

Solar flares involving mass eruptions accompany sunspots and the reversal of the magnetic polarity of the solar magnetic field. The models however have several problems. For instance, it is believed that reconnections of magnetic field lines are essential for the process but the prediction for the rate of the process is by 13-14 orders of magnitude too low. The TGD view of space-time provides a new view of electromagnetic fields based on the notion of a field body. Dark matter as phases of ordinary matter with a large value of effective Planck constant is the second new idea and zero energy ontology (ZEO) provides a third new ingredient.

The recent advances in the understanding of the formation of astrophysical structures in various scales in the TGD framework inspire the attempt to understand the structure of the solar magnetic field and its dynamics involving solar cycle, solar flares, reconnections and reversal of the solar magnetic field. By fractality, the general vision leads to a concrete model for the solar cycle and strongly suggests a concrete analogy of the solar cycle with the basic rhythms appearing in biological systems and the identification of the counterparts of anabolism and catabolism at the fundamental level.

The general picture also leads to a model for the reversals of the Earth's magnetic field and to interesting speculations concerning their connection with the evolutionary leaps. In zero energy ontology, the reversal involves the decay and re-organization of the magnetic body in zero energy ontology. The decay is analogous to the decay of the biological body after death and induces it. This interpretation provides an understanding of the so-called Tuskdam phenomenon.