

Quantum Gravitational Applications of Nuclear, Atomic and Astrophysical Phenomena

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Abstract: By following the old concept of “gravity is having a strong coupling at nuclear scale” and considering the ‘reduced Planck’s constant’ as a characteristic quantum gravitational constant, in this letter we suggest that: 1) There exists a gravitational constant associated with strong interaction, $G_s \sim 3.32956087 \times 10^{28} \text{ m}^3 / \text{kg}/\text{sec}^2$. 2) There also exists a gravitational constant associated with electromagnetic interaction, $G_e \sim 2.374335472 \times 10^{37} \text{ m}^3 / \text{kg}/\text{sec}^2$. Based on these two assumptions, in a quantum gravitational approach, an attempt is made to understand the basics of final unification with various semi empirical applications like melting points of elementary particles, strong coupling constant, proton-electron mass ratio, proton-neutron stability, nuclear binding energy, neutron star’s mass and radius, Newtonian gravitational constant and Avogadro number. With further research and investigation, a practical model of ‘quantum gravitational string theory’ can be developed.

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