# SEPARATION OF HALO AND THICK DISC STARS IN TWO CATALOGS

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Recent studies (Gilmore and Reid 1983, Gilmore and Wyse 1985, 1986) concerning the halo stars have showed that a new structure, the thick disc, must be retained to describe the Galaxy. We suppose here that this structure exists and we deduce some results concerning the difference between the halo stars and the thick disc stars. The first assumption is that the inclination of the orbits of the halo stars must be randomly distributed. This must be true if the halo has been formed from a merger or from a non-rotating protogalactic cloud. Using the catalog of Carney et al.1990 (804 stars selected for their high velocities ) and Norris' one 1986 (386 stars selected for their poor metallicity [Fe/H] < 0.6 ), we calculate the orbital inclinations of all the stars and we display them on an histogram (fig.1 ). The two samples (built on different criterions) show a flat distribution from 180° to 65° (fig. 1-a). From 65° to 0° there is clearly a mixing of halo stars and thick disc stars. If, as we assume, the halo stars have a flat distribution from 180° to 0°, we can separate the two population using another kinematical parameter : the eccentricity. We calculate it by using a logarithmic potential that gives a flat rotation curve. Now if we keep all the stars with an inclination between 180° and 65° and the stars with an inclination between 65° and 0° but with an eccentricity $e \geq 0.6$, we obtain a flat distribution of the inclination between 180° to 0° (fig. 1-b). In that case all these stars may be considered as halo stars. Plotting [Fe/H] against orbital inclination we obtain a gaussian symetrical distribution centered on -1.7. It seems that the apocenters of the selected halo stars reach a limit for 45 kpc.

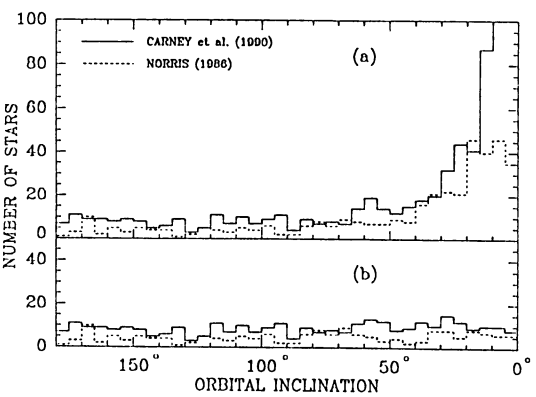


Fig. 1a-Histogram of the orbital inclinations for all stars. 1b-Same histogram for halo stars.

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