

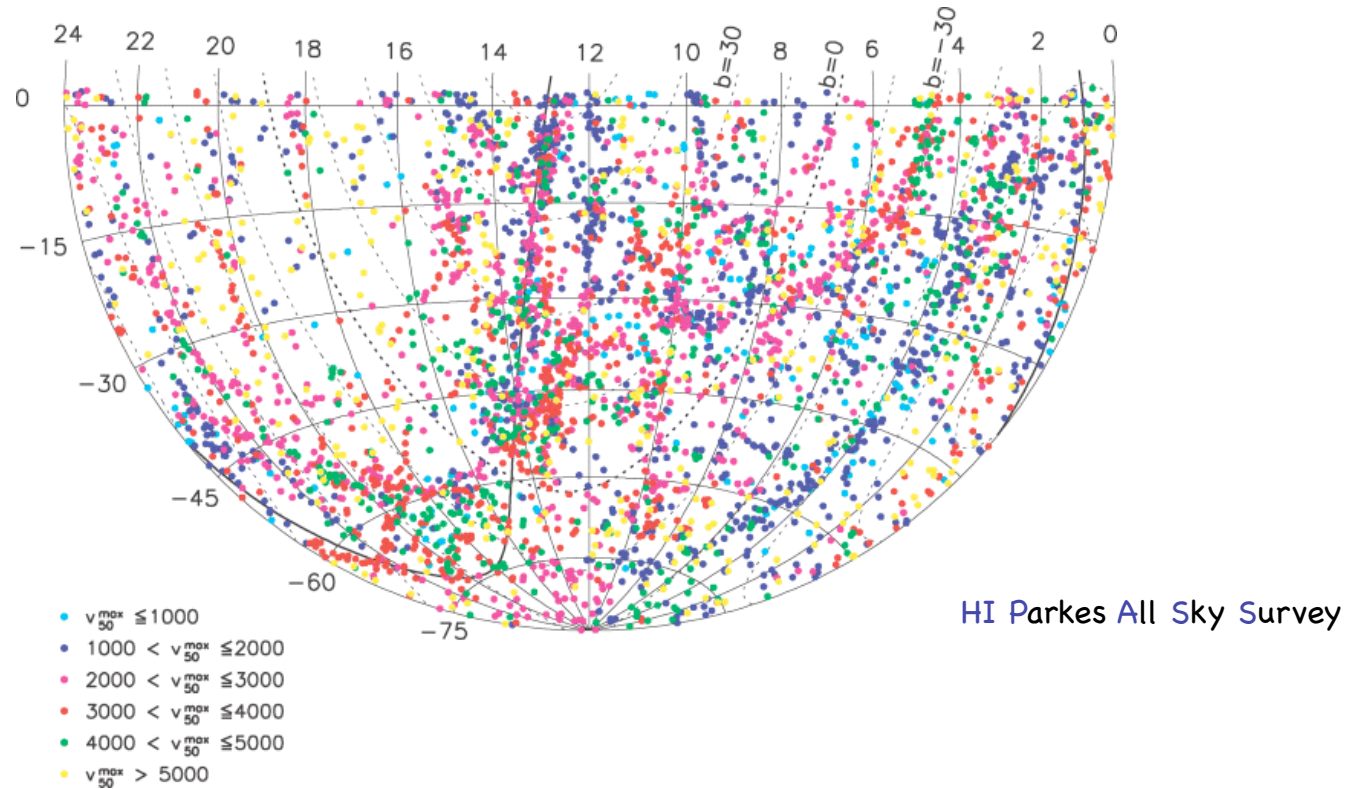


The Local Void

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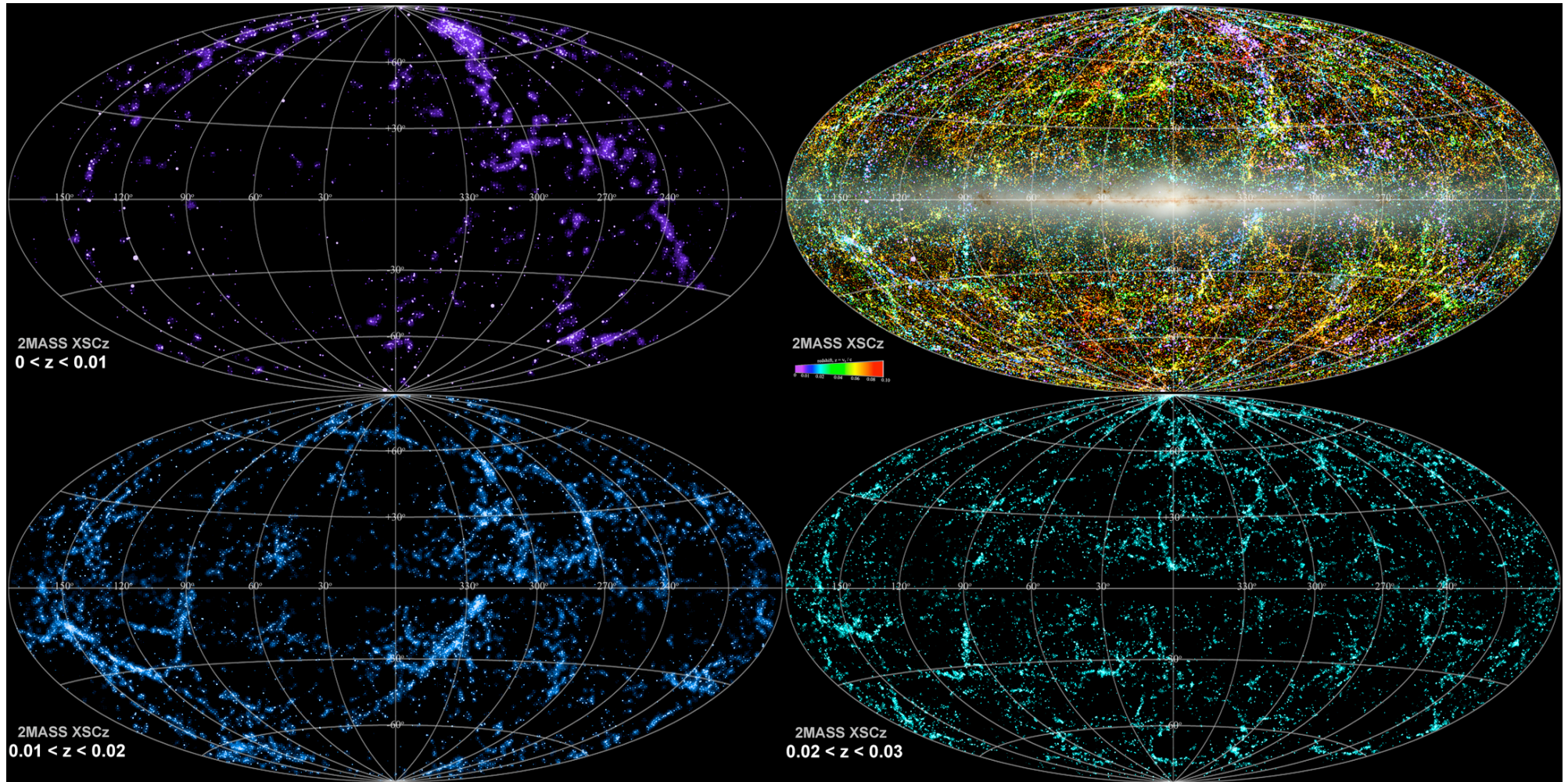
The Local Void

- a void extending 60 Mpc begins at the edge of the Local Group

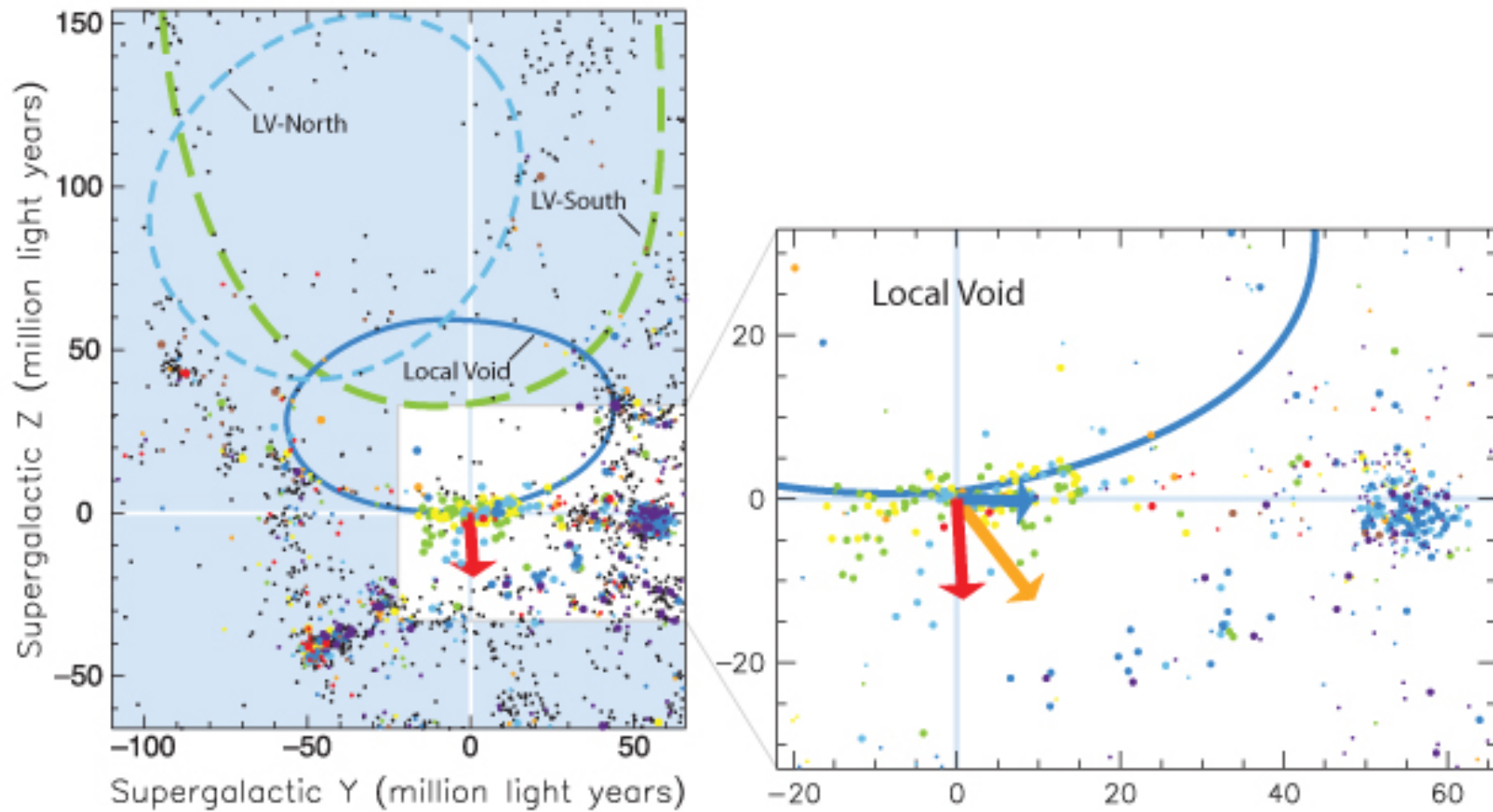


Time Allocation Committees could have inferred the existence of the Local Void

Tom Jarrett's 2MASS Extended Source Catalog



the local volume



Mapping the local volume:
hundreds of 5% distances within
6 Mpc

[Extragalactic Distance Database](http://edd.ifa.hawaii.edu)

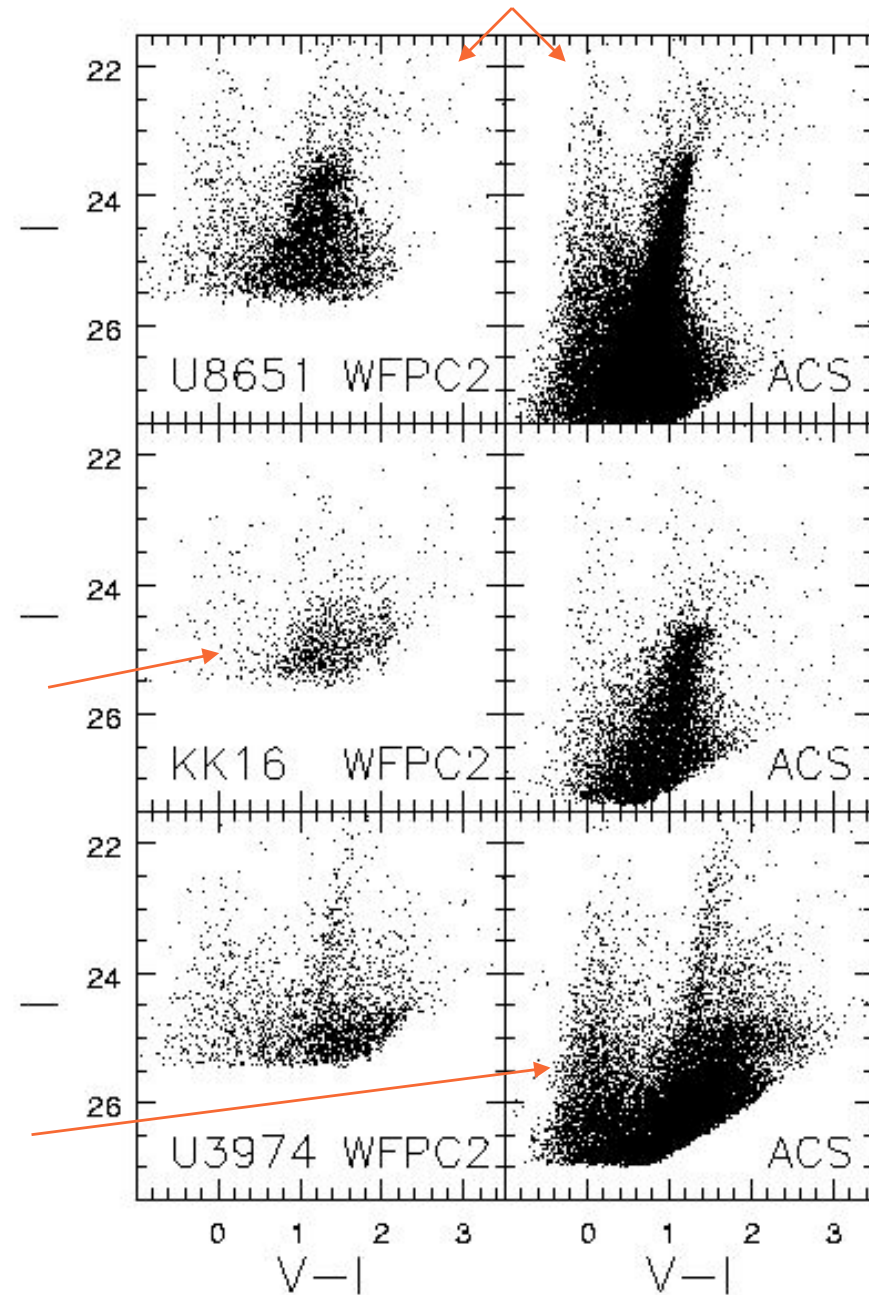
<http://edd.ifa.hawaii.edu>

select CMDs/TRGB catalog

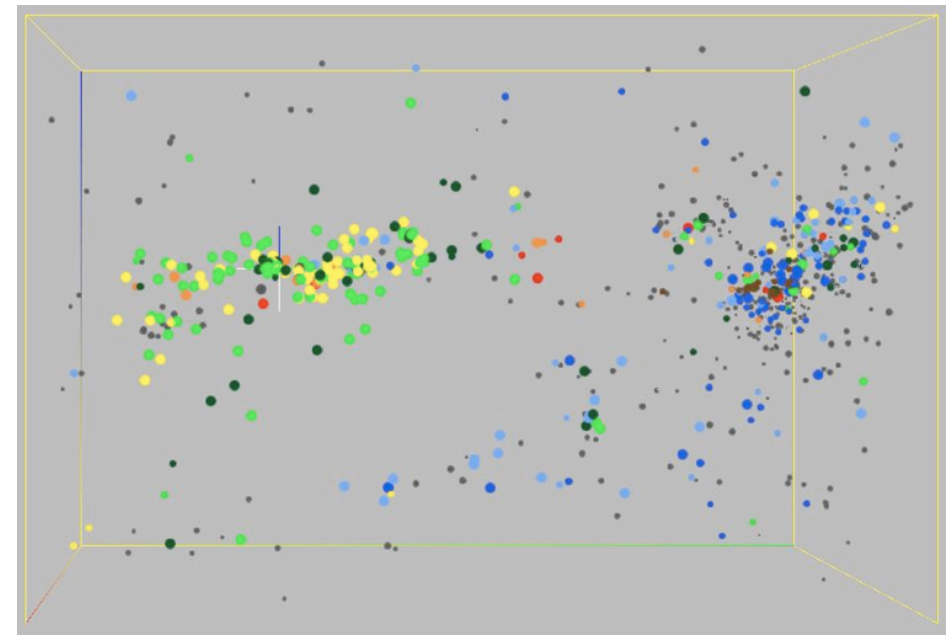
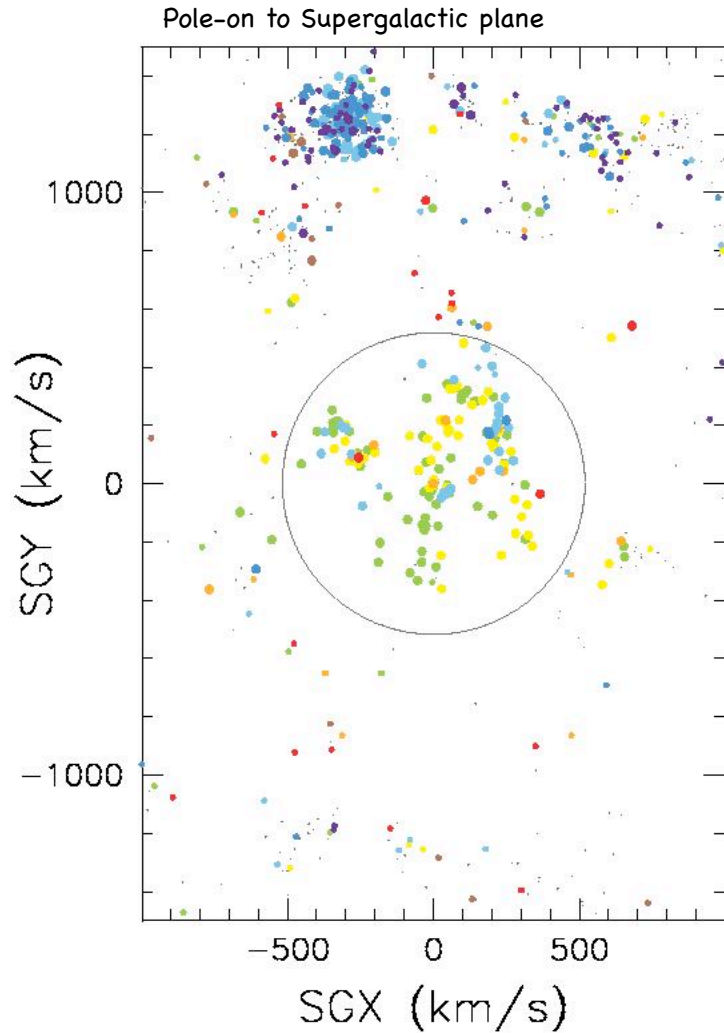
marginal at 5 Mpc

OK at 8 Mpc

good at 3 Mpc



green/yellow $V_{pec} \sim 0$
red $V_{pec} > +100$
blue $V_{pec} < -100$



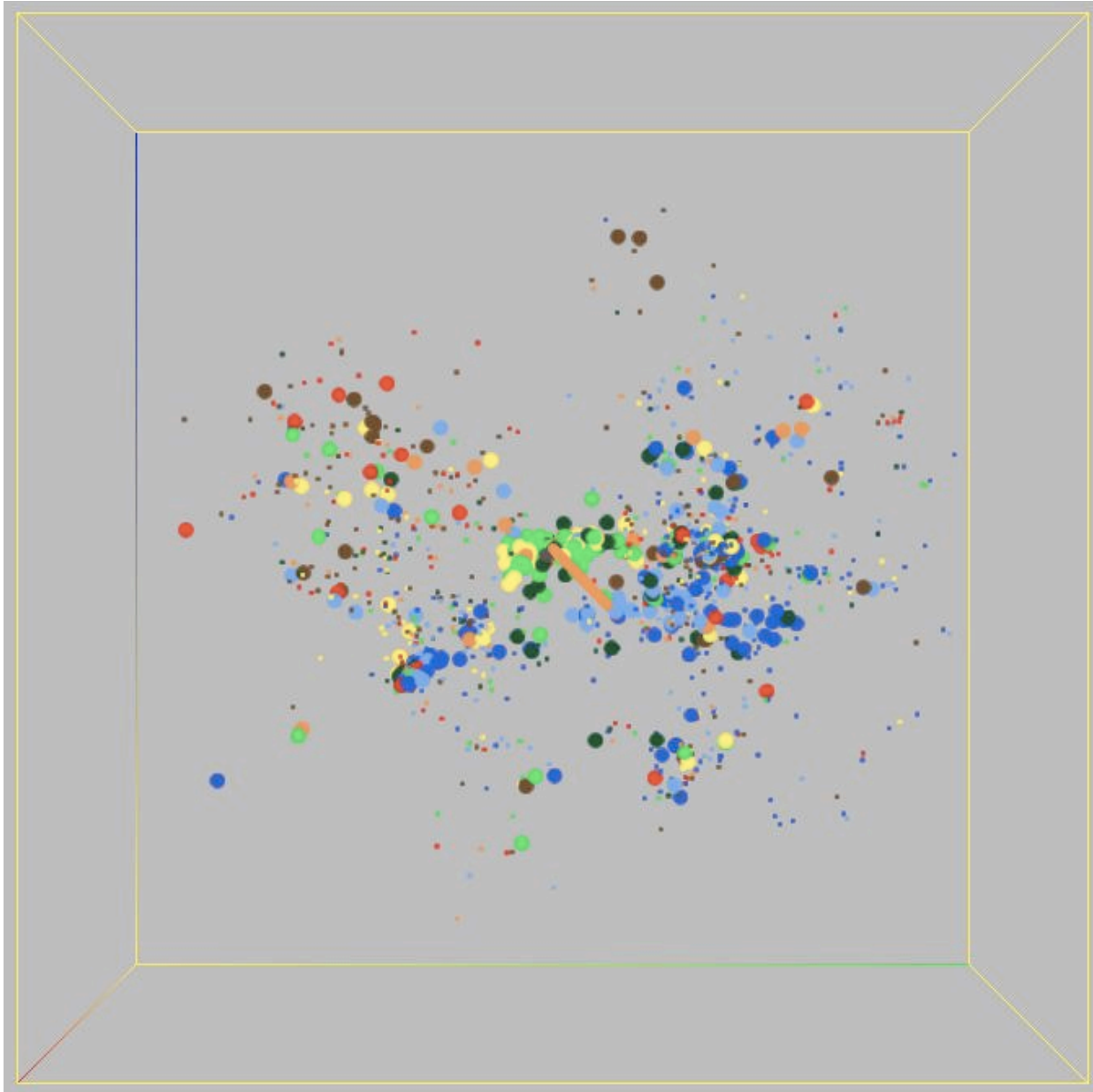
Edge-on to Supergalactic plane

co-moving motion of the Local Group w.r.t. 159 galaxies
at $1.1 < d < 7$ Mpc is 9 km/s **negligible!!**

velocity dispersion about the local expansion of groups and
galaxies outside of groups is ~ 40 km/s within the Local Sheet
(Karachentsev et al. 2003, AA, 398, 479) **cold flow!!**

We are traveling with the Local Sheet as a unit
The Local Sheet is a wall bounding the Local Void

Where is the Local Sheet going?



Orange vector shows our motion w.r.t. 1800 galaxies with distance measurements within 3,000 km/s

vector decomposition

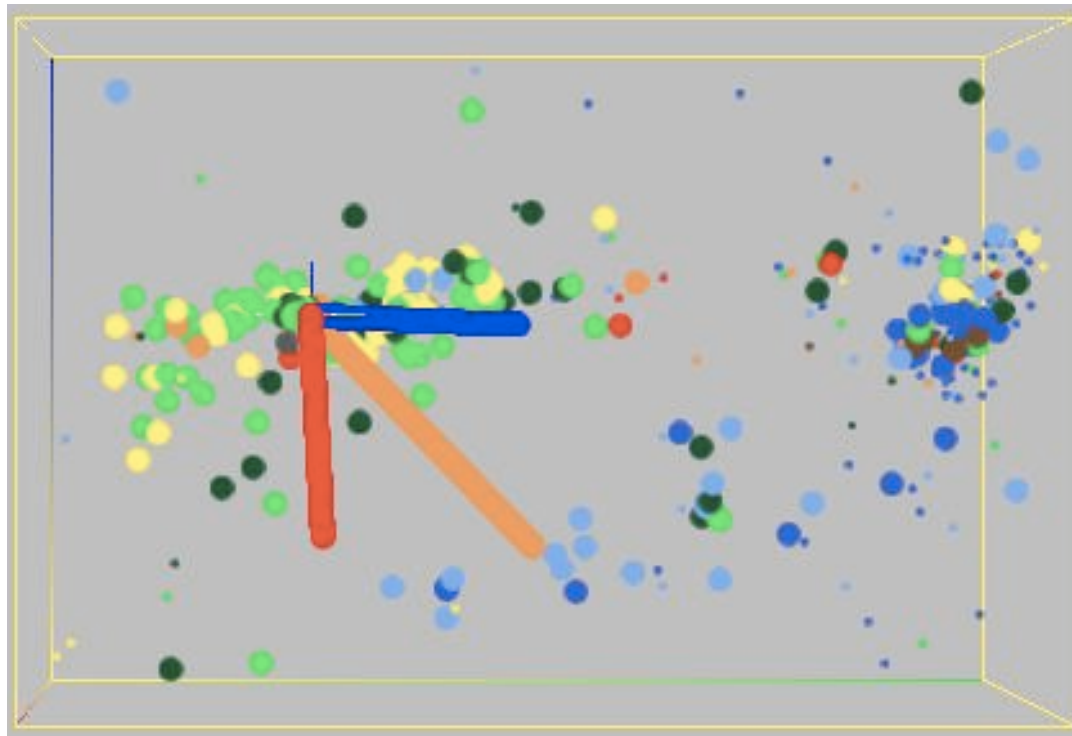
Assume component toward Virgo Cluster:

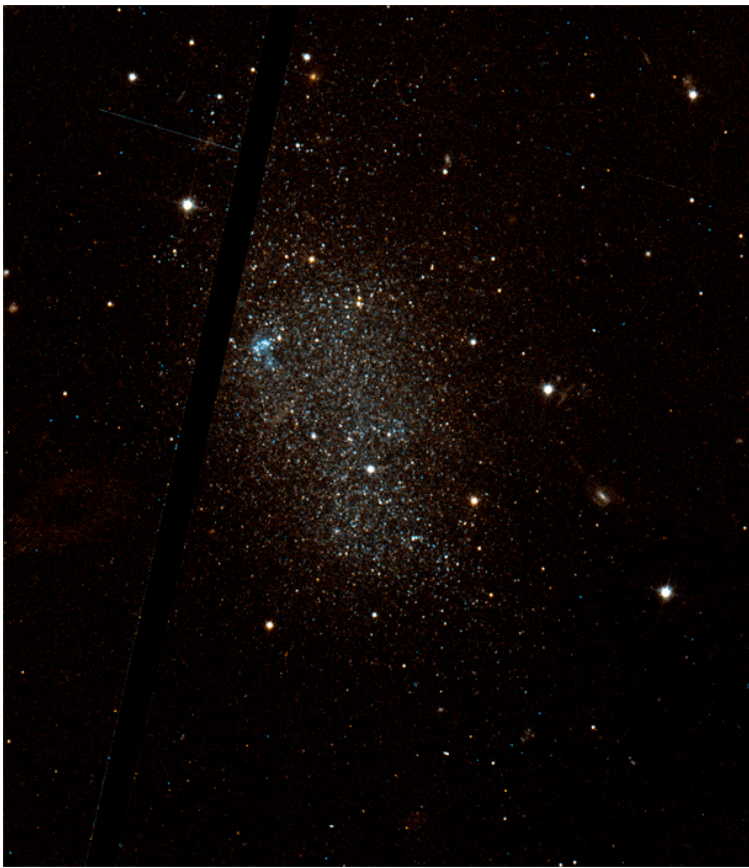
$$185 \text{ km/s} \Rightarrow \ell = 283.8 \quad \text{sgl} = 102.9$$
$$\ell = 74.5 \quad \text{sgb} = -2.4$$

Subtract from 323 km/s Local Supercluster vector:

$$259 \text{ km/s} \Rightarrow \ell = 210 \quad \text{sgl} = 11$$
$$\ell = -2 \quad \text{sgb} = -72$$

\Rightarrow evacuation of Local Void

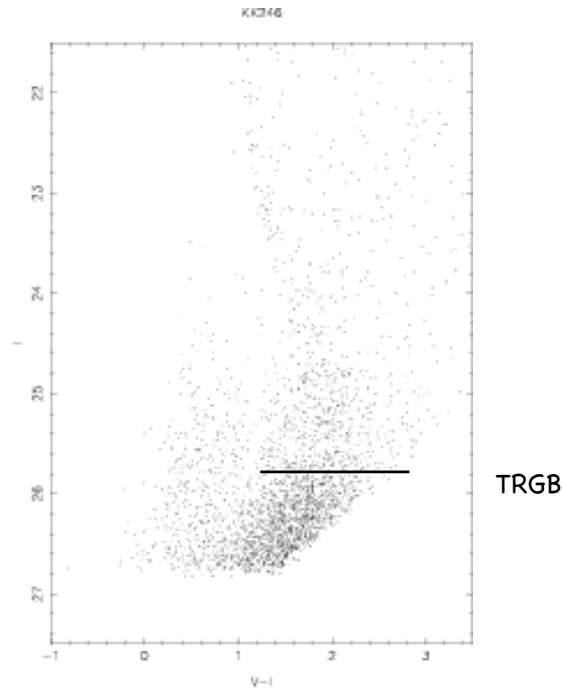




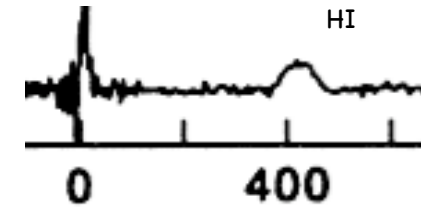
$M_B = -14$

The lonely dwarf galaxy ESO461-36 = KK246 at 6.4 Mpc within the Local Void has a peculiar velocity toward us of -30 km/s

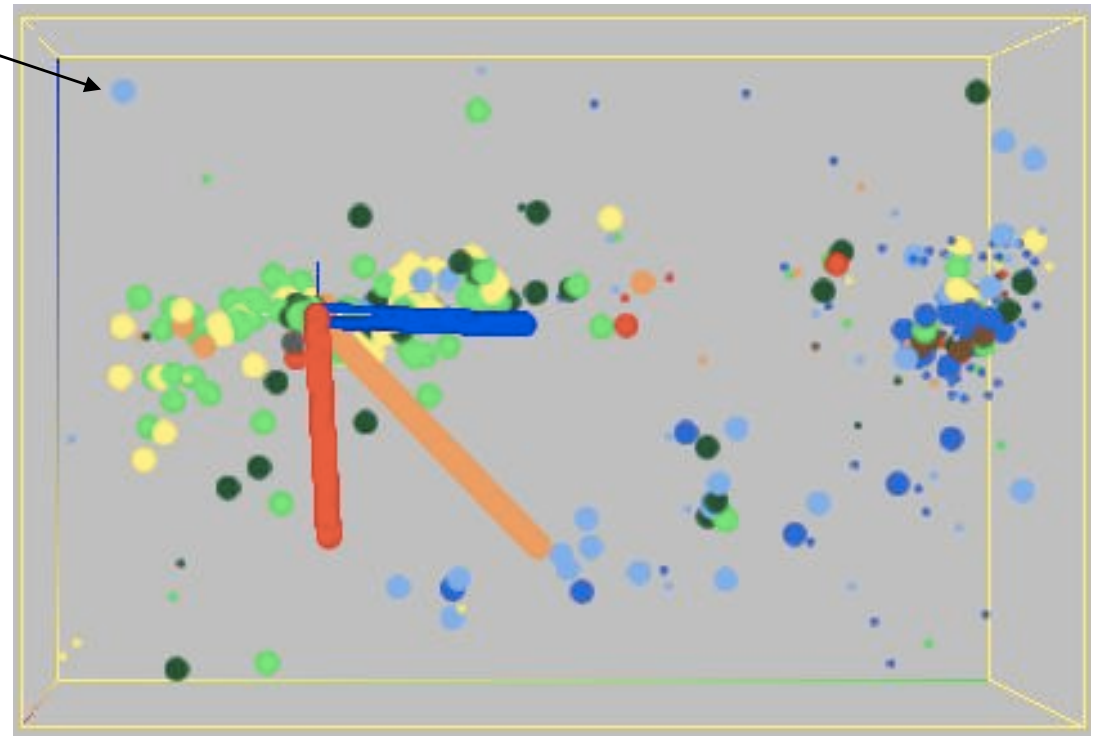
Our peculiar motion in the Local Supercluster of 323 km/s is almost in the same direction, so the peculiar motion out of the void of ESO461-36 = KK246 is at least 350 km/s with respect to the Local Supercluster



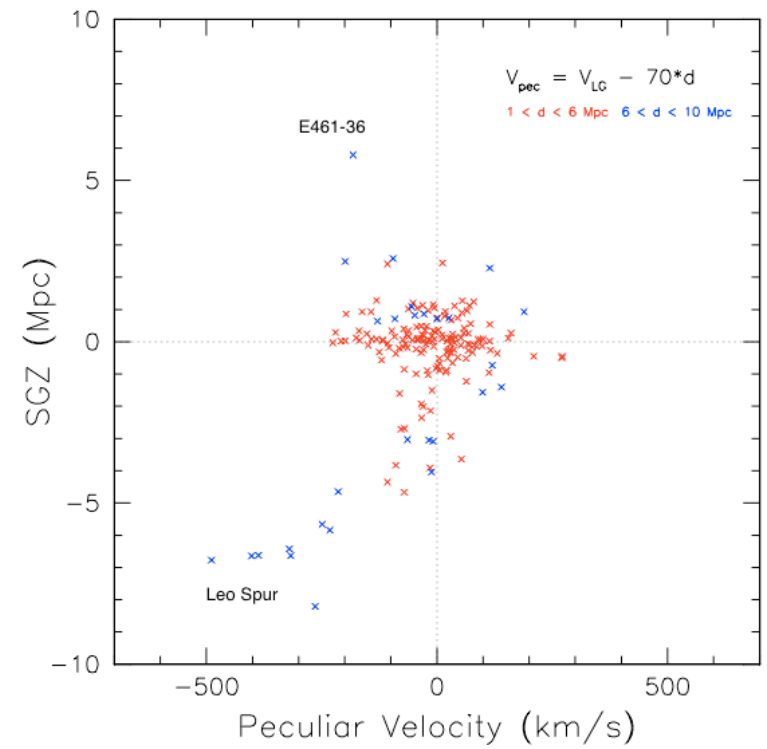
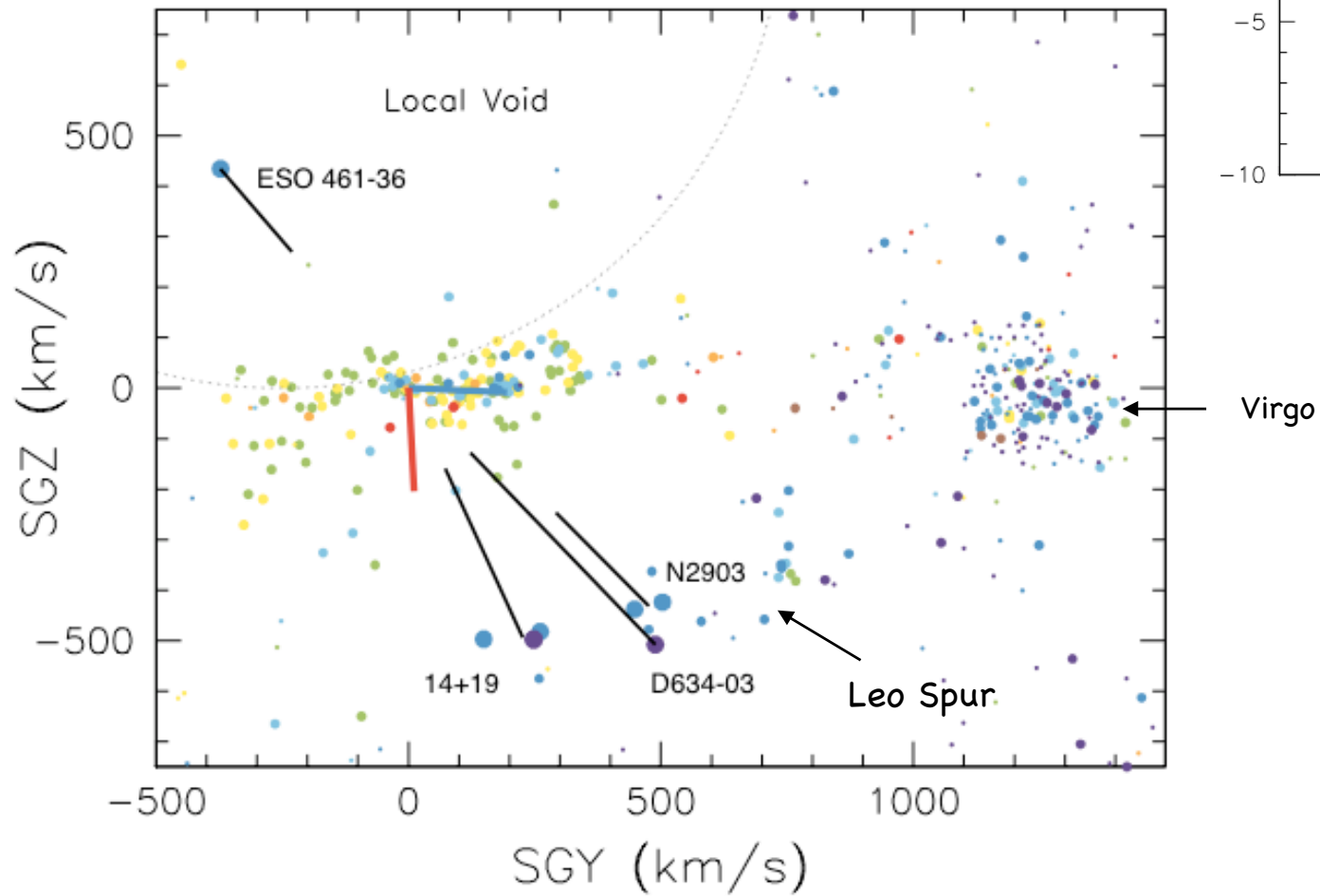
A galaxy in the void



KK246



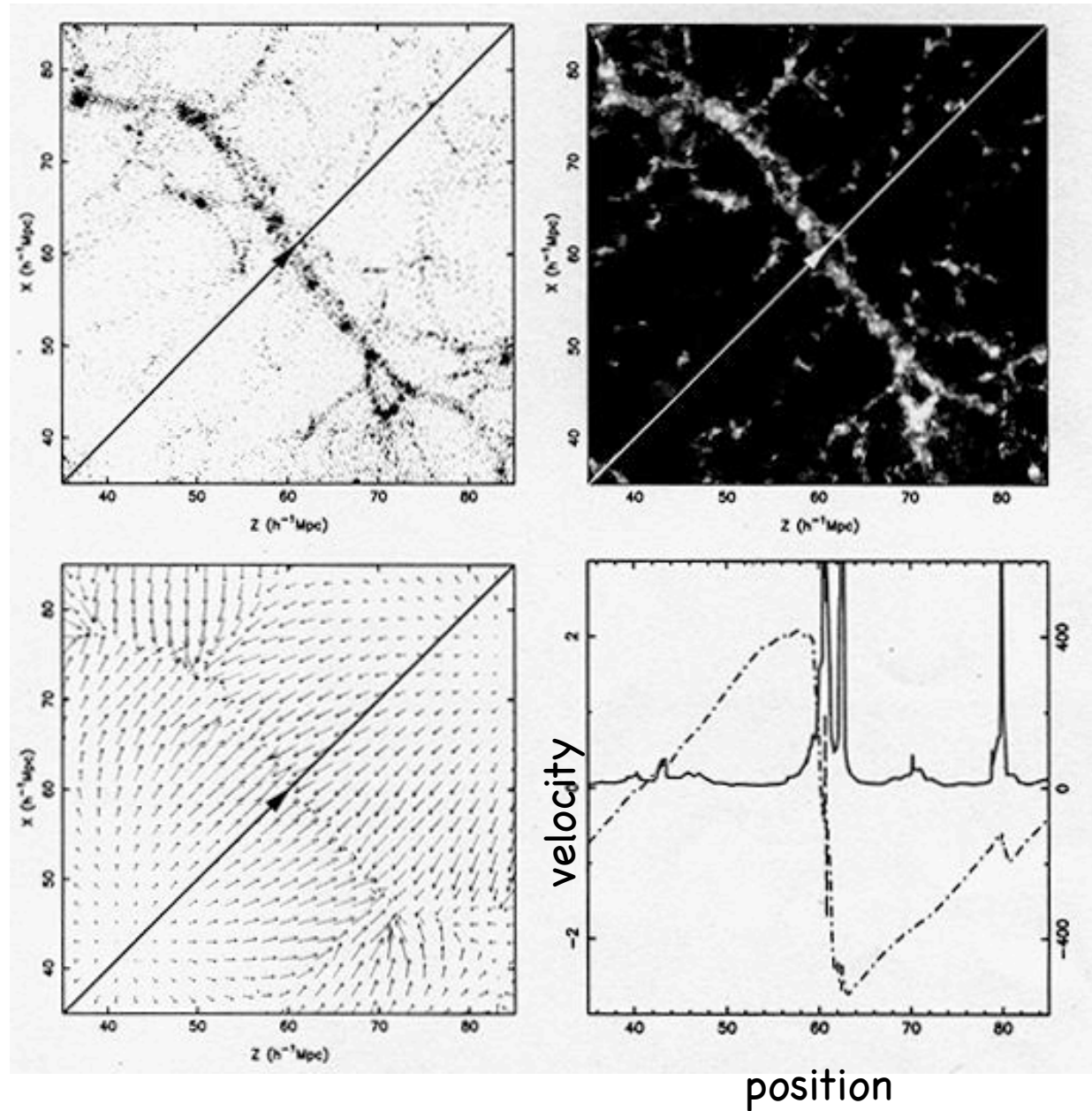
Bulk Peculiar Velocities



Voids push!

In the currently favored cosmology model, empty regions expand at 16 km/s/Mpc.

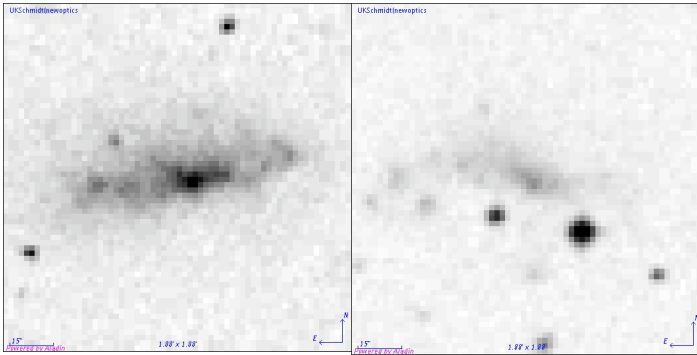
To explain an evacuation motion of 260 km/s, the Local Void must be at least 45 Mpc across and be very empty.



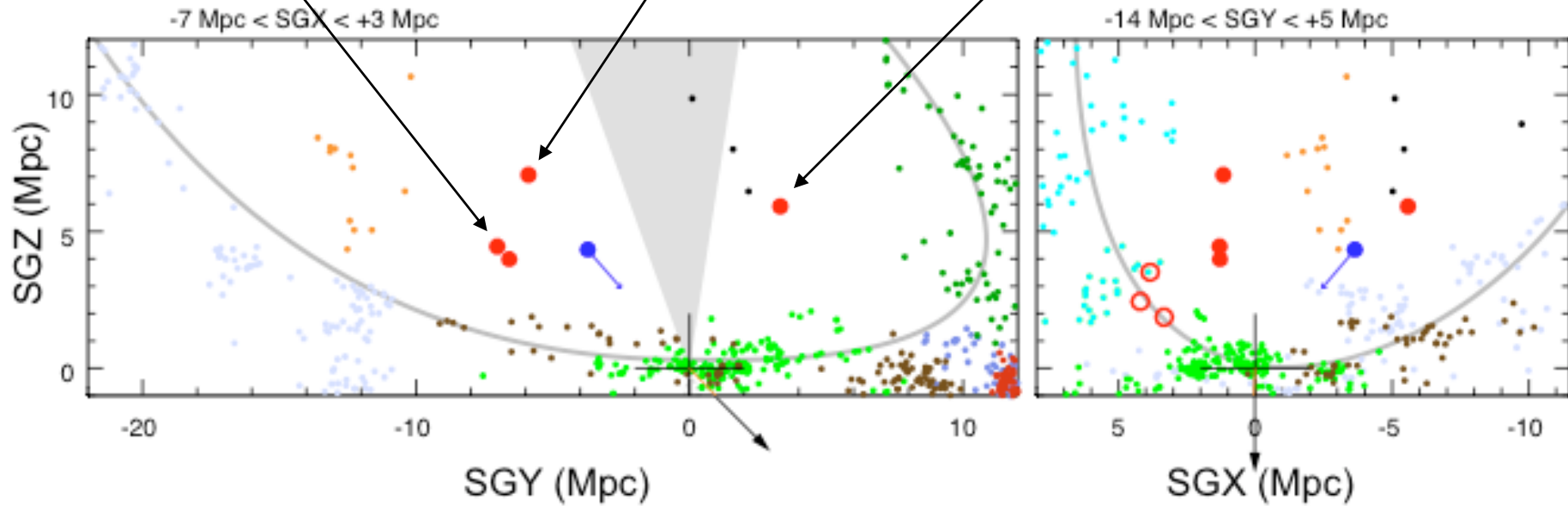
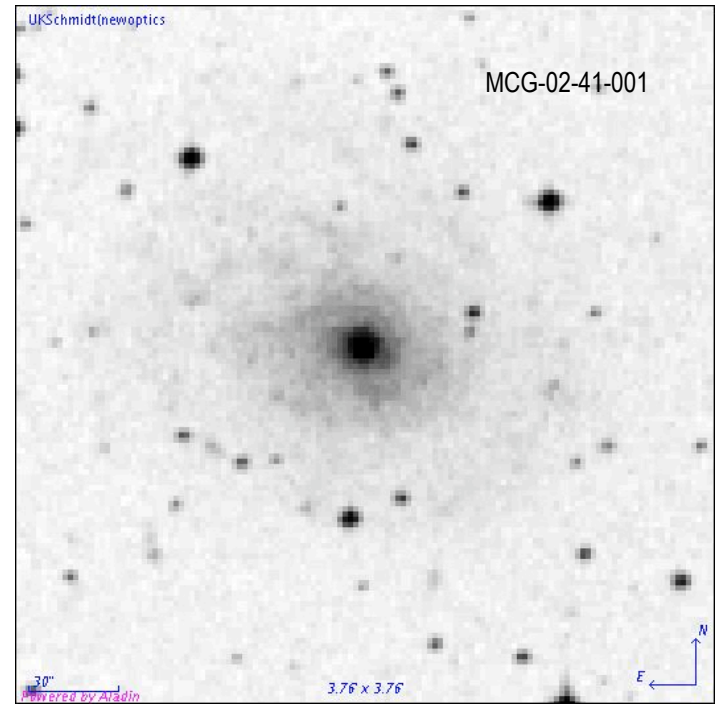
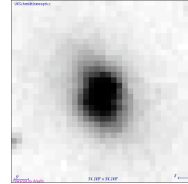
Other galaxies in the Local Void

MCG-01-57-015

UGCA 433 = DDO 215



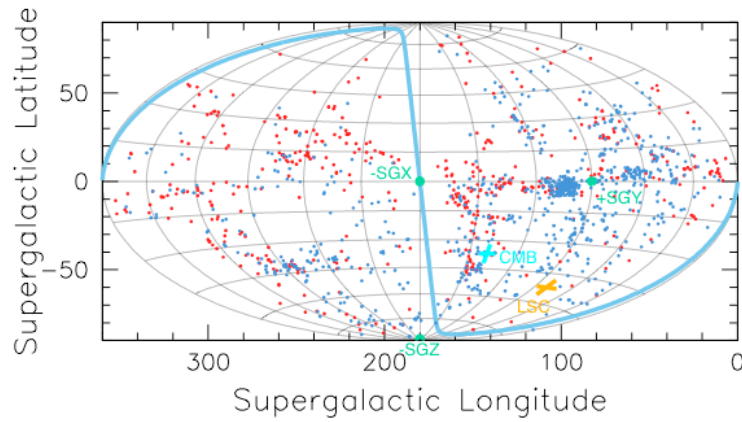
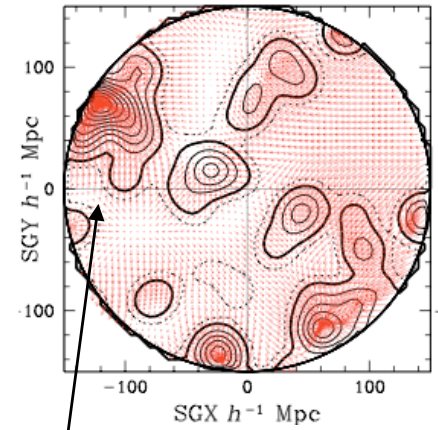
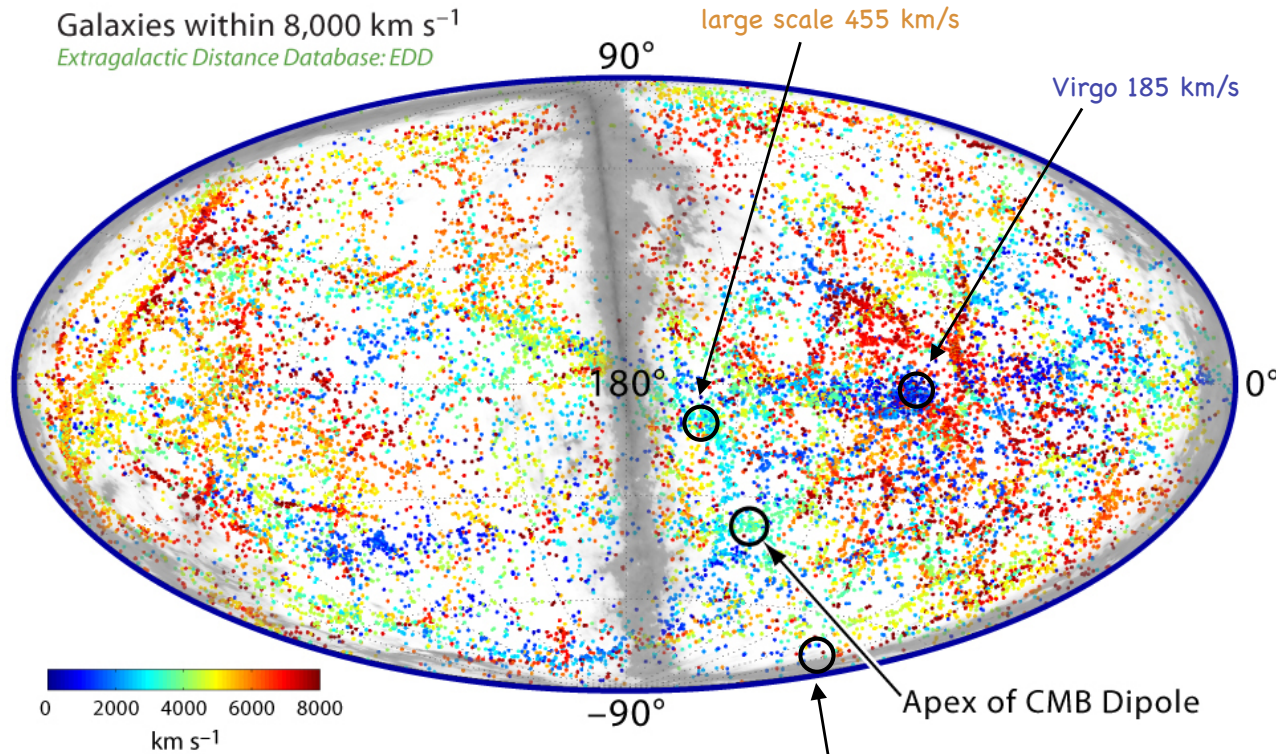
NGC 7077 (BCD)



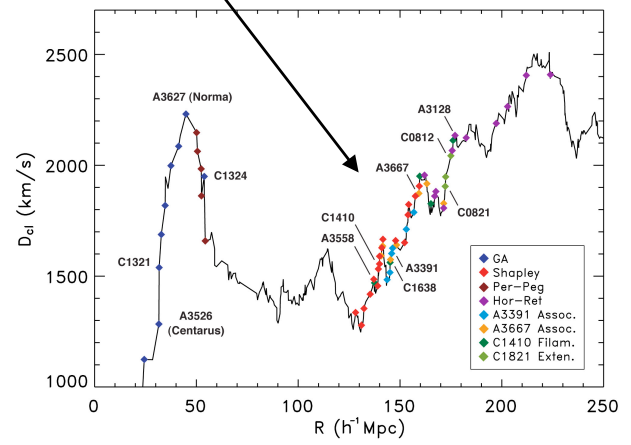
(again)

Where is the Local Sheet going?

Galaxies within $8,000 \text{ km s}^{-1}$
Extragalactic Distance Database: EDD



attractors on large scales



Kocevski & Ebeling 2006, ApJ, 645, 1043