Possible New Explanation for:
The Flattening of Galaxy Rotation Curves

Hasmukh K.Tank
Indian Space Research Organization,
22/693 Krishna Dham-2, Ahmedabad-380015 India
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Abstract:
As an explanation for the flattening of galaxy rotation curves, it is proposed hare that: Just as, a photon, while experiencing the 'gravitational red-shift', dose not loose its velocity, and chooses to loose its energy, in the form of frequency; so exactly, the luminous stars at the out-skirts of a galaxy, may be loosing their luminosity, in stead of their velocity.

Introduction:
The difference between observed velocities and the velocities expected as per Newton's law of gravitation is currently being explained either in terms of 'dark-matter', or the Modified Newtonian Dynamics (MOND); but none of the two has been conclusively proven. So there is a scope for simpler easily understandable and testable new explanation, as proposed here.

We know that the photons pay their gravitational dues by partly loosing *their* frequency, in stead of their velocity. Similarly, other luminous bodies can also pay their gravitational dues as if they too experience 'gravitational red-shift'; as shown in the next section of derivations:

The Derivations:
Let us imagine a galaxy of a radius *R*, and a star orbiting the galactic center at a radial distance $r > R$. From the Newton's law of gravitation we expect a relation:

$G M m / r^2 = m v^2 / r$ ……..*(1)*

i.e. $G M = v^2 . r$

i.e. $G M / c^2 = (v^2/c^2) . r$

i.e. $(G M / c^2)/ r = (v^2/ c^2)$

We find that the left-hand-side of the above expression is the famous expression for the gravitational red-shift; so we ca write:

$(G M / c^2)/r =(h f0 – h f)/ h f = v^2/c^2$

i.e. $h f0 – h f = h f (v^2/c^2)$

i.e. *h f0 = h f + h f (v^2/c^2)*
i.e. *h f0 = h f + (h f /c^2). V^2*
i.e. *h f0 – h f = (mass of the photon). V^2*
i.e. *(h f0 – hf)/ r = (mass of the photon) . v^2 / r ……(2)*
From comparison of the expression-2 and 1, we can say that the left-hand-side of the expression-2 is equal to the gravitational-force experienced by every luminous body including stars at the out-skirts of a galaxy, and the photons.

Conclusion:

From the expressions-1 and 2 we can expect that every luminous body, including the stars at the out skirts of a galaxy, may be experiencing 'gravitational red-shift', and may be maintaining their velocities, like the photons. This can be a new explanation for the 'flattening of 'galaxies rotation-curves.'