

JOINT COMMISSION MEETING ON  
THE LOCAL SUPERCLUSTER AND ITS ENVIRONMENT

(Commissions 28 and 47)

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## MORPHOLOGY OF THE LOCAL SUPERCLUSTER

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The intent of this brief note is to summarize some of the fundamental properties of the region, rich in galaxies, in which we live. A more complete account can be found in The Astrophysical Journal, 257, p. 389, 1982.

1. The Local Supercluster contains three components: the Virgo Cluster core (containing 20% of the luminous galaxies), a flat disk (containing 40% of the luminous galaxies), and a "halo" consisting of a small number of discrete clouds (containing 40% of the luminous galaxies).
2. The disk component is irregular in shape and can be separated into two principal clouds of galaxies. Overall, this component has the axial ratios 6:3:1. The global rms scale height along the short axis is  $\pm 1.1 h_{100}^{-1}$  Mpc.
3. The thinness of the disk suggests that either the supercluster is just collapsing today or random motions perpendicular to the disk are less than  $100 \text{ km s}^{-1}$ .
4. Line-of-sight random motions for galaxies within  $4 h_{100}^{-1}$  Mpc of our position (all in the supercluster disk) are less than  $100 \text{ km s}^{-1}$ , and probably closer to  $50 \text{ km s}^{-1}$ .
5. Our Local Group is on the edge of a hole devoid of galaxies which has dimensions comparable with the dimensions of the Local Supercluster.
6. Almost all galaxies in the halo component lie in a small number of clouds: 56% lie in 2 clouds, 86% lie in 5 clouds, 94% lie in 7 clouds. Triaxial spheroids with axes defined by the rms separations of galaxies in these clouds contain only 4% of the available volume off the plane of the supercluster.

7. The major halo clouds are prolate, elongated 2:1, and point toward the Virgo Cluster. These shapes must be attributed to tidal distention due to the mass of the central cluster. The existence of a bound group in one of these clouds is used to set an upper limit to the epoch of cloud formation at a redshift of  $z = 8$ .
8. There is a minor feature off the plane of the supercluster but parallel to it. The plane in our vicinity and this secondary feature appear to be streaming toward each other.