

The figures in this article are frame extracts from an accompanying video. The video runs 7 minutes and a soundtrack monolog provides a description.

Transcript of the dialog:

00:08 Let's embark on the discovery of our home supercluster: "Laniakea" All coloured dots in this scene are galaxies belonging to this large structure, as seen from earth. ... We live in a beautiful large blue spiral galaxy ... just one of many in this small universe volume of size 32,000 km/s on a side.

00:35 Each black dot is a galaxy with a measured redshift in the 2MASS Extended Source Catalog. The flux limited selection of this survey results in a spatial coverage, that is densest near the center. As we just saw during the zoom out, obscuration by the Milky Way creates the large vertical artificially vacant zone. Redshift space distortion causes clusters of galaxies to appear elongated, towards the center of the cube.

01:11 Cosmicflows-2 peculiar velocity measurements are superimposed during a second half rotation. Peculiar motions toward us are in blue and motions away are in red.

01:29 The scene now transitions to peculiar velocity flow lines derived from a Wiener Filter analysis of the Cosmicflows-2 peculiar velocity field. Our Galaxy is located at the origin indicated by the three central colored directional vectors.

01:54 Here we superimpose the potential field responsible for the peculiar velocity flow. The Shapley galaxy concentration is the dominant local feature. The secondary feature in the direction

of *Lepus* appears to be connected.

02:10 Contours transition to the Wiener Filter over-density field. Contours are prominent near the center where the peculiar velocity information is dense and accurate but diminishes at large distance from the center where information is sparse and uncertain.

02:49 Local components of velocity flows begin to be distinguished. Hercules separates from Shapley and Perseus-Pisces separates from *Lepus*.

03:16 Here we see contours of the cosmic web as defined by the Velocity-web. Local eigenvalues of the shear tensor are evaluated giving the red, blue, and white contours enclosing knots, filaments, and sheets.

03:35 We see local velocity flows in two adjacent regions. We live in the region of the black flow lines but we are near the transition to the red flow lines associated with the Perseus-Pisces basin of attraction.

04:13 Galaxies from a redshift catalog are superimposed with colors associating them with separate major features.

04:49 The black circle centered at our location defines the region of densities giving rise to these local cosmic flows represented in black and red.

05:03 We now impose a new center and radius on the Wiener Filter density field, and the velocity flow lines are restricted to the watershed of this basin of attraction.

05:13 Galaxies from the redshift catalog are again superimposed with colors distinguishing separate major features. A surface encloses the limits of the watershed.

05:48 Black vectors illustrate the flow of galaxies toward a location near the Norma Cluster, and the local potential minimum of this basin of attraction.

06:24 We call the watershed feeding our basin of attraction the Laniakea Supercluster.