

STARS WITH SPECTRA RESEMBLING δ DELPHINI

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Abstract

Stars with δ Delphini type spectra should be monitored photoelectrically for possible δ Scuti type variability. Twenty-four such stars are listed.

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The compilation of new data for the Catalogue of Bright Stars has revealed that 24 of the bright stars have spectra that have been reclassified as δ Del type. These are stars related to the Am types - the so-called metallic-line stars that can be classified A-type on the basis of their hydrogen lines, but F-type on the basis of the metallic lines. Very few, if any, of the Am stars vary. The δ Del stars show marginal Am characteristics and have usually been classified as giant F-types. They show sharp H and K lines of ionized calcium and have unusually strong lines of the rare earth elements. A high percentage of the δ Del type stars vary in brightness (like δ Sct), and it is of interest to evolutionary theory to ascertain if all of them do.

Among the 24 bright stars so classified, half are suspected or confirmed variables. Eight are δ Sct type variables; one, an Algol type eclipsing binary; one a variable of undetermined type (EW Aqr); two only suspected of variability; and twelve for which no variability has yet been reported. Table I lists the 24 stars. The second column gives a V magnitude from a modern photoelectric catalogue, while the last two columns give approximate periods and amplitudes when known. The periods of δ Sct type variables are not necessarily constant.

All of the stars for which no periods are given should be monitored for variability. The eclipsing variable, δ Cap = HR 8322, should also be monitored to ascertain if one of the component stars might not also be a δ Sct type variable. If all of these stars are indeed δ Sct type variables, their amplitudes would be expected to be less than 0^m2V and their periods generally under 0.2 day. They are challenging prospects for AAVSO observers who have photoelectric equipment to monitor stars for low amplitude, short period variability.

TABLE 1. BRIGHT STARS WITH δ DEL TYPE SPECTRA

HR	V	RA (1900)			Dec.		Name	Var	Period (Days)	Amp. (ΔV)
		h	m	s	o	'				
421	5 ^m 66	1	21	56	-13	35	47 Cet	S 100112		
1706	5.02	5	08	54	+32	34	14 Aur	KW Aur	0.088	0 ^m 16
1974	6.58	5	38	48	+40	28	+40 ^o 1403			
2094	5.29	5	52	38	-52	39	-52 ^o 805			
2100	5.90	5	53	13	+1	50	59 Ori	V1004 Ori	0.054	0.01
2255	6.75	6	12	53	-10	41	6 Mon			
2557	6.13	6	48	02	+44	02	+44 ^o 1551		4 hrs?	0.02
3185	2.81	8	03	17	-24	01	ρ Pup	ρ Pup	0.141	0.10
3228	6.47	8	08	28	+17	58	+18 ^o 1882			
3265	6.32	8	14	28	-9	52	-9 ^o 2471	HQ Hya	0.097	0.04
3649	6.35	9	06	40	+5	53	+6 ^o 2120			
4760	5.35	12	25	17	+58	57	74 UMa			
5017	4.73	13	13	04	+41	06	20 CVn	AO CVn	0.122	0.05
6492	4.29	17	20	58	-29	47	45 Oph			
6561	3.54	17	31	52	-15	20	ξ Ser			
7020	4.72	18	36	48	-9	09	δ Sct	δ Sct	0.194	0.18
7411	5.75	19	25	00	-53	24	-53 ^o 9585			
7859	4.88	20	29	12	-61	52	ρ Pav	S 101998		
7928	4.43	20	38	47	+14	43	δ Del	δ Del	0.136	0.10
7984	5.04	20	46	32	+43	41	56 Cyg			
8102	6.48	21	06	10	-14	53	-15 ^o 5908	EW Aqr		0.02
8322	2.87	21	41	31	-16	35	δ Cap	δ Cap	1.023	0.02
8787	4.28	23	01	15	-44	04	θ Gru			
8877	6.05	23	15	13	-50	51	-50 ^o 13948			