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**DISCOVERY OF 10.5-MINUTE OSCILLATIONS  
 IN THE Ap SrEu STAR HD 9289**

Martinez (1993) has obtained Strömgren photometry for all of the Ap SrCrEu stars in the first four volumes of the Michigan Spectral Catalogue, along with selected stars classified by Bidelman & MacConnell (1973) north of declination  $-12^\circ$ . Using this photometry we have been conducting a systematic survey for new rapidly oscillating Ap (roAp) stars. In this note we announce the 11th one found as part of the survey, the 26th now known.

Table 1. The 26 rapidly oscillating Ap stars

HD	$\gamma$	$b-\gamma$	$m_1$	$\delta m_1$	$c_1$	$\delta c_1$	$\beta$
6532	8.445	0.088	0.214	-0.014	0.879	-0.051	2.880
9289	9.383	0.138	0.225	-0.018	0.826	-0.012	2.833
12932	10.235	0.179	0.228	-0.024	0.765	-0.035	2.810
19918	9.336	0.169	0.216	-0.010	0.822	-0.058	2.855
24712	6.001	0.191	0.211	-0.023	0.626	-0.074	2.760
42659	6.768	0.124	0.257	-0.050	0.765	-0.076	2.834
60435	8.891	0.136	0.240	-0.034	0.833	-0.047	2.855
80316	7.782	0.118	0.324	-0.118	0.599	-0.283	2.856
83368	6.168	0.159	0.230	-0.024	0.766	-0.062	2.825
84041	9.330	0.177	0.233	-0.026	0.797	-0.061	2.844
101065	7.994	0.431	0.387	-0.204	0.002	-0.370	2.641
119027	10.022	0.257	0.214	-0.034	0.557	-0.076	2.731
128898	3.198	0.152	0.195	0.012	0.760	-0.077	2.831
134214	7.464	0.216	0.223	-0.029	0.620	-0.108	2.774
137949	6.673	0.196	0.311	-0.105	0.580	-0.236	2.818
150562	9.816	0.301	0.212	-0.015	0.659	-0.087	2.783
161459	10.326	0.245	0.246	-0.040	0.679	-0.141	2.820
166473	7.923	0.208	0.321	-0.118	0.514	-0.268	2.801
176232	5.89	0.150	0.208	-0.004	0.829	0.031	2.809
190290	9.912	0.289	0.293	-0.091	0.466	-0.306	2.796
193756	9.195	0.181	0.213	-0.008	0.760	-0.040	2.810
196470	9.721	0.211	0.263	-0.059	0.650	-0.144	2.807
201601	4.68	0.147	0.238	-0.032	0.760	-0.058	2.819
203932	8.820	0.175	0.196	0.004	0.742	-0.020	2.791
217522	7.525	0.289	0.227	-0.056	0.484	-0.015	2.691
218495	9.356	0.114	0.252	-0.049	0.812	-0.098	2.870

HD 9289 was classified by Bidelman & MacConnell (1973) as Ap SrEu. Martinez (1993) measured  $V = 9.383$ ,  $b-y = 0.138$ ,  $m_1 = 0.225$ ,  $c_1 = 0.826$  and  $\beta = 2.833$ . The calculated metallicity and luminosity indices are  $\delta m_1 = -0.018$  and  $\delta c_1 = -0.012$ , both of which indicate strong metallicity and heavy line-blocking in the  $v$  band - characteristics we have come to associate with roAp stars. The dereddened Strömgren indices,  $[m_1] = 0.250$  and  $[c_1] = 0.798$ , lead to  $[\delta m_1] = -0.043$  and  $[\delta c_1] = -0.046$  which even more strongly suggests to us a roAp star. In Table 1 we list the 26 known roAp stars along with their Strömgren indices.

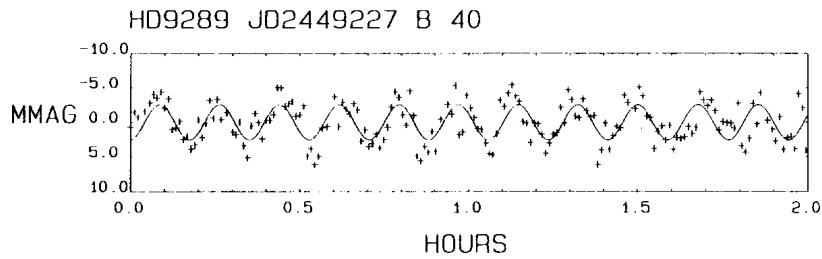


Figure 1

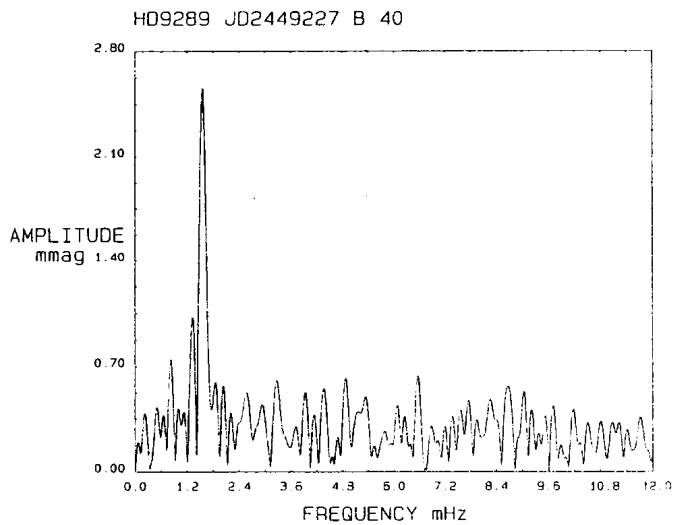


Figure 2

On the night of 27/28 August 1993 we obtained 2 hours of continuous 10-s photometric integrations of HD 9289 through a Johnson B filter using the 1-m telescope of the Sutherland Station of the South African Astronomical Observatory. The observations were corrected for coincidence losses, sky brightness, extinction and reduced to 40-s integrations. Fig. 1 shows the light curve for those two hours and Fig. 2 shows the amplitude spectrum. The 10.5-min oscillations are obvious in both. No comparison star was used, but sky transparency variations, scintillation, and photon statistics produced noise of a maximum amplitude of about 0.7 mmag at the frequencies of interest, as can be seen in the amplitude spectrum.

We have continued to observe this star and, as of this writing, have over 70 hours of observations obtained on 17 nights. The amplitude of the light curve is strongly modulated. The star is multiperiodic and may also show rotational amplitude modulation. We will continue to observe it for the rest of this season, then present a complete frequency analysis. HD 9289 appears to be of considerable asteroseismological interest.

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