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HD 213637 IS A RAPIDLY OSCILLATING Ap STAR

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The rapidly oscillating Ap (roAp) stars are cool, magnetic, chemically peculiar A-type stars that pulsate with periods in the range 6–16 minutes and Johnson B semi-amplitudes ≤ 0.008 mag. The observed characteristics of the roAp phenomenon have been reviewed by Martinez and Kurtz (1995) for the 28 confirmed roAp stars known at the time of that writing. This Bulletin announces the discovery of the 29th roAp star, HD 213637.

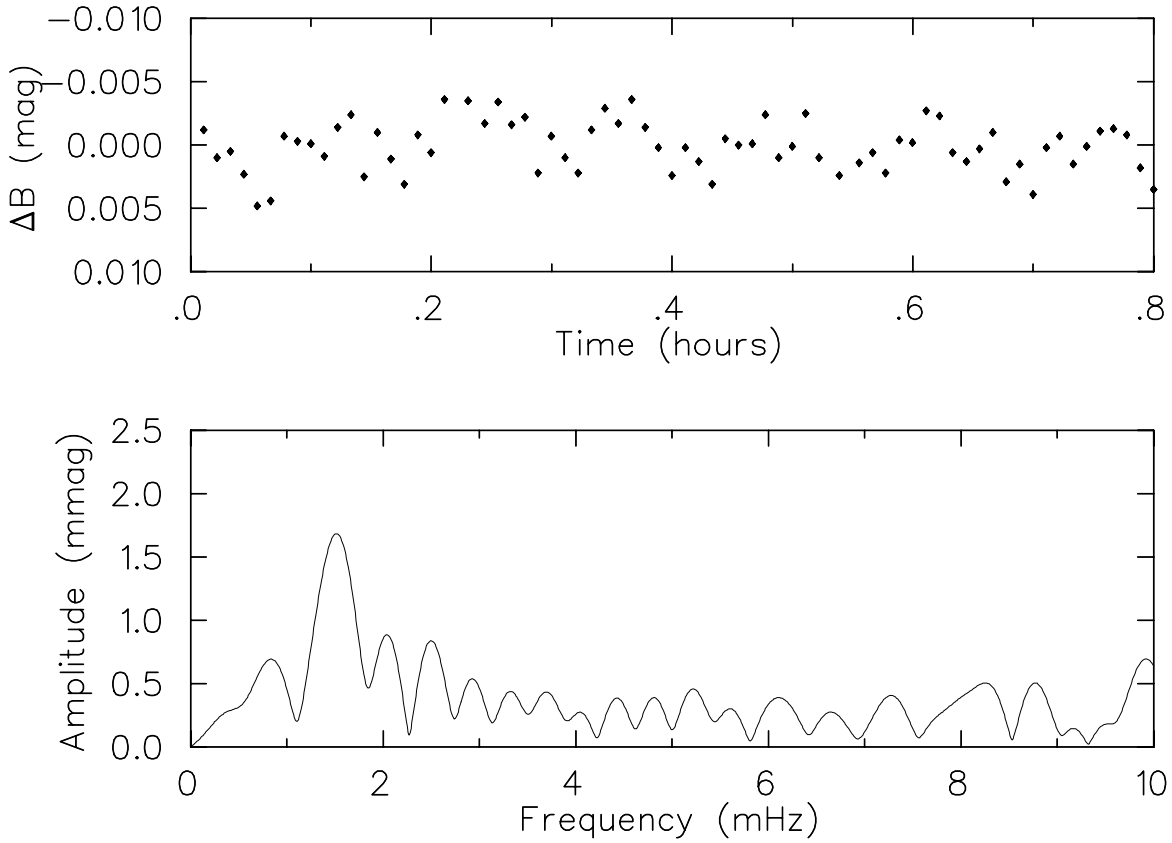

Figure 1.

HD 213637 is classified by Houk & Smith-Moore (1988) as A(p EuSrCr). Martinez (1993) determined its Strömgren indices to be V=9.611, $b-y$ = 0.298, m_1 = 0.206, c_1 = 0.411 and β = 2.670. Our attention was particularly drawn to the calculated metallicity and luminosity indices, δm_1 = −0.035 and δc_1 = −0.031, both of which indicate strong metallicity and line blocking in the v band. As these are characteristics that we associate with the roAp stars, we decided to search for rapid oscillations in HD 213637. Our observations comprised continuous 10-s integrations in Johnson B light acquired with the Radcliffe Peoples Photometer attached to the 0.75-m telescope of the South African Astronomical Observatory at Sutherland.

Rapid oscillations were discovered in HD 213637 on the night of 26/27 July 1997, JD 2450656. Fig. 1 shows the discovery light curve (top) and its amplitude spectrum (bottom). The data shown here have been corrected for coincidence counting losses, sky background and extinction, and were then binned to 40-s integrations. The oscillations, which are barely discernible in the light curve, are more evident in the Fourier representation of the data in the lower panel. The amplitude spectrum peaks strongly at a frequency of 1520±220 μHz, corresponding to a pulsation period of 11 minutes. Subsequent to the discovery of these pulsations a number of additional confirmatory light curves were acquired. Inspection of the available light curves indicates the presence of amplitude modulation, which may be caused by beating among several frequencies and/or non-radial pulsations being seen from variable aspect as the star rotates. Further observations and an analysis of those observations will be presented in a future publication.

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