POPULATION AND EVOLUTION OF PULSATING A-F STARS

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Pulsating A-F variables include all the stellar types listed in teh Table, as well as the pulsating white dwarfs. Stars near the zero-age-main-sequence have faster rotation velocity, which slows as expected with age (Villata 1992) and a smaller amplitude of light variation, so we suggest that rotation velocity be considered in Population classifications. Also, in the Galaxy, the galactic rotation constant A is related to stellar age T by: $A(\mathrm{kms^{-1}kpc^{-1}}) = (-2.4 \pm 0.8)T(10^9\mathrm{yr}) + (32 \pm 2)$ (Kharchenko 1992). The linear rotation velocity is also a function of the Z coordinate of the object inside the Galaxy: the mean Z-gradient is -10$\mathrm{kms^{-1}kpc^{-1}}$ (Malakhova & Petrovskaya, 1992). Thus the population is strongly correlated with the rotation velocity and the evolutionary age.

type of variables	$< V sini >$	percent	age (yr)	$\Delta V(mag)$	Pop
normal A stars	118 ± 70	53	10^7	0	I
δ Scuti stars	84 ± 48	25 - 30	10^7-10^9	$\leq$ 0.3	I
Am stars	44 ± 28	11	10^9	$\leq$0.01	I
Ap stars	42 ± 37	6	10^9	$\leq$0.1	I
δ Del	30 ± 20	3	10^9	$\leq$0.3	I
SX Phe	$\leq$ 20	$\leq$ 0.1	$\geq 10^9$	$\geq$0.3	II
δ Cepheid	17 ± 5	$\leq$ 0.1	$\geq 10^7$	$\geq$0.1	I
W Vir	$\leq$ 20	$\leq$ 0.1	$\geq 10^8$	$\geq$0.1	II
RR Lyr		$\leq$ 0.1	$\geq 10^9$	$\geq$0.1	II

References

Villata M., 1992, MNRAS 258, 107
Kharchenko N.V., 1992, Kinematics Phys. Celest. Bodies, 8, 61
Malakhova Yu. N. and Petrovskaya I.V., 1992, Kinematics Phys. Celest. Bodies, 8, 90