

I received a link to a video summarizing the properties of the Local Bubble surrounding the solar system. The Local Bubble represents only one example of magnetic bubbles. The magnetic bubble carries a magnetic field with field lines along its surface. Star formation and interstellar gas seems to concentrate on the bubble.

It is believed that the Local Bubble has been formed in a burst of star formation in the center of the bubble. These stars would have died as supernovae and the matter from supernova explosions would have pushed gas and compressed it to form the Local Bubble.

These bubbles bring in mind the large voids, whose boundaries carry galaxies. I have discussed this from the TGD point of view already earlier. One ends up with a question, whether galaxies are formed at the surfaces of large voids and stars at the surfaces of the magnetic bubbles. Could also the formation of planets be understood in this way? TGD predicts that cosmic expansion takes place as rapid "jerks" and this view has application to the mystery of Cambrian Explosion. Could these local Big-Bangs give rise to a universal mechanism for the formation of structures? If so, then Earth and Moon must have the same composition. The finding that this is indeed the case, came as a total surprise.

The fusion of dark protons at monopole flux tubes to dark proton sequences identified as dark nuclei, which then transform to ordinary nuclei and liberate nuclei binding energy and in this way induce explosion, is the basic step in the formation of astrophysical objects. Dark fusion was originally proposed as a model of "cold fusion" but later generalized to a model for the first step in the formation of stars not yet involving ordinary fusion. The recently found candidates for population III stars could correspond to these prestellar objects.

Galactic blackholes have been recently found to receive a new contribution to their mass from dark energy identifiable as the energy of cosmic strings in the TGD framework. The second discovery is that galaxies, which should be the oldest ones on the basis of their distance, are oldest ones on the basis of their age: zero energy ontology explains this.

A detailed model emerges for the formation of a planetary system as a series of solar explosions as analogs of supernova explosions throwing out a layer of dark matter transforming to ordinary matter, possibly forming a planet. Both the generalization of Nottale's model for planetary orbits involving gravitational Planck constant and a generalization of the Expanding Earth model are involved. The model explains the composition differences between giant planets and Earth-like planets and also the Kuiper belt as a failed planet and is also applied to giant exoplanets.