

MAGNITUDE DAMPING IN THE BLAZHKO EFFECT OF XZ CYGNI

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Abstract

The amplitude of secondary cycle magnitude maxima appears to have decreased abruptly, coincident with the increase in primary period that occurred in 1979.

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Attention is called to an apparent sudden damping of the amplitude of magnitude maxima in the Blazhko effect of XZ Cygni. This phenomenon appears to coincide with the star's recent increase in primary period (Taylor 1979), Figure 1.

Because of the abruptness (rather than slow modulation) of the damping, it seems unlikely that this effect is an alias for the projected ~ 9 year tertiary period (Klepikova 1958), although this is not yet certain. Unfortunately, because of their nature, maximum magnitudes from the 15 year AAVSO maxima series on XZ Cygni cannot be directly compared to those of other observers.

It has been proposed (Detre and Szeidl 1973; Stothers 1980; etc.) that periodic, long-term variation in the secondary periods of RR Lyrae stars may be related to magnetic fields and analogous to the solar cycle. Stothers also suggests that sudden changes in primary period may correspond to abrupt generation or destruction of magnetic field, giving rise to abrupt alterations in the normal amplitude of the Blazhko effect.

No attempt has been made to define the existence of a similar damping in the O-C aspect of the secondary period. The most recent observations of XZ Cygni indicate that the primary period may not yet have stabilized, or alternatively, that the initial increase was slightly larger than originally believed.

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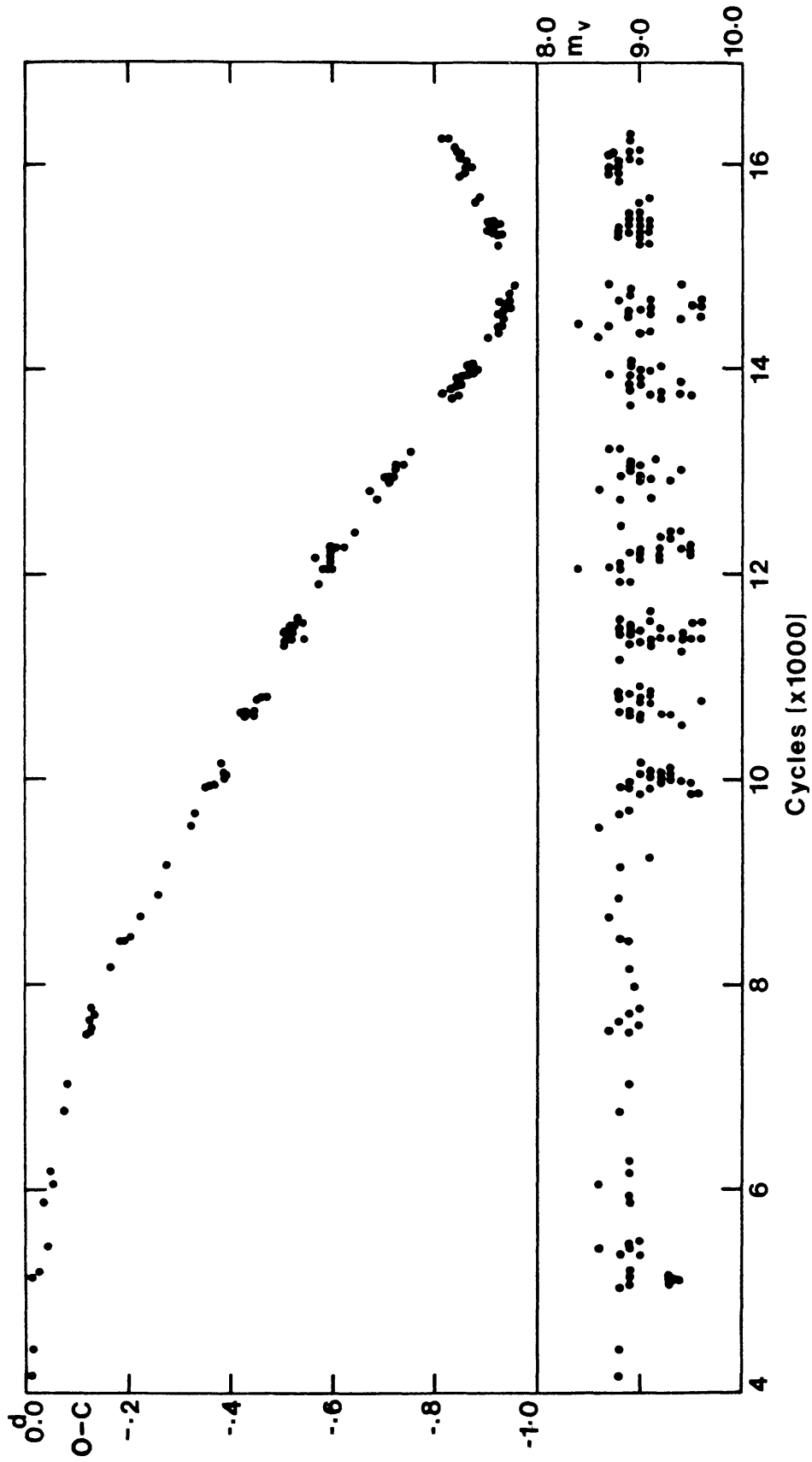


Figure 1. Upper; O-C residuals relative to elements given in the 1969 GCVS. Lower: magnitude at maximum. The appearance of a lessened amplitude of magnitude maxima between cycles 4000 and 9600 may be due to a paucity of AAVSO observations during that interval.