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IS τ CASSIOPEIAE A VARIABLE STAR?

The star τ Cassiopeiae (τ Cas, HD 223165, HR 9008, SAO 35763, K1 III, $V=4.87m$) was observed at the University of Northern Iowa (UNI) Hillside Observatory during 1986 and 1987. We used a 0.4 meter Cassegrain telescope and a STARLIGHT-1 photon counting photometer with standard B and V filters.

τ Cas has been used extensively as a comparison star for ρ Cassiopeiae variability studies. The American Association of Variable Star Observers has used τ Cassiopeiae as a primary comparison star for ρ Cassiopeiae for a number of years. τ Cas is listed in the *New Catalogue of Suspected Variable Stars* (Kholopov, 1982). Due to this suspected variability τ Cas was gradually dropped from the ρ Cassiopeiae observing program by the British Astronomical Association (Percy, 1985). Although Percy's work leads him to believe that τ Cas may not be a variable star. As a portion of a study done at UNI on ρ Cassiopeiae, we believe that τ Cas *does* have a small degree of variability. HD 223173 (HR 9010, SAO 35761, K3 II, $V = 5.51m$, $B-V = 1.65$) was used as the comparison star. Table 1 lists the mean delta magnitudes obtained for τ Cas. Figures 1 and 2 are graphical representations of these data.

Figure 1
 τ Cas Visual Delta Magnitudes

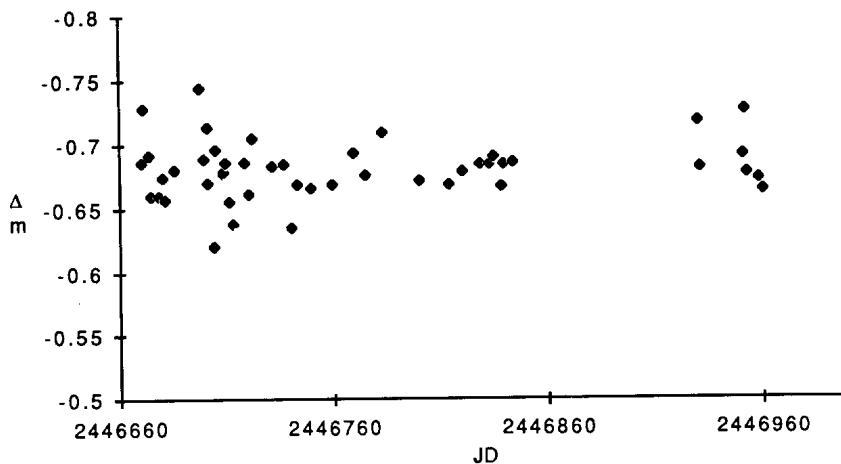
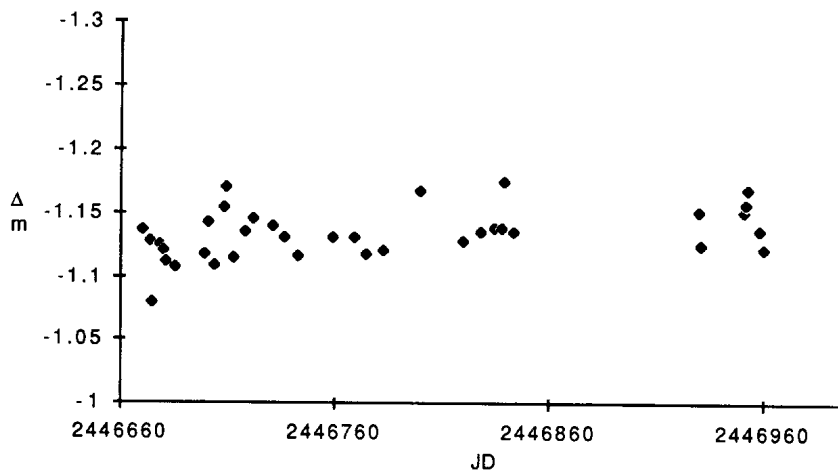


Table 1
 τ Cas Visual and Blue Delta Magnitudes

JD	V	error	#	JD	B	error	#
2446670.616	-0.687	0.005	2	2446670.631	-1.136	0.004	2
2446671.663	-0.728	0.028	2	2446674.709	-1.127	0.009	2
2446674.591	-0.692	0.023	2	2446675.685	-1.081	0.017	2
2446675.665	-0.660	0.026	2	2446678.663	-1.126	0.006	2
2446678.642	-0.660	0.011	2	2446680.655	-1.121	0.009	2
2446680.638	-0.675	0.007	2	2446681.674	-1.113	0.006	2
2446681.658	-0.656	0.026	2	2446686.593	-1.107	0.021	2
2446686.573	-0.680	0.015	2	2446699.565	-1.118	0.005	2
2446697.658	-0.744		1	2446701.652	-1.143	0.021	2
2446699.547	-0.688	0.035	2	2446704.584	-1.110	0.047	2
2446701.622	-0.714	0.006	2	2446708.563	-1.154	0.008	2
2446701.720	-0.670	0.018	2	2446709.569	-1.170	0.034	2
2446704.544	-0.620	0.025	2	2446713.564	-1.116	0.019	2
2446705.625	-0.697	0.086	2	2446718.601	-1.135	0.005	2
2446708.546	-0.677	0.004	2	2446722.553	-1.146	0.018	2
2446708.621	-0.680	0.008	2	2446731.535	-1.140	0.000	2
2446709.550	-0.687	0.039	2	2446737.544	-1.131	0.019	2
2446711.540	-0.656		1	2446743.571	-1.116	0.026	2
2446713.545	-0.638	0.031	2	2446759.562	-1.130	0.008	2
2446718.585	-0.687	0.028	2	2446769.527	-1.130	0.008	2
2446720.536	-0.661	0.046	2	2446775.505	-1.119	0.004	2
2446722.530	-0.705	0.001	2	2446783.524	-1.121	0.044	2
2446731.516	-0.685	0.010	2	2446800.571	-1.166	0.066	2
2446737.527	-0.686	0.022	2	2446820.581	-1.128	0.003	3
2446740.684	-0.636	0.048	2	2446828.627	-1.135	0.010	3
2446743.548	-0.668	0.010	2	2446835.572	-1.138	0.007	3
2446749.538	-0.666	0.021	2	2446838.645	-1.138	0.010	3
2446759.542	-0.669	0.037	2	2446839.670	-1.175	0.010	3
2446769.546	-0.693	0.011	2	2446844.708	-1.135	0.018	3
2446775.523	-0.677	0.025	2	2446930.895	-1.152	0.008	3
2446783.542	-0.709	0.015	2	2446931.861	-1.126	0.004	3
2446800.600	-0.671	0.057	2	2446951.713	-1.152	0.001	3
2446814.566	-0.669	0.002	3	2446952.663	-1.157	0.008	3
2446820.568	-0.680	0.006	3	2446953.686	-1.169	0.009	3
2446828.615	-0.685	0.014	3	2446958.764	-1.137	0.003	3
2446833.587	-0.685	0.009	3	2446960.742	-1.123	0.012	3
2446835.564	-0.691	0.003	3				
2446838.644	-0.667	0.023	3				
2446839.662	-0.686	0.005	3				
2446844.699	-0.687	0.012	3				
2446930.884	-0.720	0.007	3				
2446931.851	-0.682	0.004	3				
2446951.723	-0.692	0.014	3				
2446952.654	-0.727	0.009	3				
2446953.674	-0.677	0.011	3				
2446958.754	-0.674	0.008	3				
2446960.729	-0.664	0.004	3				

Figure 2
 τ Cas Blue Delta Magnitudes



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