

Extremely Low Amplitude Cepheids

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Abstract

Several photometric studies conducted in the 1970's indicate that at least half the stars in the Cepheid instability strip are stable at the level of 0.02 mag (Ferne & Hube 1971; Percy 1975; Ferne 1976; Percy, Baskerville, & Trevorrow 1979). A precision radial velocity survey of these "stable stars" is currently being conducted by the author. Radial velocity errors have been reduced to a few tens of meters per second with the use of an iodine absorption cell (Marcy & Butler 1992).

Extremely low amplitude (200 m/s) periodic radial velocity variations have been found for HR 7796, an F8Ib supergiant (Butler 1992). Two and a half complete cycles have been monitored over three observing runs. The period is found to be 11.87 days. Observations of the reference star HR 509 (G8 V) taken on the same nights, show no periodicities and a scatter of just 20 m/s. Both the period and the shape of the velocity curve appear similar to a normal F8Ib Cepheid. If HR 7796 is a Cepheid, it is the smallest amplitude Cepheid by more than an order of magnitude.

References:

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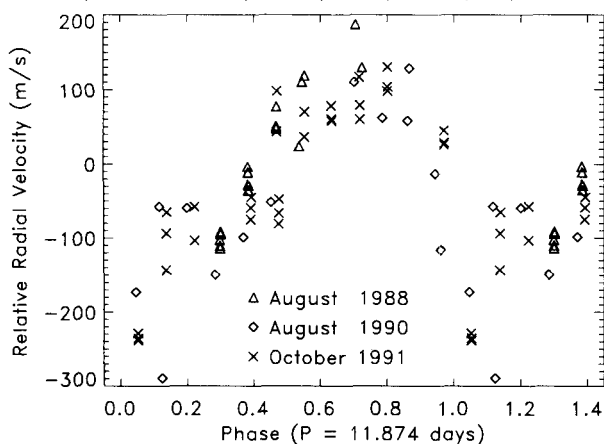


FIG. 5.—Velocity vs. pulsation phase for HR 7796. The period is 11.874 days, and the epoch is 2,447,386.29 for zero phase.