

THE PULSATION OF SOME δ SCUTI STARS WITH UNUSUAL LIGHT CURVES

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Abstract. Among the δ Scuti stars with large amplitude there are a few stars with unusual light curve shape and multiperiodicity. These stars are V1719 Cyg, V798 Cyg, V974 Oph and δ Scuti. The Fourier phase difference for the main pulsation mode is very different from that typical of the other large amplitude δ Scuti, SX Phe and RR Lyrae stars. The period ratio is generally high, ≥ 0.80 . Two of the stars (δ Scuti and V1719 Cyg) have known spectral type or Strömngren indices, and these indicate high metallicity which should be related to the δ Delphini type (evolved Am/Fm stars). Some tests with the one-zone model show that the unusual light curve shape could be related to a poor He content in the envelope, while the application of model atmosphere grids shows that the anomalous behavior of the metallicity photometric index of V1719 Cyg is simply due to the high metal abundance of its atmosphere. The conclusion is that diffusion phenomena such as the He settling and the metal enhancement should be able to explain all the observed characteristics of these pulsating stars.