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**Photometry of  $\alpha$  Orionis (Nov 1990 to Apr 1992)**

We present new photometry of Betelgeuse derived from differential measurements with respect to  $\phi^2$  Ori (= HR 1907, for which  $V = 4.09$ ,  $B-V = 0.95$ ). The color of Betelgeuse was taken to be  $B-V = 1.84$ , as given by the 4th edition of the *Bright Star Catalogue* (1982). Transformation to the UBV system was accomplished by means of transformation coefficients derived from differential measures of the red-blue pair 27 and 28 LMi (Hall 1983). From observations obtained over several years our system has  $\epsilon_V = -0.054$ ,  $\mu = 0.940$ . The data were obtained at the 2800-m level of Mauna Kea, Hawaii, using a 15-cm Newtonian reflector, a DC photometer, and a strip chart recorder. The data are given in Table I. Previous data are given in Krisciunas and Fisher (1988) and Krisciunas (1990).

Table I  
Photometry of  $\alpha$  Orionis

Date	<UT>	Julian Date	V	B-V	
13/14 Nov 1990	1032	2448209.94	0.475 $\pm$ 0.015		
27/28 Dec 1990	0623	8253.77	0.548	0.013	
3/4 Jan 1991	0700	8260.79	0.459	0.016	
20/21 Jan 1991	0643	8277.78	0.488	0.006	
6/7 Mar 1991	0656	8322.79	0.524	0.013	
3/4 Apr 1991	0659	8350.79	0.555	0.011	
12/13 Oct 1991	1144	8542.99	0.292	0.006	
9/10 Nov 1991	0920	8570.89	0.365	0.006	
26/27 Dec 1991	0750	8617.83	0.345	0.019	1.844
29/30 Dec 1991	0710	8620.80	0.352	0.004	
26/27 Jan 1992	0656	8648.79	0.352	0.012	
2/3 Feb 1992	1105	8655.96	0.320	0.023	
22/23 Mar 1992	0641	8704.78	0.394	0.018	
16/17 Apr 1992	0604	8729.75	0.423	0.008	

alpha Orionis and gamma Orionis (Sep 1985 to Apr 1992)

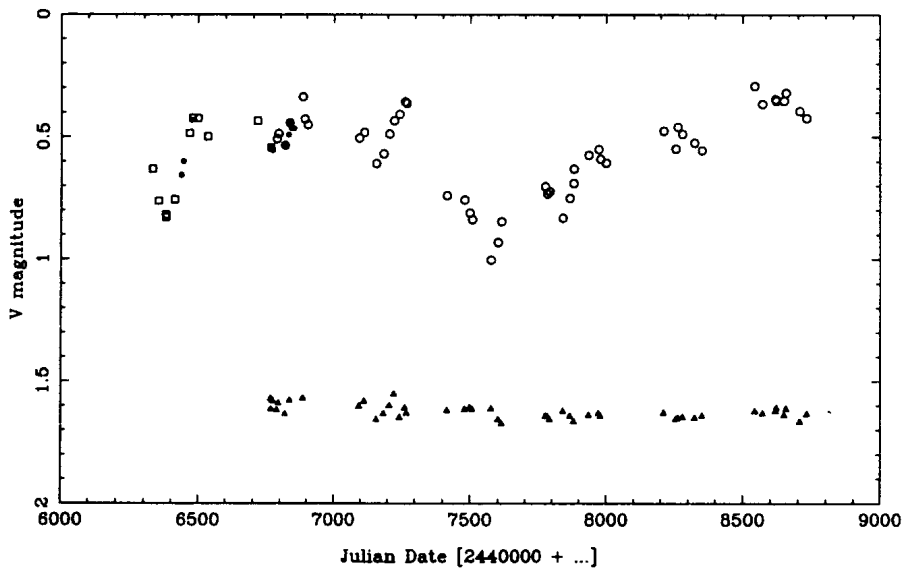


Fig. 1 - Data from Table I and from IBVS Numbers 3227 and 3477. Squares:  $\alpha$  Ori data by Krisciunas reduced with respect to  $\gamma$  Ori. Dots:  $\alpha$  Ori data by David Fisher, using  $\phi^2$  Ori as comparison star. Open circles:  $\alpha$  Ori data by Krisciunas reduced with respect to  $\phi^2$  Ori. Filled triangles:  $\gamma$  Ori data reduced with respect to  $\phi^2$  Ori.

The check star was  $\gamma$  Ori ( $V = 1.64$ ,  $B-V = -0.22$ ), which in the 1987/88 season exhibited some evidence of variability on the order of 0.1 magnitude. Since then it has not shown any evidence of variability. The redder color of  $\phi^2$  Ori makes it a much better comparison star for Betelgeuse than  $\gamma$  Ori.

Because the light curve of Betelgeuse did not show great changes in the past two seasons, in Figure 1 we give the light curve over the past 6 1/2 years. This is greater than the principal period of variation, traditionally quoted as

5.781 years (Sanford 1933). The  $\approx 420$  day period of smaller amplitude, also observed photometrically by Dupree et al. (1987), and in radial velocity data by Smith, Patten, and Goldberg (1989) and by Dupree et al. (1990), seems to have diminished greatly in amplitude or to have died out.

KEVIN KRISCIUNAS  
Joint Astronomy Centre  
665 Komohana Street  
Hilo, Hawaii 96720 USA

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