

Quantum criticality is one of the corner stone assumptions of TGD. The value of Kahler coupling strength fixes quantum TGD and is analogous to critical temperature. TGD Universe would be quantum critical. What does this mean is however far from obvious and I have pondered the notion repeatedly both from the point of view of mathematical description and phenomenology. Dark matter as a hierarchy of phases of ordinary matter labelled by the value of effective Planck constant h_{eff} following as prediction of adelic physics suggests a general approach to quantum criticality. The chapter begins with general ideas about quantum criticality and phase transitions. Also applications to condensed matter physics and biology are considered besides applications, which might be labelled as miscellaneous.