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BINARY SYSTEM 44i BOOTIS

The binary system 44i Bootis was introduced in the photometric observational program of the Bucharest telescope in 1987, following the IAU indications, about the stars included in Hipparcos program (Dworak and Oblak, 1987).

We have studied the light curve and the period change of this star. Using Duerbeck's ephemeris (1975) we obtained the (O-C) values for a lot of minima between 1975-1990 ((O-C)₁ in Table I).

Figure 1 shows a period jump between 1977-1978 and we consider that a new jump was in 1986-1987.

After the first jump we proposed a new period (Oprescu et al., 1989):

$$\text{Min I} = 2443604.^d5880 + 0.^d26781753 \text{ E.}$$

Using this new ephemeris we reconsidered the (O-C) values ((O-C)₂ in Table I). Figure 2 shows the new (O-C)₂ aspect. The proposed period was a good one for 1977-1987 interval. After 1987 a change in period was observed. Using a few observations between 1987-1990 we estimate this change:

$$\Delta P = 1.^d02666 \times 10^{-6}$$

and the new ephemeris after 1987 will be:

$$\text{Min I} = 2443604.^d5880 + 0.^d26781856 \text{ E.}$$

The period change confirms the existence of "active" and "quiet" intervals in the life of this star. The active period is approximately 3 years and the duration of quiet period is about 7 years. The period change appears in an active interval.

Table I.

Hel.Min.	(O-C) ₁	E	(O-C) ₂	E	Filter	Authors
244...						
2531.4512	-0.0015	10003				Duerbeck, 1975
2553.4119	-0.0017	10085				"
2837.5649	-0.0014	11146				"
2841.5831	-0.0004	11161				"
2953.5306	0+0000	11579				"
3604.5880	-0.0030	14010				Duerbeck
3607.5379	0.0009	14021	0.0020	11		et al., 1978
3607.8107	0.0059	14022	0.0089	12		
3614.3611	-0.0052	14046.5	-0.0022	36.5		Rovithis, 1981
3614.5000	-0.0002	14047	-0.0027	37		

Table I (cont.)

Hel.Min.	(0-C) ₁	E	(0-C) ₂	E	Filter	Authors
244...						
3615.5710	-0.0005	14051	0.0025	41		Rovithis, 1981
3616.3764	-0.0015	14054	0.0045	44		"
3974.4464	0.0019	15391	0.0024	1381		Hopp, Witzigmann,
3974.5788	0.0001	15391.5	0.0010	1381.5		1982
4706.5219	0.0023	18124.5	-0.0012	4114.5		"
4709.4679	0.0023	18135.5	-0.0012	4125.5		"
4345.5067	0.0030	16766.5	0.0016	2766.5		Mikolajewska,
4365.4569	0.0009	16851	-0.0006	2841		Mikolajewski,
4366.5290	0.0018	16855	0.0003	2845		1980
4349.3904	0.0034	16791	0.0020	2781		Bergeat et al.,
4351.5314	0.0019	16799	0.0004	2789		1984
4354.4773	0.0017	16810	0.0003	2800		"
4355.5500	0.0032	16814	0.0017	2804		"
4356.3523	0.0020	16817	0.0006	2807		"
4366.7971	0.0020	16856	0.0005	2846		Scarfe et al.,
4390.9032	0.0047	16946	0.0030	2936		1984
4409.7855	0.0060	17016.5	0.0042	3006.5		"
4811.7794	0.0082	18517.5	0.0040	4507.5		"
5473.8187	0.0076	20989.5	0.0085	6979.5		"
5476.9019	0.0099	21001	0.0018	6991		"
5477.8383	0.0090	21004.5	0.0008	6994.5		"
5478.7745	0.0078	21008	-0.0004	6998		"
5488.8162	0.0063	21045.5	-0.0018	7035.5		"
5468.4684	0.0126	20969.5	0.0045	6959.5	B	Pohl, Tunca,
5468.4649	0.0091	20969.5			V	1985
5482.5245	0.0084	21022	0.0002	7012	B	"
5482.5259	0.0098	21022			V	"
5870.4565	0.0111	22470.5	-0.0015	8460.5	V	"
6640.3026	0.0174	25345	0.0033	11335	B	Al-Naimiy et al.,
6638.2937	0.0171	25337.5	0.0030	11327.5	B	1986
6640.3005	0.0153	25345			V	"
6638.2939	0.0151	25337.5			V	"
6973.3286	0.0153	26588.5			U	Oprescu et al.,
6973.3296	0.0163	26588.5	0.0006	12578.5	B	1989
6973.3352	0.0218	26588.5			V	"
6977.3550	0.0245	26603.5	0.0074	12593.5	U	"
6977.3510	0.0205	26603.5			B	"
6977.3557	0.0252	26603.5			V	"
6984.3159	0.0221	26629.5	0.0050	12619.5	U	"
6984.3174	0.0236	26629.5			B	"
6984.3235	0.0298	26629.5			V	"
6986.3253	0.0229	26637	0.0058	12627	U	"
6986.3238	0.0214	26637			B	"
6986.3257	0.0233	26637			V	"
7242.4883	0.0200	27593.5	0.0013	13583.5		Rovithis,

Table I (cont.)

Hel.Min.	(O-C) ₁	E	(O-C) ₂	E	Filter	Authors
244...						
7242.6248	0.0224	27594	0.0039	13584		Rovithis-Livaniou,
7245.4395	0.0252	27604.5	0.0066	13594.5		1989
7245.5701	0.0219	27605	0.0032	13595		"
7319.7446	0.0114	27881			U	Willmitch,
7319.7495	0.0173	27881			B	Douglas, 1989
7319.7491	0.0159	27881			B	"
7322.7008	0.0217	27892			B	"
7322.6999	0.0208	27892			V	"
7338.3675	0.0211	27951	0.0019	13941.5		Rovithis,
7338.5006	0.0203	27952	0.0011	13942		Rovithis-Livaniou,
7340.3756	0.0206	27959	0.0013	13949		1989
7341.3174	0.0250	27962.5	0.0058	13952.5		"
7341.4445	0.0182	27963	-0.0010	13953		"
7359.3920	0.0221	28030	0.0027	14020		Surkova, 1990
7364.3469	0.0224	28048.5	0.0030	14038.5		"
7365.4180	0.0223	28052.5	0.0028	14042.5		"
7371.4438	0.0222	28075	0.0027	14065		"
7375.3270	0.0220	28089.5	0.0026	14079.5		"
7388.3163	0.0223	28138	0.0027	14128		"
7393.4050	0.0225	28157	0.0029	14147		"
7739.2988	0.0320	29448.5	0.0104	15438.5	V	This paper
8086.3840	0.0278	30744.5	0.0041	16734.5	U	"
8086.3881	0.0319	30744.5	0.0062	16734.5	B	"
8086.3877	0.0315	30744.5	0.0078	16734.5	V	"
8091.3346	0.0238	30763	0.0001	16753	U	"
8091.3346	0.0238	30763	0.0001	16753	E	"

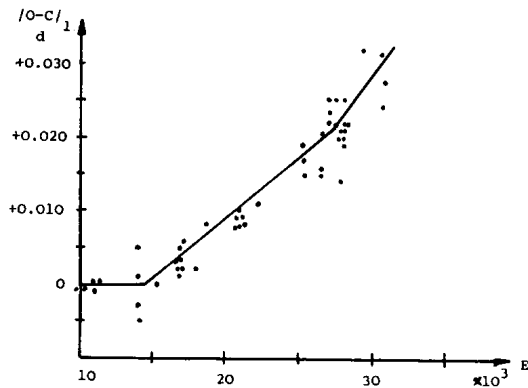


Figure 1

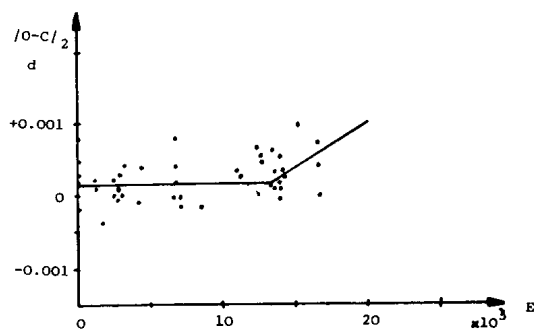


Figure 2

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