.5	7.0	5.0	8.0
8- 9	2.5	9.5	2.5		3.0						2.5		7.0	7.5	9.0	6.5
9-10													10.0	8.0		5.0
10-11	11.0	4.5	8.5						2.5			3.0		8.5	8.0	3.5
11-12	9.5	8.5	5.5	2.5				3.5			2.5		3.0	9.0		2.0
12-13	8.0		3.0										6.0	9.5	7.0	
13-14	6.5	3.5											9.0	10.5		10.0
14-15	5.0	7.5	8.5								3.0	2.5		11.0	5.5	8.5
15-16	3.5		6.0					5.0	3.0			4.5	2.0			7.0
16-17	2.0	2.5	3.5					3.0					5.0		4.5	5.5
17-18		6.5									3.5		8.5		8.5	4.0
18-19	10.5		9.0	2.0	2.0							2.0				2.5
19-20	9.0		6.5		3.0							4.0			7.5	
20-21	7.5	5.5	3.5					4.5	3.0		3.5		4.5	2.0		10.5
21-22	6.0	10.0					2.0	2.5					7.5	2.5	6.5	9.0
22-23	5.0		9.0							2.0			11.0	3.0		7.5
23-24	3.5	4.5	6.5									3.5		3.5	5.0	6.0
24-25	2.0	9.0	4.0							2.5			3.5	4.0	9.0	4.5
25-26								4.0	3.5				7.0	4.5		3.0
26-27	10.5	3.5	9.5					2.0		3.0			10.0	5.0	8.0	
27-28	9.0	8.0	7.0									3.0		5.5		
28-29	7.5		4.5							3.5			3.0	6.0	7.0	9.5
29-30	6.0	2.5			2.0								6.0	6.5		8.0

AAVSO RR Lyrae Ephemeris for July 2019

all times in U.T.

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	SW	XX	AT	SW	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	RR	XZ	DM	RW	XZ	TW	VX	AR	DL	
	AND	AND	AND	AQR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CET	CYG	CYG	DRA	DRA	HER	HER	HER	HER	
MAX	9.3	10.3	10.8	10.5	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	9.3	9.1	11.2	11.0	9.6	10.5	9.9	10.6	11.0	
MIN	10.8	11.6	11.5	12.1	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	10.3	10.5	12.7	12.0	10.3	11.8	10.4	11.6	12.4	
RISE	2	3	3	1	2	2	3	2	2	3	2	1	2	2	2	3	2	2	3	2	2	2	1	
0- 1	9.0		6.0			7.5		6.5		7.0	6.0	6.5				10.0	4.0	7.0	4.5	4.0	3.5	4.5	7.0	
1- 2	6.0	10.5		10.0	10.0			7.0		5.5	7.5	4.5				8.0	10.0	4.5	3.5	9.0		3.0		
2- 3				8.5		4.5	7.5	8.0		4.0	9.0	2.5				6.5	6.0		2.0	4.0				
3- 4			8.0	6.5		8.0				2.5				8.0	5.0	2.5	9.5		8.5	8.0			6.0	
4- 5	8.5	8.0		4.5		2.0	4.0		2.5			9.0	6.5	10.5	3.5	8.5	6.5		4.0	6.0	10.0			
5- 6	5.5			4.5		5.0			3.5	7.0		7.0				2.0	4.5	4.0	10.0	8.5	3.5	8.5		
6- 7			10.0		10.0	8.5			4.5	5.5	2.5	5.0	5.5						9.0	4.0		7.0	5.0	
7- 8	10.5	5.5		9.5		2.5	7.0		5.5	4.0	4.0	3.0			10.0	7.0	9.0	8.0	8.5	8.5		6.0	9.5	
8- 9	8.0		6.5	7.5		5.5			7.0	2.5	5.5		4.0		7.5	8.0	3.0	6.5	7.0	4.0	8.0	4.5		
9-10	5.0	9.5		5.5			3.5		8.0		7.0			2.0	10.0	6.5	9.5	3.5	5.5	8.5	6.0	3.0	4.0	
10-11				3.5		3.0				7.0	8.5	7.5	3.0			5.0	5.5		4.5	4.0	4.0		8.5	
11-12	10.0		8.5		10.5	6.0				5.5		5.5				3.5	2.0	9.0	3.5	8.5	1.5			
12-13	7.5	7.0		11.0			6.5	2.0		4.0		3.5	2.0			2.0	8.0	6.0	2.5	3.5		10.0	3.0	
13-14	4.5		5.0	9.0		3.5		2.5		2.5							4.0	3.5		8.5	8.5	8.5	7.5	
14-15		11.0	10.5	7.0		6.5	3.0	3.5			2.0				9.5	10.0				3.5	6.0	7.0		
15-16	9.5			5.0			9.0	4.0	2.0	7.0	3.5	8.5		2.5		8.0	6.5	8.5	10.5	8.5	4.0	5.5	2.0	
16-17	7.0		7.0			3.5		4.5	3.0	5.5	5.0	6.5				6.5	2.5	5.5	9.5	3.5	2.0	4.0	6.5	
17-18		8.5				7.0	6.0	5.5	4.0	4.0	6.5	4.0				5.0	9.0	3.0	8.0	8.5			2.5	
18-19			3.0	10.0				6.0	5.0	2.5	8.0	2.0				3.5	5.0		7.0	3.5	8.5			
19-20	9.0		9.0	8.0		4.0	2.5	6.5	6.5				5.5		9.0	1.5		8.0	6.0	8.5	6.5		5.5	
20-21	6.5	5.5		6.0		7.5	8.5	7.0	7.5	7.0		9.0					7.5	5.5	4.5	3.5	4.5	9.5	10.0	
21-22			5.0	4.0				8.0		5.5		7.0	4.5	3.0		9.5	3.5	2.5	3.5	8.5	2.0	8.0		
22-23		9.5	11.0		9.5	4.5	5.5			4.0		5.0				8.0	10.0	10.5	2.5	3.5		6.5	4.5	
23-24	8.5					8.0				2.5	3.0	3.0	3.5			6.5	6.0	8.0		8.5	9.0	5.5	9.0	
24-25	6.0		7.5	9.5		2.0	2.0				4.5				8.0	5.0	2.0	5.0		3.5	6.5	4.0		
25-26		7.0		7.5		5.0	8.0			7.0	6.0		2.0		11.0	3.5	8.5	2.5	10.5	8.0	4.5	2.5	3.5	
26-27			3.5	5.5		8.0				5.5	7.5	7.5					4.5	10.0	9.5	3.5	2.5		8.0	
27-28	8.0	11.0	9.5	3.5	9.5	2.5	5.0		2.5	4.0		5.5						7.5	8.5	8.0		11.0		
28-29	5.5					5.5				3.5	2.5	3.5					9.5	7.0	4.5	7.0	3.5	9.0	9.5	2.5
29-30			5.5	10.5						4.5					7.5	8.0	3.0	2.0	6.0	8.0	7.0	8.0	7.0	
30-31	10.5	8.5		8.5		3.0	7.5			6.0	7.0				10.0	6.5	9.5	10.0	5.0	3.5	4.5	6.5		

	DY	UU	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	10.2	10.7	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	10.6	12.3	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	1	2	2	2	2	3	1	2	2	2	3
0- 1								9.5	7.0	6.0	6.5
1- 2	7.0						2.5		7.5		5.0
2- 3	4.5							2.0	8.5	4.5	3.5
3- 4	2.0							5.5	9.0	8.5	2.0
4- 5								8.5	9.5	3.5	
5- 6	7.5		3.0				2.0		10.0	7.5	
6- 7	5.0								10.5		8.5
7- 8	2.5							4.5	11.0	6.5	7.0
8- 9								7.5			5.5
9-10	8.0							11.0		5.5	4.0
10-11	5.0	2.0	2.5								2.5
11-12	2.5							3.5		4.0	
12-13								7.0		8.0	
13-14	8.0							10.0	2.0	3.0	9.0
14-15	5.5						2.5		2.5	7.0	7.5
15-16	3.0		2.0					3.0	3.0		6.0
16-17						2.0		6.0	3.5	6.0	4.5
17-18	8.5							9.5	4.0		3.0
18-19	6.0						2.0		4.5	5.0	
19-20	3.5							2.0	5.0	9.0	
20-21								5.5	5.5	3.5	
21-22	9.0							8.5	6.0	7.5	8.0
22-23	6.0			2.0					7.0	2.5	6.5
23-24	3.5								7.5	6.5	5.0
24-25			3.0					4.5	8.0		3.5
25-26	9.0							8.0	8.5	5.5	2.0
26-27	6.5							11.0	9.0		
27-28	4.0			2.0	2.0				9.5	4.5	
28-29								4.0	10.0	8.5	8.5
29-30			2.5		2.5			7.0	10.5	3.0	7.0
30-31	7.0							10.0	11.0	7.0	5.5

	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2
0- 1	8.0		2.0	6.5			6.0		2.0		5.5	2.5						5.0	5.5	7.0	4.0		8.0
1- 2	5.0		7.5	5.0		10.0		4.5	2.5		4.0	4.5	6.0					3.5	1.5	4.5	2.5		3.5
2- 3		6.0		3.0		8.0	3.0		3.5		2.5	6.0	4.0					1.5	8.0	1.5	1.5		8.0
3- 4	10.0		4.0				6.5		4.0				2.0			7.0		4.0	9.5				3.0
4- 5	7.5	10.0	10.0	10.0				7.0	4.5							9.5	9.5		7.0	10.5			8.0
5- 6	4.5	3.5		8.0			3.5		5.5		5.5			3.5				8.0	6.5	4.0	9.5		3.0
6- 7			6.0	6.0		10.5		3.5	6.0		4.0		6.5					6.5	2.5	1.5	8.5		8.0
7- 8	9.5	7.5		4.0		8.5				2.0	2.5		4.5	2.5	11.5			5.0	9.0	9.0	7.5		3.0
8- 9	7.0		2.5	2.0	9.0		4.0			3.0		2.5	2.5				6.5	3.5	5.0	6.5	6.0		8.0
9-10	4.0	11.5	8.0					6.5		4.0		4.0		1.5			9.0	1.5		3.5	5.0	9.5	3.0
10-11		4.5		9.0			1.5			5.5	5.5	5.5							7.5		4.0		8.0
11-12	9.0		4.5	7.5		11.0	4.5	3.0			4.0	7.0						9.5	3.5	9.0	3.0		3.0
12-13	6.5	8.5	10.5	5.5		9.0					2.5		5.5					8.0	9.5	6.0	1.5		8.0
13-14	3.5			3.5			2.0						3.0				6.0	6.5	6.0	3.5			3.0
14-15			6.5	1.5			5.0	6.0									8.5	5.0	2.0		11.0		7.5
15-16	8.5	6.0		10.5							5.5						11.0	3.0	8.0	8.5	9.5		3.0
16-17	6.0		3.0	8.5			2.5	2.5			4.0	2.0						1.5	4.5	6.0	8.5		7.5
17-18	3.0	10.0	8.5	6.5	9.0	9.0	5.5				2.5	3.5	6.0		11.5					3.0	7.5		3.0
18-19		3.5		4.5		7.0				1.5	1.5		5.0	4.0	4.0		5.5	9.5	7.0		6.5		7.5
19-20	8.0		5.0	2.5			3.0	5.5	2.0	2.5		6.5	2.0				8.0	8.0	3.0	8.0	5.0		3.0
20-21	5.5	7.5	10.5				6.0		2.5	3.5	5.5			3.0			10.5	6.5	9.0	5.5	4.0		7.5
21-22	2.5		1.5	10.0				2.0	3.5	5.0	4.0							5.0	5.5	3.0	3.0		3.0
22-23	10.5		7.0	8.0		9.5	3.0		4.0	6.0	2.5		6.5	2.0				3.0	1.5		2.0		7.5
23-24	7.5	5.0		6.0		7.5	6.5		4.5				4.5					1.5	7.5	8.0			2.5
24-25	5.0		3.5	4.0				5.0	5.5			1.5	2.5			7.5		4.0	5.0	11.0			7.5
25-26		9.0	9.0	2.0			3.5		6.0		5.5	3.0				10.0		9.5	10.0	2.5	10.0		2.5
26-27	10.0				9.5			1.5			4.0	4.5						8.0	6.0	10.5	8.5		7.5
27-28	7.0		5.5	9.0		10.0					2.5	6.0	7.0					6.5	2.5	7.5	7.5		2.5
28-29	4.5	6.5	11.0	7.0		8.0	4.0						5.0					5.0	8.5	5.0	6.5		7.5
29-30			2.0	5.0				4.5					3.0				7.0	3.0	5.0	2.0	5.5		2.5
30-31	9.5	10.5	7.5	3.0			1.5			2.0	5.5						9.5	1.5		10.0	4.0		7.5

	VX	AR	DL	DY	RR	RR	RZ	AV	RV
	HER	HER	HER	HER	LEO	LYR	LYR	PEG	UMA
MAX	9.9	10.6	11.0	10.2	10.0	7.1	10.0	9.9	10.1
MIN	10.4	11.6	12.4	10.6	11.7	8.1	12.0	10.9	11.2
RISE	2	2	1	1	2	2	2	2	3
0- 1	2.5	5.0	1.5	4.0				2.0	4.0
1- 2		3.5	6.0	1.5		3.0		6.0	2.5
2- 3		2.0				6.0			
3- 4	7.0					9.5		5.0	
4- 5	5.0		5.0	4.5			1.5	9.0	
5- 6	3.0			2.0		2.0	2.0	4.0	
6- 7		7.5				5.5	2.5	8.0	6.0
7- 8		6.0	4.0			8.5	3.0	2.5	4.5
8- 9	7.5	5.0		5.0	1.5		3.5	6.5	3.0
9-10	5.0	3.5		2.0		1.5	4.0	1.5	1.5
10-11	3.0	2.0	3.0			4.5	4.5	5.5	
11-12			7.0			8.0	5.5		
12-13				5.0		11.0	6.0	4.5	
13-14		9.0	2.0	2.5			6.5	8.5	6.5
14-15	5.5	7.5	6.0			4.0	7.0	3.0	5.0
15-16	3.0	6.0				7.0	7.5	7.5	3.5
16-17		4.5		5.5		10.5	8.0	2.0	2.0
17-18		3.0	5.0	3.0			8.5	6.0	
18-19		1.5				3.0	9.0		
19-20	5.5					6.5	9.5	5.0	
20-21	3.5		4.0	6.0		9.5	10.0	9.0	7.0
21-22	1.5	8.5		3.0				4.0	5.5
22-23		7.0				2.5		8.0	4.0
23-24		5.5	3.0			5.5		2.5	2.5
24-25	6.0	4.5	7.5	6.0		8.5		7.0	
25-26	3.5	3.0		3.5				1.5	
26-27	1.5	1.5	2.0			1.5		5.5	
27-28			6.5		1.5	4.5	1.5		
28-29				6.5		8.0	2.0	4.5	6.0
29-30	6.0	8.5		4.0		11.0	2.5	8.5	4.5
30-31	4.0	7.0	5.5				3.5	3.5	3.0

AAVSO RR Lyrae Ephemeris for September 2019

all times in U.T.

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	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2
0- 1	7.0	3.5		1.5			4.5	1.0		3.0	4.0							11.0	7.0	7.5	3.0		2.5
1- 2	4.0		4.0			10.5					2.5	1.0						9.5	3.5	4.5	2.0		7.5
2- 3	1.0	8.0	9.5	8.5		8.5	2.0				1.0	2.5				9.5	4.0	8.0	9.5	2.0	1.0		2.5
3- 4	9.0	1.0		6.5		6.5		4.0				4.5	3.5		10.5		6.5	6.5	5.5		11.0		7.5
4- 5	6.5	12.0	6.0	4.5									1.5	2.0			9.0	5.0	2.0	7.0	10.0		2.5
5- 6	3.5	5.0	11.5	2.5			2.5	0.5	1.0		4.0						11.5	3.0	8.0	4.0	9.0		7.0
6- 7	0.5		2.5	0.5	8.5	11.0			1.5		2.5			1.0				1.5	4.0	1.5	8.0		2.5
7- 8	8.5	9.0	8.0			9.0			2.0		1.0					11.5	3.5	11.0			6.5	9.5	7.0
8- 9	6.0	2.5		7.5	7.5	6.5	2.5	3.5	3.0				4.5				6.0	9.5	6.5	6.5	5.5		2.5
9-10	3.0		4.5	6.0					3.5	0.5		1.0	2.0		11.0		8.5	8.0	2.5	4.0	4.5	9.0	7.0
10-11		6.5	10.0	4.0	6.5				4.0	1.5	4.0	2.5					11.0	6.5	9.0	1.0	3.5		2.5
11-12	8.0		1.0	2.0			3.0			2.5	2.5	4.0				10.0		4.5	5.0	9.0	2.0	9.0	7.0
12-13	5.5	10.5	6.5			9.0				4.0	1.0							3.0	1.5	6.5	1.0		2.0
13-14	2.5	4.0		9.0		7.0		3.0					5.0				5.5	1.5	7.5	3.5	11.5	8.5	7.0
14-15	10.5		3.0	7.0			3.5						3.0				8.0	11.0	3.5	1.0	10.0		2.0
15-16	7.5	8.0	8.5	5.0	8.5						4.0		1.0		11.5		10.5	9.5	10.0	8.5	9.0	8.0	7.0
16-17	5.0	1.5		3.0			1.0	5.5			2.5					11.5		8.0	6.0	6.0	8.0		2.0
17-18	2.0		5.0	1.0	7.5	9.5	4.0				1.0							6.5	2.0	3.0	7.0	8.0	7.0
18-19	10.0	5.5	10.5			7.5		2.5				2.0					5.0	4.5	8.5		5.5		2.0
19-20	7.0		1.5	8.5	6.5	5.5	1.5					3.5	3.5	1.5			7.5	3.0	4.5	8.5	4.5	7.5	7.0
20-21	4.5	9.5	7.0	6.5			4.5				4.0	5.0	1.5		9.5	10.5	10.0	1.5	0.5	5.5	3.5		2.0
21-22	1.5	3.0		4.5				5.0		1.0	2.5				12.0			11.0	7.0	3.0	2.5		7.0
22-23	9.5		3.5	2.5		10.0	2.0			2.0	1.0							9.5	3.0		1.0		2.0
23-24	6.5	7.0	9.0			8.0		1.5		3.5							4.0	8.0	9.5	8.0			7.0
24-25	4.0				9.0	6.0			1.0				4.0				7.0	6.5	5.5	5.5	10.5		2.0
25-26	1.0	11.0	5.5	7.5			2.5		1.5		4.5		2.0				9.5	4.5	1.5	2.5	9.0		6.5
26-27	9.0	4.0	11.0	5.5	8.0			4.5	2.0		3.0	1.5			10.0		12.0	3.0	8.0		8.0		2.0
27-28	6.0		2.0	3.5		10.5			3.0		1.5	3.0						1.5	4.0	7.5	7.0		6.5
28-29	3.5	8.0	7.5	1.5	7.0	8.5	2.5	1.0	3.5			4.5					3.5	11.0		5.0	6.0		2.0
29-30	0.5	1.5				6.0			4.0				5.0			10.5	6.0	9.5	6.5	2.0	4.5		6.5

	VX	AR	DL	DY	SZ	UU	DG	DH	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LYN	LYR	LYR	PEG	UMA
MAX	9.9	10.6	11.0	10.2	10.6	10.7	11.6	11.4	11.0	9.1	7.1	10.0	9.9	10.1
MIN	10.4	11.6	12.4	10.6	11.7	12.3	12.6	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	2	1	1	2	2	3	2	3	1	2	2	2	3
0- 1	1.5	5.5				11.0		11.5	12.0		4.0	4.0	7.5	1.5
1- 2		4.0						11.0			7.0	4.5	2.0	
2- 3		2.5	4.5	4.0								5.0	6.5	
3- 4		1.0		1.5								5.5	1.0	
4- 5	4.0										3.0	6.0	5.0	
5- 6	2.0		3.5								6.5	6.5	9.5	5.0
6- 7				4.5						8.5	9.5	7.0	4.0	3.5
7- 8		6.5		2.0								7.5	8.0	2.0
8- 9		5.5	2.5								2.5	8.0	3.0	
9-10	4.5	4.0									5.5		7.0	
10-11	2.0	2.5		4.5						8.0	9.0		1.5	
11-12		1.0	1.5	2.0		11.0							6.0	
12-13			6.0								1.5		0.5	
13-14											5.0		4.5	4.0
14-15	4.5		0.5	5.0						7.5	8.0		9.0	2.5
15-16	2.5	6.5	5.0	2.5									3.5	0.5
16-17		5.0									1.0		7.5	
17-18		3.5									4.0	0.5	2.5	
18-19		2.0	4.0		11.5						7.0	1.0	6.5	
19-20	4.5	0.5		3.0								2.0	1.0	
20-21	2.5						11.0					2.5	5.5	4.5
21-22			3.0								3.5	3.0		3.0
22-23						11.0					6.5	3.5	4.0	1.0
23-24		6.0		3.0			11.0	11.5		8.5	9.5	4.0	8.5	
24-25	5.0	5.0	2.0									4.5	3.0	
25-26	3.0	3.5									2.5	5.0	7.0	
26-27	0.5	2.0					11.5				5.5	5.5	2.0	
27-28			1.0	3.5						8.0	9.0	6.0	6.0	5.0
28-29			5.5	1.0								6.5	0.5	3.5
29-30	5.0										1.5	7.0	5.0	1.5

AAVSO RR Lyrae Ephemeris for October 2019

all times in U.T.

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	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	RW	TT	RR	XZ	DM	RW	XZ	RR	TW	VX
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5	9.9
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8	10.4
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	3	2	3	2	2	3	2	2	2
0- 1	8.5	12.5	4.0		6.0	4.0							2.5			9.0	8.0	2.5		3.5		2.0	3.0
1- 2	6.0	5.5	9.5	7.0									0.5	8.5		11.5	6.5	9.0		2.5	5.5		1.0
2- 3	3.0		0.5	5.0	5.0	11.0				0.5	1.5			10.5			4.5	5.0	4.5	1.5		2.0	
3- 4	0.0	9.5	6.0	3.0	9.0	8.5	0.5	0.5		1.5		12.5			9.5	3.0	3.0	1.0	2.0	0.0			
4- 5	8.0	3.0	11.5	1.0		6.5						1.0			12.5	5.5	1.5	7.5		10.5		1.5	
5- 6	5.5		2.5		8.0	4.5						2.5				8.0		3.5	7.0	9.5			3.0
6- 7	2.5	7.0	8.0				1.0	3.5					1.5			11.0	9.5		4.5	8.0	9.5	1.5	1.0
7- 8	10.5	0.5		6.0	7.0						1.5			9.0	8.0		8.0	6.0	1.5	7.0			
8- 9	7.5	11.0	4.5	4.0		9.0		0.0						11.0	11.0		2.5	6.0	2.0		6.0	9.0	1.5
9-10	5.0	4.5	10.0	2.5	6.0	7.0	1.5									5.0	4.5	8.5	6.5	5.0			
10-11	2.0		1.0	0.5		5.0										7.5	3.0	4.5	4.0	3.5	9.0	1.5	
11-12	10.0	8.5	6.5		5.0			3.0				12.0	2.0			10.0	1.5	0.5	1.0	2.5			1.5
12-13	7.0	2.0	12.0		9.5		2.0		0.5		1.5	1.0			9.5			7.0		1.5	8.5	1.5	
13-14	4.5		3.0	5.5		9.5			1.0	0.0		2.5		9.5		2.0	9.5	3.0	6.5	0.5			
14-15	1.5	6.0	8.5	3.5	8.5	7.5			1.5	1.0				11.5		4.5	8.0		3.5	10.5	8.0	1.5	
15-16	9.5			1.5		5.5	2.0		2.0							7.0	6.0	5.5	1.0	9.5			
16-17	6.5	10.0	5.0		7.5	3.0		2.5					2.5		8.5	9.5	4.5	1.5		8.5	8.0	1.5	1.5
17-18	4.0	3.5	10.5								1.5		0.5		11.5		3.0	7.5	6.0	7.5			
18-19	1.0		1.5	6.5	6.5	10.0								7.5		1.5	1.5	4.0	3.5	6.0	7.5	1.5	
19-20	9.0	7.5	7.0	5.0		8.0								9.5		4.0		0.0	0.5	5.0			
20-21	6.0	0.5		3.0	5.5	5.5						0.5		12.0		6.5	9.5	6.5		4.0	7.0	1.5	
21-22	3.5	11.5	3.5	1.0		3.5		2.0				2.0	3.0		10.0	9.0	8.0	2.5	5.5	2.5			1.5
22-23	0.5	4.5	9.0								1.5		1.0				6.0	8.5	3.0	1.5	7.0	1.5	
23-24	8.5				8.5	10.5	0.5										4.5	5.0	0.0	0.5			
24-25	5.5	8.5	5.5	6.0		8.0								8.0		3.5	3.0	1.0		11.0	6.5	1.0	
25-26	3.0	2.0	11.0	4.0	7.5	6.0			0.5					10.0	8.5	6.0	1.5	7.0	5.5	9.5			
26-27	0.0		2.0	2.0		4.0	1.0	1.5		2.0				12.5	12.0	8.5		3.5	2.5	8.5	6.5	1.0	2.0
27-28	8.0	6.0	7.5	0.0	6.5						1.5		1.5			11.0	9.5			7.5			
28-29	5.0					10.5						0.0					8.0	5.5		6.5	6.0	1.0	
29-30	2.5	10.0	4.0		5.5	8.5	1.5					1.5				3.0	6.0	2.0	5.0	5.0			
30-31	10.5	3.5	9.5	5.5		6.5								8.5	10.5	5.5	4.5	8.0	2.5	4.0	5.5	1.0	

	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1								10.5				5.5	5.0		9.0	0.0
1- 2									11.5			7.5			3.5	10.0
2- 3	4.5		1.0	11.0	10.0					10.5					8.0	
3- 4	3.0				11.0								1.0		2.5	
4- 5	1.5	3.5			12.5								4.0		6.5	
5- 6	0.0							10.0		11.0	7.0	7.5			1.5	
6- 7			1.5						11.5						5.5	2.0
7- 8		2.5											0.0		0.0	0.5
8- 9										11.5			3.5		4.5	10.5
9-10				10.5								6.5	6.5	0.5	8.5	
10-11	4.5	1.5	1.5	12.5				9.5				8.5		1.0	3.0	
11-12	3.0								12.0	11.5				1.5	7.5	
12-13	1.5												2.5	2.0	2.0	
13-14		0.5			10.0							5.5	6.0	2.5	6.0	2.5
14-15			2.0		11.0					11.5	12.0	8.0		3.0	1.0	1.0
15-16					12.5	11.5	9.0							3.5	5.0	11.0
16-17				10.0		11.0		12.5	12.0				2.0	4.0		
17-18		3.5		12.0		10.5				12.5			5.0	4.5	4.0	
18-19	4.0		2.5			10.0			12.5		7.0			5.0	8.0	
19-20	2.5					9.5	10.5							5.5	2.5	
20-21	1.0	2.5											1.0	6.0	6.5	3.0
21-22						9.0							4.0		1.5	1.5
22-23			2.5									6.5	7.5		5.5	0.0
23-24		1.5	0.0	9.5											0.5	10.0
24-25				11.5	10.0	9.5		10.0					0.0		4.5	
25-26					11.0								3.5		8.5	
26-27	4.0	0.5	3.0		12.5						6.0	6.5		3.5		
27-28	2.5		0.5			10.0						8.0			7.5	
28-29	1.0									9.0					2.0	2.0
29-30								9.5					2.5		6.0	0.5
30-31						10.0						5.5	6.0		1.0	10.5

	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TV	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	11.5	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8
RISE	2	3	3	1	2	2	2	3	2	2	3	2	1	2	2	3	2	3	2	2	3	2	2
0- 1	7.5		0.0	3.5	4.5	4.5		1.0	0.5						10.5		8.0	3.0	4.5	10.0	3.0		
1- 2	5.0	7.5	6.0	1.5	8.5	2.5									13.0			1.5	0.5		2.0	5.5	1.0
2- 3	2.0	1.0			3.5			12.5					0.5			6.0			6.5	4.5	0.5		
3- 4	10.0		2.0		7.5	9.0										9.0	2.5		3.0	2.0	11.0	5.0	1.0
4- 5	7.0	5.0	8.0		2.5	7.0				11.5		11.0			6.5	12.0	5.0			10.0	10.0		
5- 6	4.5			4.5	6.5	5.0		0.5				12.5			9.0		7.5	6.0	5.0		8.5	4.5	1.0
6- 7	1.5	9.0	4.5	2.5		2.5									11.0			4.5	1.5	4.5	7.5	9.0	
7- 8	9.5	2.5	10.0	0.5	5.5			12.0					1.0	12.5		8.0		3.0		1.5	6.5	4.5	1.0
8- 9	6.5		0.5			9.5										11.0	2.0	1.5	3.5		5.5	9.0	
9-10	4.0	6.5	6.5		4.5	7.5								11.5			4.5				4.0	4.0	1.0
10-11	1.0				9.0	5.0									7.0		7.0		6.0	4.0	3.0	8.5	
11-12	9.0	10.5	2.5	4.0	3.5	3.0									9.5	6.5	9.5		2.5	1.5	2.0	3.5	1.0
12-13	6.0	3.5	8.5	2.0	8.0	1.0	0.5	11.5				10.5			11.5	9.5		6.0			1.0	8.5	
13-14	3.5			0.0	2.5	10.0						12.0				12.5	1.5	4.5	4.5		11.0	3.5	1.0
14-15	0.5	8.0	5.0		7.0	8.0						1.0					4.0	3.0	1.0	4.0	10.0	8.0	
15-16	8.5	1.0				5.5				11.0							6.5	1.5		1.0	9.0		0.5
16-17	5.5		1.0	5.0	6.0	3.5			10.5	12.5					7.5	8.0	9.0		3.0		7.5	7.5	
17-18	3.0	5.0	7.0	3.0		1.5			11.5		0.0				10.0	11.0					6.5		0.5
18-19	0.0			1.5	5.0	10.5			12.0				0.0		12.0		1.0		5.5	3.5	5.5	7.5	
19-20	8.0	9.0	3.0		9.0	8.0			0.5								3.5	6.0	1.5	0.5	4.5		0.5
20-21	5.0	2.5	9.0		4.0	6.0						10.0		13.0		7.0	6.0	4.5			3.0	7.0	
21-22	2.5				8.0	4.0						11.5			5.5	10.0	8.5	3.0	4.0		2.0		0.5
22-23		6.5	5.0	4.5	3.0	2.0					0.0	0.5		12.0	8.0	13.0		1.5	0.0	3.0	1.0	6.5	
23-24	7.5			2.5	7.0	10.5		1.5					1.0		10.0		0.0		6.5	0.5	11.5		0.5
24-25	4.5	10.5	1.5	0.5		8.5									12.5		3.0		2.5		10.0	6.5	
25-26	2.0	4.0	7.5		6.0	6.5										8.5	5.5				9.0		0.5
26-27	10.0					4.5										11.5	8.0	6.0	5.0	3.0	8.0	6.0	
27-28	7.0	8.0	3.5		5.0	2.0				12.0	0.0				6.0			4.5	1.0	0.0	6.5		0.5
28-29	4.0	1.5	9.5	4.0	9.5			1.0							8.5			3.0			5.5	5.5	
29-30	1.5		0.0	2.0	4.0	9.0						11.5			10.5	7.0	2.0	1.5	3.5		4.5		0.5

	VX	AR	DL	DY	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HER	HER	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	9.9	10.6	11.0	10.2	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	10.4	11.6	12.4	10.6	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	2	2	1	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1				0.5	11.0							9.0	7.5			5.0	9.0
1- 2	0.0														0.5		
2- 3						8.0	10.5			10.0				2.0	1.0	4.0	
3- 4						9.0			9.0			9.5	5.0	5.0	1.5		
4- 5		2.0		1.0		10.0			6.5				7.0		2.0	3.0	
5- 6		0.5				11.5	11.0								2.5	7.0	1.0
6- 7	0.0				9.0	12.5		11.5				10.0		1.0	3.0	1.5	11.0
7- 8					11.0			11.0	10.5	10.5			4.5	4.5	3.5	5.5	9.5
8- 9			1.0		12.5		11.5	10.5	8.5				6.5		4.0	0.5	8.0
9-10								10.0				10.0	8.5			4.5	
10-11								9.5			9.5			0.5			
11-12	0.5		0.0				12.0	9.0					4.0	3.5		3.5	
12-13		2.0						8.5	10.0	10.5	10.0	10.5	6.0				
13-14		0.5			8.5	8.0		8.0	7.5				8.0			2.5	0.0
14-15					10.5	9.0	12.5	7.5			10.5					6.5	10.0
15-16					12.0	10.0						11.0	3.5	2.5		1.0	8.5
16-17	0.5					11.5					10.5		5.5			5.0	
17-18					12.5	12.5			9.5	11.0			7.5				
18-19									7.0		11.0	11.0				4.0	
19-20														2.0			
20-21		1.5			8.0						11.5		5.0	5.0		3.0	0.5
21-22	1.0	0.0	1.5		10.0		7.0					11.5	7.0				10.5
22-23					12.0				9.0	11.0	12.0					2.0	9.0
23-24									6.5			7.0		1.0	0.0	6.0	
24-25			0.5			8.0	7.5				12.5	12.0	4.5	4.5	0.5	0.5	
25-26						9.0							6.5		1.0	4.5	
26-27	1.0					10.0			10.5		13.0	7.5	8.5		1.5		
27-28		3.0			8.0	11.5	8.0		8.5	11.5		12.0		0.5	2.0	3.5	1.0
28-29		1.5			9.5	12.5		11.5					4.0	3.5	2.5		11.0
29-30		11.0		0.5	11.5			11.0				7.5	6.0		3.5	2.5	9.5

	SW	XX	AT	SW	TZ	BH	RS	ST	SW	SZ	TW	UU	UY	RW	TT	RR	XZ	DM	RW	XZ	RR	TW	AR	
	AND	AND	AND	AQR	AUR	AUR	BOO	BOO	BOO	BOO	BOO	BOO	BOO	CNC	CNC	CET	CYG	CYG	DRA	DRA	GEM	HER	HER	
MAX	9.3	10.3	10.8	10.5	11.2	11.1	9.8	10.6	11.3	12.0	10.8	11.2	10.6	10.7	11.0	9.3	9.1	11.2	11.0	9.6	10.7	10.5	10.6	
MIN	10.8	11.6	11.5	12.1	12.8	12.6	11.3	11.8	12.7	13.4	12.1	12.7	12.0	12.6	12.3	10.3	10.5	12.7	12.0	10.3	11.9	11.8	11.6	
RISE	2	3	3	1	2	2	2	3	2	2	2	1	2	2	3	2	3	2	2	3	2	2	2	
0- 1		5.5	5.5		8.5	7.0		12.5						13.0	10.0	5.0			2.5	3.5	5.5		10.0	
1- 2	6.5				3.0	5.0			8.0							7.5			10.5	2.0		0.5		
2- 3	3.5	9.5	2.0		7.5	2.5		9.5	9.0					4.5				2.0		1.0	5.0			
3- 4	1.0	3.0	7.5		2.0	0.5			9.5					6.5	6.0						11.5		0.5	
4- 5				3.0	6.5	9.5			10.0			11.0		9.0	9.0	1.5	4.5	4.5	2.0	10.5	4.5			
5- 6	6.0	7.0	4.0	1.0	1.0	7.5		12.0	11.0				12.0	11.0	12.0	4.0	3.0	0.5	10.0	9.0	9.5	0.0		
6- 7	3.5	0.0			5.5	5.0			11.5	9.0	9.5					7.0	1.0			8.0	4.5			
7- 8	0.5		0.5			3.0			12.0	10.0	11.0		11.0		4.5			3.0		7.0	9.0	0.0	11.0	
8- 9		4.0	6.0		4.5	1.0				11.5	12.5			5.0	7.5				2.0	6.0	4.0		9.5	
9-10	5.5				8.5	10.0				12.5			10.0	7.0	10.5	1.0			9.5	4.5	8.5	0.0		
10-11	3.0	8.0	2.5	2.5	3.5	7.5		11.5				9.5		9.5		3.5		1.5		3.5	3.5			
11-12	0.0	1.5		0.5	7.5	5.5								11.5		6.0	4.5			2.5	8.5	0.0		
12-13	8.0				2.5	3.5									6.0		3.0	4.0	1.5	1.5	3.5			
13-14	5.0	5.5	4.5		6.5	1.5									9.0		1.0	0.0	9.5	0.0	8.0	0.0		
14-15	2.5				1.5	10.0					9.0			5.5	12.5	0.5				10.5	3.0		1.0	
15-16			1.0		5.5	8.0		11.0			10.5	10.0		7.5		3.0		2.5		9.5	7.5		10.5	
16-17	7.5	3.0	6.5	1.5		6.0					12.0			10.0	5.0	5.5			1.0	8.0	2.5		9.5	
17-18	4.5				4.5	4.0								12.0	8.0			5.0	9.0	7.0	7.5			
18-19	2.0	7.0	3.0		8.5	2.0				9.5			12.5		11.0		4.5	1.0		6.0	2.5			
19-20		0.5			3.5	10.5	9.0			11.0				3.5		0.0	3.0			5.0	7.0			
20-21	7.0				7.5	8.5		10.5	8.0	12.0		10.5	11.5	5.5		2.5	1.0	3.5	1.0	3.5	2.0			
21-22	4.0	4.5	5.0	3.0	2.5	6.5			9.0					8.0	6.5	5.0			8.5	2.5	6.5			
22-23	1.5			1.0	6.5	4.5			9.5		8.5		10.5	10.0	9.5						1.5	1.5		0.5
23-24		8.5	1.5		1.5	2.0			10.0		10.0			12.5	12.5			2.0		0.5	6.5		10.5	
24-25	6.5	2.0	7.0		5.5	0.0			11.0		11.5		9.0						0.5	10.5	1.5		9.0	
25-26	3.5				0.5	9.0		10.0	11.5					4.0	5.0	2.0	4.5	4.5	8.5	9.5	6.0			
26-27	1.0	6.0	3.5		4.5	7.0			12.0			9.5		6.0	8.5	4.5	3.0	0.5		8.5				
27-28				2.5	9.0	4.5								8.5	11.5	7.0	1.0		3.0	7.0	5.5			
28-29	6.0			0.5	3.5	2.5		12.5						10.5				3.0	0.0	6.0				
29-30	3.0	3.0	5.5		8.0	0.5				9.0				13.0	4.0				8.0	5.0	5.5			
30-31	0.5				2.5	9.5		9.5		10.5	8.0					7.0	1.5			4.0			0.5	

	DL	SZ	UU	DG	DH	RR	SS	TV	WW	SZ	RR	RZ	AV	RV
	HER	HYA	HYA	HYA	HYA	LEO	LEO	LEO	LEO	LYN	LYR	LYR	PEG	UMA
MAX	11.0	10.6	10.7	11.6	11.4	10.0	10.5	11.5	11.0	9.1	7.1	10.0	9.9	10.1
MIN	12.4	11.7	12.3	12.6	12.6	11.7	12.0	12.6	12.0	9.6	8.1	12.0	10.9	11.2
RISE	1	2	2	3	2	2	2	2	3	1	2	2	2	3
0- 1	12.5			8.5	10.5				12.5	8.0				8.0
1- 2					10.0	10.0				1.5			1.0	6.5
2- 3					9.5	7.5	11.5		8.0	3.5	3.0			
3- 4		5.5	5.5	9.0	9.0	5.5			13.0	5.5			0.0	
4- 5		7.5	7.0		8.5		9.0			7.5			4.0	
5- 6		9.0	8.0		8.0				8.5					
6- 7		11.0	9.0	9.0	7.5	9.5				3.0	2.0		3.0	10.0
7- 8		13.0	10.0		7.0	7.0	12.0	7.5		5.0				8.5
8- 9			11.5		6.5	5.0			8.5	7.0			2.0	7.0
9-10			12.5	9.5	6.0		9.0	8.0						
10-11					5.5					2.5	1.0		0.5	
11-12		7.0				9.0		8.0	9.0	4.5			5.0	
12-13		9.0		10.0		6.5	12.0			6.5				
13-14		10.5						8.5		8.5			3.5	10.5
14-15		12.5	5.5				9.5		9.5	1.5	0.5			9.0
15-16			7.0	10.5		10.5		9.0		4.0	3.5		2.5	7.5
16-17			8.0			8.5				6.0		0.0		5.5
17-18			9.0			6.0	12.5	9.5	9.5	8.0		0.5	1.5	
18-19		6.5	10.5	11.0						1.0		1.0		
19-20		8.5	11.5	5.0			9.5	10.0	5.0	3.0	3.0	2.0	0.0	
20-21		10.0	12.5			10.0			10.0	5.5		2.5	4.5	11.0
21-22		12.0		11.5	11.5	7.5		10.5		7.5				9.5
22-23				5.5	11.0	5.5	12.5		5.5				3.0	8.0
23-24					10.0			11.0	10.5	2.5	2.0			6.0
24-25				11.5	9.5		10.0			4.5			2.0	
25-26		6.5	5.5	6.0	9.0	9.5		11.5	6.0	7.0				
26-27		8.0	7.0		8.5	7.0			10.5				1.0	
27-28		10.0	8.0	12.0	8.0	5.0	13.0	12.0		2.0	1.5		5.0	
28-29		11.5	9.0	6.0	7.5				6.0	4.0				10.0
29-30	12.5		10.5		7.0		10.0	12.0	11.0	6.0			4.0	8.5
30-31			11.5	12.5	6.5	9.0				8.5				6.5