Large Number Hypothesis and Weizaecker’s Ur-Theory

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Abstract: According to Weizaecker’s Ur-Theory there are N so called ‘urs’ that form each object in the universe. Each ‘ur’ is one bit of information, so the entropy $S$ of the universe in natural units is: $S = 4\pi M^2 = 4\pi N$.

1 The number $N$ of urs in the universe

The number $N$ of urs in the universe are given by radius $R$ or mass $M$ of the universe, with the Planck-length $l_P$ or Planck-mass $m_P$, we can write as follows (see [1]):

$$N = \frac{R^2}{l_P^2} = \frac{M^2}{m_P^2} \approx 10^{120}$$

With $l_P = \sqrt{\frac{hG}{c^3}}$ or $m_P = \sqrt{\frac{hc}{G}}$ we can write:

$$\frac{G}{R^2} = \frac{c^3}{Nh} = constant$$
2 The Gravitational constant G

As calculated before the Gravitational constant is given by:

\[ \frac{G}{R^2} = \frac{c^3}{N\hbar} = \text{constant} \]

If we assume \( R = ct \) we can rewrite:

\[ \frac{G}{t^2} = \frac{c^5}{N\hbar} = \text{constant} \]

The product of \( MR \) is given by the adiabatic equation:

\[ MR = N\frac{\hbar}{c} = Nl_p m_p \]

3 References


3. Peter H. Michalicka, About the Gravitation, viXra.org, Relativity and Cosmology, viXra:1410.0091