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The Part Played by c^2/G in Investigations of Gravitational Lensing

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The coefficients c^n/G $(n = 0, 1, 2, 3, 4, 5)$ and their inverses that appear in the equations of General Relativity, Relativistic Cosmology and in the Stoney"s , Planck's, Kittel's etc. Units are, since some years, the subject of my theoretical investigations.

Each of these coefficients has a physical dimension that can be found out using dimensional analysis

For instance the coefficient c^4/G has the dimension of force (i.e. increase of momentum per unit of time) and the coefficient c^5/G has the dimension of power. Several physicists interpret c^4/G, as the greatest possible force (the greatest possible increase of momentum per unit of time) in Nature and c^5/G as the greatest possible power in Nature Therefore there can be formulated the following laws

1. **It is impossible to construct a device (e.g. an accelerator) that would be able to accelerate a physical body (e.g. a particle) i.e. that could endow it with an increase of momentum per unit of time greater than c^4/G**
2. **It is impossible to construct a device (e.g. an accelerator) the power of which would be greater than c^5/G.**

As we can see the coefficients c^4/G and c^5/G have a limitary nature.

The coefficient c^2/G has the dimension of mass divided by its gravitational length R_G and the coefficient c^3/G has the dimension of mass divided by its gravitational time T_G

Kittel's gravitational length $R_G = (G/c^2)m$

Kittel's gravitational time $T_G = (G/c^3)m$

Knowing, on the basis of Friedmann's equations (with $k = 0$ and $\Lambda > 0$, the relation between the gravitational length R_G (and time T_G) and Hubble length R_H (and time T_H) we can calculate the gravitational mass M_m and the mass connected with the dark energy M_Λ embedded in our observable Hubble sphere

$$M_m = (c^2/G)(R_H/2)\Omega_m = (c^3/G)(T_H/2)\Omega_m$$

$$M_\Lambda = (c^2/G)(R_H/2)\Omega_\Lambda = (c^3/G)(T_H/2)\Omega_\Lambda$$

where Ω_m and Ω_Λ are respectively the known density parameters

The coefficient c^2/G plays also a part in the gravitational lens system. The gravitational bending and lensing have also their limits determined by the coefficient c^2/G. These limits can and have to be investigated. It is interesting to note e.g. that $(1/4)(\theta \check{r}_E) = R_G$