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Erratum

An Apparent Phenomenal Descriptive Method for Judging the Synchronization of Rotation of Binary Stars

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Table 1. The calculated results for synchronous parameters of twenty components in ten eclipsing binary systems by using the apparent descriptive method of formula (4).

Name		Sp type	P(d)	i(deg)	$R_{1,2}(R_{\odot})$	$(V_{1,2} \sin i)_M$ (km/s)	$Q_{e,e'}$	$P_R \gtrless P$	Synch
GT Cep	1	B2V	4.9087	78	4.64	42	1.11	$P_R > P$	B
	2	A0			6.04	58	1.05	$P_R > P$	A
My Cyg	1	Am	4.0051	89	2.32	26	1.13	$P_R > P$	B
	2	Am			2.06	47	0.55	$P_R < P$	D
V451 Oph	1	B9V	2.1966	87	2.48	48	1.19	$P_R > P$	B
	2	A0			1.98	45	1.01	$P_R > P$	A
U Oph	1	B4.5	1.6773	86.6	3.27	110	0.89	$P_R < P$	B
	2	B5.5			3.02	100	0.91	$P_R < P$	B
V505 Sgr	1	A2v	1.8287	75	2.30	100	0.95	$P_R < P$	A
	2	F81V			2.35	50	1.94	$P_R > P$	E
CV Vel	1	B2V	6.8925	88.2	4.27	50	0.63	$P_R < P$	D
	2	B2V			4.16	85	0.36	$P_R < P$	D
CD Tau	1	F7V	3.4351	88	1.49	34	0.64	$P_R < P$	D
	2	F7V			1.50	34	0.65	$P_R < P$	D
V1143 Cyg	1	F5V	7.6407	87	1.34	9	0.98	$P_R < P$	A
	2	F5V			1.04	20	0.34	$P_R < P$	D
ZZ Boo	1	F2V	4.9917	88	1.76	12	1.48	$P_R > P$	E
	2	F2V			1.70	25	0.69	$P_R < P$	D
AS Cam	1	B8V	3.4309	89	2.06	40	0.7	$P_R < P$	C
	2	A0V			2.47	30	1.21	$P_R > P$	C

Table 2. The calculated results for synchronous parameters of thirty-five components in twenty single-lined and double-lined spectroscopic binary systems by using four apparent descriptive methods.

The first method calculated by using $a_{1,2}\sin i$											
Name		Sp type	P(d)	$R_{1,2}$ ($R_\odot$)	$m_{1,2}$ ($m_\odot$)	$q_{1,2}$	$(V_{1,2}\sin i)_M$ (km/s)	$(a_{1,2}\ \sin i)\times 10^6$ (km)	$Q_{1,1'}$	$P_R \lesseqgtr P$	Synch
AG Per	1	B5pV	2.0287	3.02	5.08	0.89	105	4.53	0.69	$P_R < P$	D
	2	F6		2.78	4.52	1.1	120	4.97	0.55	$P_R < P$	D
V448 Cyg	1	O9.5	6.5179	10.00	22.25	0.73	95	$1.92\times10^{+1}$	1.08	$P_R > P$	B
	2	BII		17.34	16.24	1.37	92	$1.50\times10^{+1}$	1.10	$P_R > P$	B
GK Cep	1	A2V	0.9362	2.67	2.67	0.93	106	2.21	1.29	$P_R > P$	C
	2	A4		2.45	2.48	1.08	100	2.41	1.27	$P_R > P$	C
EI Cep	1	FI	8.4397	2.99	1.80	0.95	15	9.42	1.25	$P_R > P$	C
	2	FI		2.31	1.71	1.05	10	8.92	1.31	$P_R > P$	D
AH Cep	1	O8	1.7748	6.44	16.52	0.87	175	6.08	1.08	$P_R > P$	B
	2	O9		5.98	14.37	1.15	160	6.91	1.02	$P_R > P$	A
The second method calculated by using $m_{1,2}\sin^3 i$											
Name		Sp type	P(d)	$R_{1,2}$ ($R_\odot$)	$m_{1,2}$ ($m_\odot$)	$q_{1,2}$	$(V_{1,2}\sin i)_M$ (km/s)	$m_{1,2}\ \sin^3 i$ ($m_\odot$)	$Q_{2,2'}$	$P_R \lesseqgtr P$	Synch
EK Cep	1	A1V	4.4278	1.59	2.11	0.55	45	2.0	0.63	$P_R < P$	D
	2	G5		1.19	1.16	1.82	14	1.1	1.02	$P_R > P$	B
NY CeP	1	B01V	15.2767	10.56	16.51	0.67	80	$2.7\times10^{+1}$	0.52	$P_R < P$	D
	2	B01 V		8.66	11.06	1.49	71	$1.3\times10^{+1}$	0.43	$P_R < P$	D
RX Her	1	B9.5 V	1.7786	2.37	2.86	0.86	73	2.7	0.93	$P_R < P$	B
	2	A0.5 V		2.05	2.50	1.07	60	2.3	0.94	$P_R < P$	B
Z Vul	1	B4 V	2.4454	4.54	5.42	0.43	98	5.4	0.95	$P_R < P$	A
	2	A3III		4.57	2.33	2.32	115	2.2	0.79	$P_R < P$	C
λ Tau	1	B3V	3.9529	5.64	6.04	0.24	85	6.4	0.87	$P_R < P$	B
	2	A4IV		4.33	1.45	4.16	60	1.7	0.97	$P_R < P$	A

Table 2. (*Continued*)

The third method calculated by using $K_{1,2}$

Name		Sp type	P(d)	$R_{1,2}$ $(R_\odot)$	$m_{1,2}$ $(m_\odot)$	$q_{1,2}$	e	$(V_{1,2}\sin i)_M$ (km/s)	$K_{1,2}$ (km/s)	$Q_{3,3'}$	$P_R \lesseqgtr P$	Synch
EG Ser	1	A0	9.9473	2.17	3.05	0.78	0	48	75.8	0.22	$P_R < P$	D
	2	A2		1.93	2.37	1.29	0	68	83.8	0.12	$P_R < P$	D
V624 Her	1	A_{3m}	3.8950	2.93	2.23	0.86	0	36	96.6	1.02	$P_R > P$	A
	2	A_{4m}		2.32	1.90	1.17	0	36	117.2	0.84	$P_R < P$	B
Sig Aql	1	B_3V	1.9503	4.12	6.48	0.86	0	108	16.42	0.90	$P_R < P$	B
	2	B_3V		3.44	5.58	1.16	0	125	208	0.71	$P_R < P$	C
WW Air	1	A7V	2.5250	1.93	1.81	0.96	0	35	115.6	1.09	$P_R > P$	B
	2	A7V		1.92	1.74	1.04	0	35	127.7	1.15	$P_R > P$	B
RZ Cha	1	F5IV	2.8321	2.94	1.90	0.84	0	39	108.2	1.34	$P_R > P$	D
	2	F5IV		3.19	1.59	1.19	0	39	107.6	1.27	$P_R > P$	C

The fourth method calculated by using $f(m)$

Name	Sp type	P(d)	R_1 $(R_\odot)$	m_1 $(m_\odot)$	q_1	$(V_1\sin i)_M$ (km/s)	$f(m)$ $(m_\odot)$	Q_4	$P_R \lesseqgtr P$	Synch
UW Vir_1	A_4	1.8107	1.52	1.77	0.24	76	1.9×10^{-2}	0.59	$P_R < P$	D
TW Dra_1	A_5V	2.8067	2.06	2.24	0.43	123	5.9×10^{-2}	0.59	$P_R < P$	D
QS Aql_1	B5V	2.4968	2.65	6.82	0.17	75	2.7×10^{-2}	0.74	$P_R < P$	C
DV Aqr_1	LateA	1.5755	2.16	2.20	0.59	92	1.4×10^{-1}	0.70	$P_R < P$	C
UX Her_1	A3	1.5489	1.80	1.92	0.30	61	2.1×10^{-2}	0.85	$P_R < P$	B

References

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