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**DISTRIBUTION  
OF THE ANGULAR  
MOMENTUM  
IN THE GALAXY AND M31**

**TARTU 1977**

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Distribution of the Angular Momentum  
in the Galaxy and M31

It is usually accepted that the angular momentum distribution in galaxies is identical with the corresponding distribution of an uniformly rotating homogeneous spheroid (Crampin and Hoyle, 1964). Einasto (1974a) demonstrated that in these determinations the mass of spheroidal populations of galaxies has been underestimated. As new mass distribution models of our Galaxy (Einasto, Jöeveer and Kaasik 1976) and of the Andromeda galaxy M31 (Einasto et al. 1977) have recently become available, a rediscussion of the angular momentum distribution is possible.

The angular momentum distribution has been calculated separately for the disk and halo populations. We adopted the rotation velocity  $V_0 = 0.9 V$  for the disk and the rotation velocity  $V_0 = 0.4 V$  for the halo ( $V$  is the circular velocity) in accordance with recent summary of kinematical data (Einasto 1974b). The disk was approximated with a ring, for details see corresponding papers. The distribution of angular momentum of the Galaxy and M31 is shown in Figs. 1 and 2 respectively.

The distribution of angular momentum in the disk and the halo is different. Since interior of the disk is empty, the respective distribution has a minimum at the galactic center. At larger radii the distribution is well approximated with the corresponding distribution of an uniformly rotating homogeneous spheroid. Thus we may expect

that the galactic disk has been formed from an homogeneous spheroid without a momentum redistribution. As the galactic halo has a large excess of matter with small angular momentum, the formation of the halo had to proceed a path completely unlike that of along the formation of the disk. This may be caused either by different initial data or by subsequent dynamical evolution.

J. Einasto and P. Traut

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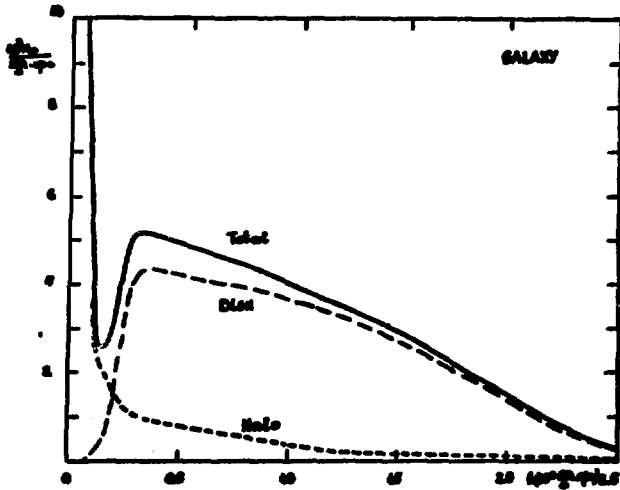


Fig. 1

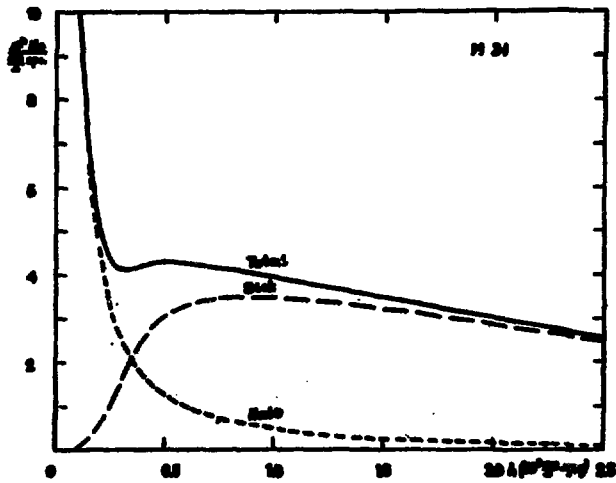


Fig. 2



**АКАДЕМИИ НАУК ЭСТОНИИ ССР.**

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