AGE VARIATIONS OF THE MEAN ANGULAR MOMENTUM

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The mean angular momentum of stars in the solar vicinity with respect to the galactic center shows a significant change as a function of age. In figure 1a the variation is given for B stars using the Strömgren index [u-b] as abscissa since it depends nearly linear on the logarithm of the age (i.e. the interval $0^m.6 < [u-b] < 1^m.4$ corresponds approximately to $7.7 < \log(\text{age}) < 8.2$). This can be explained by a change in the birthrate as a function of place, velocity and time and/or an azimuthal variation in the galactic potential. To investigate if the presence of a density wave potential could cause the observed distribution a number of models were made. In these models stars were formed close to the spiral arms according to the density wave theory and traced back to the present epoch. The mean angular momentum of stars being within 300 pc from the sun is shown in figure 1b where the amplitude of the wave was 5 percent, the inclination angle $-7^\circ.2$ and one arm coincided with the Sagittarius arm. For a pattern speed $\Omega_p = 13.5$ km/s/kpc the observed values could be reproduced quite well which indicats the existence of a density wave in our Galaxy.

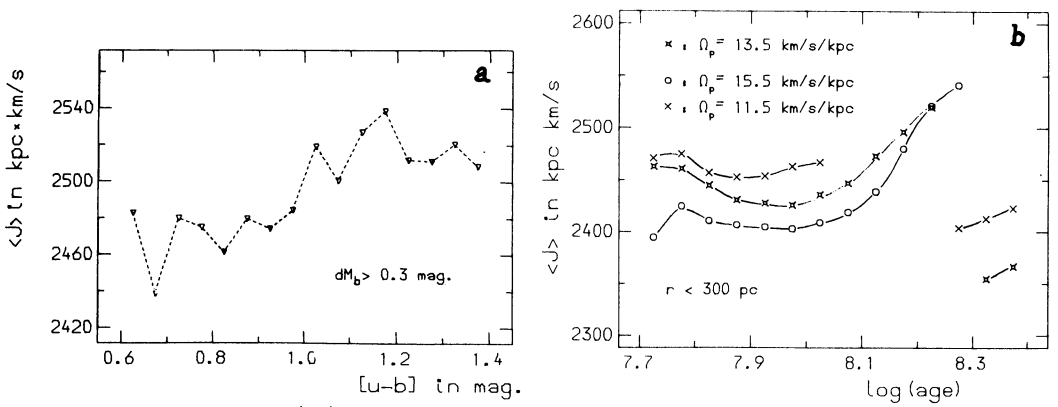

Figure 1. Observed (a) and theoretical (b) mean angular momentum <J>.

W. B. Burton (ed.), The Large-Scale Characteristics of the Galaxy, 238.