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HISTORICAL LIGHT CURVES OF FOUR T TAURI STARS

I have examined the archival plate collection at the Harvard College Observatory to obtain the historical light curves of SY Cha, TW Cha, VZ Cha, and DR Tau. This study was designed to look for periodic photometric variation (and hence rotation periods) as first suggested by Mathieu and Fich (1982). The reason for choosing the

Table I

J.D.minus 2,400,000	TW Cha	SY Cha	VZ Cha	J.D.minus 2,400,000	TW Cha	SY Cha	VZ Cha
25986.572	13.9	14.3	13.7	27649.226	13.9	>14.1	14.1
26057.312	14.1	14.3	13.8	27811.468	----	----	13.4
26067.434	----	----	13.5	27874.505	----	14.2	14.4
26071.395	----	----	13.9	27930.272	13.7	14.1	13.5
26086.308	14.4	14.2	14.2	27960.257	14.4	14.3	14.2
26092.479	13.9	14.3	14.3	27960.347	14.5	14.2	14.3
26096.348	13.9	14.3	>14.3	27978.196	14.0	14.1	13.5
26118.219	14.0	14.3	14.5	27982.347	14.0	----	>14.1
26144.220	13.8	14.3	14.1	28257.517	14.0	13.3	13.7
26144.286	13.9	14.3	14.4	28260.599	13.9	>14.1	>14.2
26366.423	----	13.7	13.7	28307.240	13.9	13.9	14.3
26399.461	14.2	14.0	13.9	28307.318	13.5	14.0	14.1
26456.286	13.8	14.0	>14.5	28327.226	14.3	14.3	12.9
26472.352	14.4	14.4	14.8	28336.228	13.6	14.1	>14.5
26481.344	13.6	14.5:	13.8	28339.312	13.4	14.1	14.3
26486.220	14.1	14.4	13.3	28342.229	13.7	14.0	14.1
26486.288	14.2	14.0	13.5	28357.234	14.0	14.1	13.2
26486.349	----	----	13.4	28387.232	14.5	14.1	13.8
26504.338	----	----	13.8	28486.535	13.9	14.3	13.8
26505.328	14.1	14.2	13.9	28598.446	13.9	14.4	14.6
26539.222	14.0	14.2	13.5	28639.411	14.4	14.3	14.1
26769.461	13.0	13.5	14.0	28639.496	14.3	14.2	13.9
26805.445	14.2	13.9	14.6	28670.318	14.4	14.8	14.8
26811.426	----	----	13.2	28694.228	13.9	14.3	14.1
26839.373	14.0	14.3	>14.3	28694.312	14.1	14.4	14.1
26918.223	14.2	>14.3	>14.2	28721.234	14.0	14.2	14.2
27186.380	14.4	14.2	13.7	28770.239	14.1	>14.1	14.1
27523.299	14.1	14.5	14.1	28878.552	14.6	14.4	13.4
27524.348	14.1	13.5	>14.0	28912.558	14.2	14.2	14.4
27546.295	14.3	13.7	14.3	28968.505	14.0	14.3	13.7
27570.236	14.0	14.1	13.8	28993.491	14.1	14.1	>14.1
27631.227	>14.4	14.1	13.8	29001.480	13.5	----	13.9:

Table I (cont.)

J.D.minus 2,400,000	TW Cha	SY Cha	VZ Cha	J.D.minus 2,400,000	TW Cha	SY Cha	VZ Cha
29014.327	14.3	14.2	14.4	29349.346	----	12.7	14.1
29014.411	14.1	14.1	14.3	29374.410	14.2	14.2	14.2
29018.318	14.2	14.3	13.8	29374.494	14.1	----	13.9
29018.424	14.1	14.1	13.9	29382.275	14.4	14.5	13.4
29022.462	14.4	14.0	13.8	29399.228	14.1	14.0	13.6
29042.402	14.3	14.0	14.2	29399.316	14.2	14.4	14.1
29046.336	13.9	14.0	14.2	29403.380	14.2	14.3	13.7
29049.248	14.1	14.0	14.3	29407.264	13.5	14.3	13.5
29049.334	14.2	14.2	14.3	29410.329	14.1	14.4	12.8
29049.376	14.3	14.2	14.2	29410.351	14.5	14.2	13.2
29073.357	14.0	14.3	13.6	29419.217	13.0	14.2	13.7
29077.255	13.9	>14.0	14.2	29428.331	14.4	14.2	14.2
29079.252	14.2	>14.3	14.5	29435.227	14.2	14.4	14.2
29079.295	----	----	14.2	29435.312	14.0	14.4	----
29101.281	14.5	14.1	13.8	29463.230	14.6	14.3	13.6
29125.236	14.1	>14.2	14.2	29471.245	14.5	14.3	14.1
29222.539	14.1	14.1	14.1	29480.326	----	----	13.8
29266.543	14.6	14.3	14.1	29620.538	14.3	14.3	14.0
29341.420	14.5	14.3	13.5	29666.466	14.3	14.0	14.2

Table II

J.D.minus 2,400,000	SY Cha	J.D.minus 2,400,000	SY Cha	J.D.minus 2,400,000	SY Cha
15498.598	14.2	30852.363	14.1	43613.687	14.1
18043.605	13.9	30915.237	14.3	43615.525	14.3
18456.572	14.5	31109.555	14.1	43616.689	14.3
22105.512	14.4	31286.235	14.4	43694.498	14.0
22112.503	>14.2	31478.490	14.1	43899.772	>13.7
25594.496	14.0	31593.233	14.3	43901.748	>14.1
25626.478	14.3	31647.236	14.2	43901.821	>13.8
25650.543	14.0	31970.230	14.0	43902.753	14.1
25689.458	14.2	32005.236	14.4	44018.625	14.1
25710.369	14.0	32021.236	14.2	44020.545	13.0
25731.293	14.5	32276.536	14.5	44021.539	14.1
25759.214	14.5	32317.313	14.2	44021.667	14.5
25776.213	>14.1	32384.237	14.0	44023.703	14.1
29696.359	14.4	32593.412	13.9	44638.989	>13.7
29716.462	13.6	32626.517	14.2	44643.986	13.9
29731.393	14.0	32670.214	14.5	44647.040	14.0
29764.197	14.3	32702.229	14.3	44663.969	14.1
29811.210	14.2	33000.359	14.4	44673.052	14.1
29819.233	14.3	33041.233	14.4	44674.059	14.2
29823.213	14.4	33070.271	13.9	44694.957	14.3
30004.491	14.0	33091.232	14.4	44699.891	>13.7
30057.515	14.5	33099.320	14.2	44700.007	13.8
30061.473	14.2	33125.235	14.0	44727.892	>14.2
30085.456	14.3	33308.539	14.1	44727.984	14.2
30106.393	14.5	33409.383	14.5	44749.828	14.3
30117.400	14.4	33477.237	14.5	44994.029	14.0
30134.409	14.2	33664.558	14.2	45054.957	14.5
30178.213	14.3	33834.300	14.5	45073.889	14.0
30198.235	14.5	34099.466	14.4	45085.986	14.1
30436.355	14.5	43613.640	14.2		

Table III

J.D.minus 2,400,000	DR Tau	J.D.minus 2,400,000	DR Tau	J.D.minus 2,400,000	DR Tau
42427.635	11.7	43214.526	13.9	44192.724	11.5
42452.552	11.5	43397.842	>14.0	44222.607	12.5
42716.838	12.1	43399.579	12.2	44247.612	12.1
42745.690	12.5	43427.864	13.4	44273.530	12.2
42748.671	12.6	43438.813	14.4	44274.542	12.2
42754.710	11.8	43459.788	12.5	44283.610	13.6
42754.767	11.9	43462.688	12.2	44549.772	11.2
42770.590	12.0	43480.698	13.2	44549.835	11.2
42779.643	12.4	43482.717	12.8	44577.669	11.2
42783.552	12.1	43540.522	11.4	44577.700	11.8
42798.599	12.2	43542.538	12.0	44607.589	11.2
42806.535	12.2	43550.583	12.7	44607.619	11.7
42811.555	12.2	43567.508	12.6	44630.545	12.1
42829.528	12.2	43568.505	12.3	44630.573	12.2
43043.851	12.5	43754.846	11.5	44663.510	11.8
43044.806	11.8	43791.848	12.2	44665.505	12.2
43044.861	11.4	43792.849	12.1	44672.894	12.0
43046.569	12.9	43814.745	12.2	44673.924	11.2
43074.768	13.2	43814.772	12.3	44872.884	11.2
43078.787	14.0	43840.716	12.4	44908.796	11.8
43097.675	12.2	43840.742	12.5	44911.762	11.4
43099.781	12.2	43870.613	11.1	44933.641	12.0
43126.664	12.1	43870.637	11.4	44939.627	11.9
43155.560	12.1	43921.538	12.4	44955.623	11.4
43166.593	12.1	43922.548	13.1	44955.649	11.5
43166.651	12.0	43922.580	12.6	44985.585	12.1
43182.569	12.8	43933.542	11.2	44985.638	12.1
43192.531	13.2	44136.761	12.2	44994.598	11.9
43193.512	12.7	44172.797	12.8	44994.621	11.9
43193.567	12.9	44192.696	11.5	45044.511	11.8

first three stars for examination was the reports of periodicities by Mauder and Sosna (1975) and Kappelmann and Mauder (1981). B, V, and R observations of SY Cha during 1970-2 will be reported by Schaefer (1982). During this period, SY Cha brightened and showed strictly periodic oscillations with a 1.6^m amplitude. DR Tau showed a similar brightening in the 1970's (Chavarría-K. 1979), so it is of interest to look for oscillations during its "outburst". Additional observations of DR Tau after 1975 are given in Kuan(1976), Bertout et al.(1977), Bastian and Mundt(1979), Cohen and Kuhl(1979), Chavarría-K.(1979), and Gotz(1982).

All plates that I examined were from the A, MF, RB, or Damon series and are in the B magnitude system. The magnitudes (see Tables I-III) were estimated visually, so the one sigma error is roughly 0.20^m .

The sequence of comparison stars for DR Tau was taken from Gotz(1982). The Chamaeleon sequence was derived from measurements of the stars in Selected Area SA203. I have performed a Fourier Transform on the data for the various stars and find no significant periodicities between 0.7^d and 100.0^d .

BRADLEY E. SCHAEFER
 Massachusetts Institute of Technology
 Cambridge, Mass. 02139 USA

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