

A summary of the work done in an attempt to understand free energy phenomena in TGD framework is provided: this includes some slightly updated chapters from the book \blockquote{p-Adic length scale hypothesis and dark matter hierarchy}. Some new ideas ideas and devices related to free energy are discussed.

The ZPE approach is compared with the TGD approach identifying dark matter as a hierarchy of phases of ordinary matter characterized by non-standard value of Planck constant $h_{\text{eff}}=nh$. The general ideas behind anomalous hydrolysis of water are introduced, and a TGD inspired model for Brown's gas explaining its anomalous properties is formulated. This inspires a vision about how metabolism in living matter could utilize the mechanisms explaining the behavior of Brown's gas.