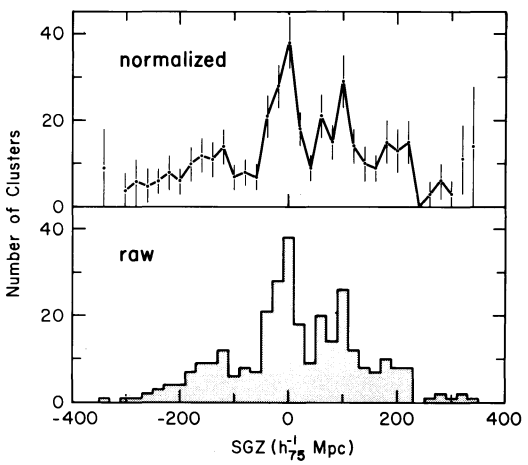
CLUSTERING ON A SCALE OF 10^{18} $M_\odot$

R. Brent Tully
Institute for Astronomy, University of Hawaii

This discussion represents an update of an article submitted for publication in The Astrophysical Journal that describes the concentration of Abell clusters to the supergalactic equator. Since that article was written, our sample of Abell-class clusters has been augmented by 44% to now total 309 clusters within a redshift of 0.1c. The distribution of those clusters with distance from the supergalatic equator is illustrated in the accompanying figure. The normalized histogram includes an attempt to correct for the diminished unobscured area in planes off the supergalactic equator. Within 4 bins on the equator (i.e., within $80/h_{75}$ Mpc) there are 105 clusters, rather than the 48 clusters that would be expected with a random distribution. The 57 excess clusters represents a 4.6 σ signal.

The bias toward greater completion locally can be crudely counteracted by the rejection of everything within $100/h_{75}$ Mpc radius. There are 22 nearby clusters that all contribute to the central signal. Without these clusters, there is still a significant 3.0 σ signal on the supergalactic equator.



It is concluded that 10^2 Abell-class clusters participate in superclustering on a very large scale. These clusters are contained within a region with a long dimension of about $600/h_{75}$ Mpc and a short dimension of less than $100/h_{75}$ Mpc. There is a coincidence between the plane of this structure and the plane defined by nearby galaxies that lead to the definition of the supergalactic coordinate system.

J. Kormendy and G. R. Knapp (eds.), Dark Matter in the Universe, 117.