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FURTHER PHOTOMETRY OF α Ori AND γ Ori

We present photometry of α Ori and γ Ori, obtained differentially with respect to ϕ^2 Ori (V = 4.09, B−V = 0.95). These data were obtained from November 1992 to April 1994, primarily with a 15-cm reflector at the 2800-m elevation of Mauna Kea in Hawaii. The data of 8/9 January 1994 were obtained with the Lowell 0.6-m telescope at Cerro Tololo, stopped down to about 0.36-m, and using a 3.7 magnitude neutral density filter. Transformation coefficients for conversion of the data to the UBV system were obtained from observations of red-blue pairs (Hall 1983). Typically, each data point on α Ori in Table 1 and Figure 1 represents three bracketed differential measures. For previous data see Krisciunas and Fisher (1988), Krisciunas (1990), and Krisciunas (1992).

Guinan et al. (1993) noted the relatively rapid decrease in brightness of α Ori by nearly 0.5 magnitude from October 1992 to February 1993 (≈JD 2448900 to 9000). A previous such dimming, by 0.7 mag, occurred from April 1988 to February 1989 (≈JD 2447300 to 7600).

Krisciunas and Fisher (1988) noted that the check star, γ Ori, was variable. Since this star is one of the secondary standards of the UBV system (Johnson, 1963) one might say that its V magnitude is, *by definition*, 1.64. But when we have carried out all-sky photometry, multiple measures of γ Ori have been noted to be inconsistent with each other, and their mean value can indicate that γ Ori does not always fit with other standards. We believe that ϕ^2 Ori is constant and that γ Ori is a low amplitude (irregular?) variable.

Table 1. Photometry of α Orionis

Date	<UT>	Julian Date	V		B-V
25/26 Nov 1992	0834	2448952.8569	0.581 ±	0.015	
24/25 Jan 1993	0803	9012.8354	0.838	0.008	
18/19 Feb 1993	0648	9037.7833	0.858	0.002	
14/15 Mar 1993	0601	9061.7507	0.881	0.002	
23/24 Mar 1993	0559	9070.7493	0.891	0.009	
28/29 Mar 1993	0636	9075.7750	0.835	0.016	
13/14 Apr 1993	0632	9091.7722	0.864	0.012	
22/23 Apr 1993	0602	9100.7514	0.823	0.019	
8/9 Sep 1993	1450	9240.1180	0.818	0.013	
10/11 Nov 1993	0914	9302.8851	0.588	0.018	
19/20 Dec 1993	0753	9341.8313	0.607	0.003	
20/21 Dec 1993	0924	9342.8917	0.589	0.006	
8/9 Jan 1994	0406	9361.6706	0.693	0.001	1.871
6/7 Mar 1994	0645	9418.7813	0.666	0.015	
7/8 Apr 1994	0607	9450.7552	0.651	0.012	

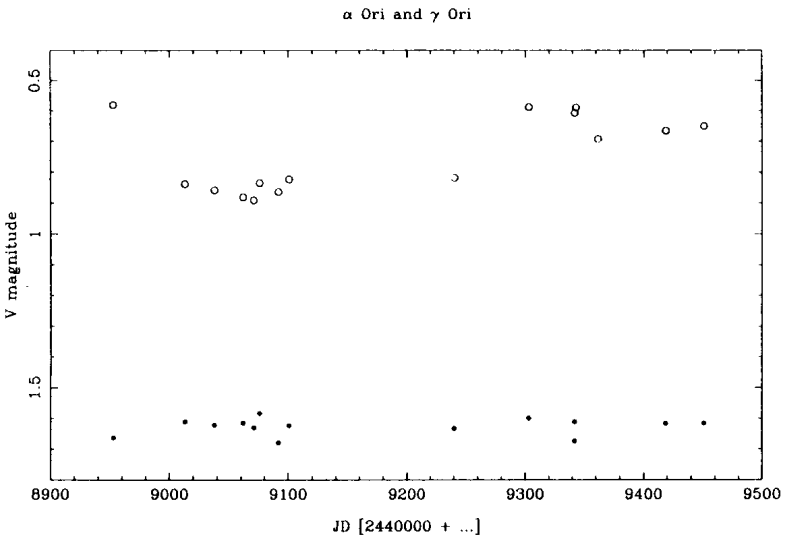

Figure 1 - Photometry of α Ori (open circles) and γ Ori (dots), derived with respect to ϕ^2 Ori.

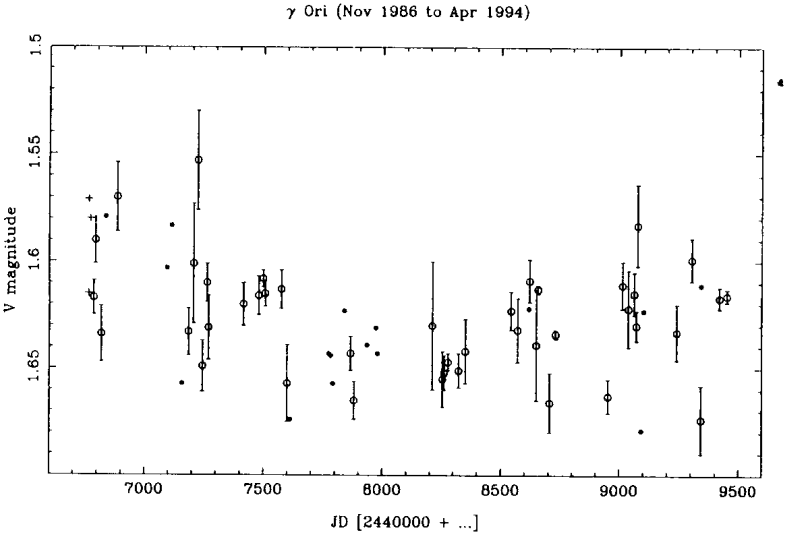

Figure 2 - Photometry of γ Ori, derived with respect to ϕ^2 Ori. Pluses: data of David Fisher. Open circles: Krisciunas data, based on two or more differential measures. Dots: Krisciunas data based on a single differential measure.

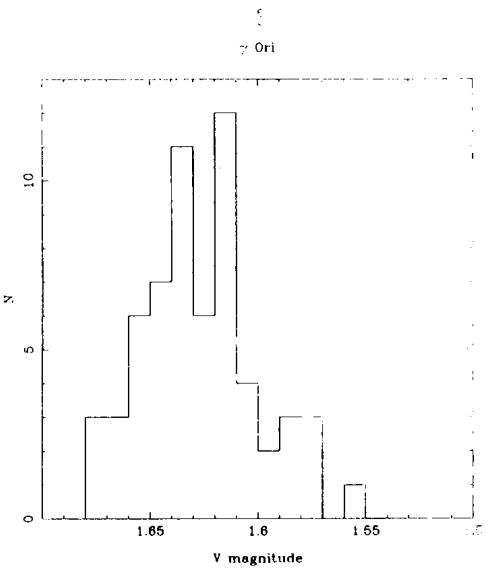

Figure 3 - Histogram of data in Figure 2.

In Figure 2 we give the γ Ori data of the last eight observing seasons. The mean V magnitude is 1.626 $\pm$0.004, and the standard deviation of the distribution is $\pm$0.027 mag, based on 61 nightly means. In Figure 3 note the evidence for a bimodal distribution of values.

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