

On the Effect of Gravitation on the Propagation of Electromagnetic Waves

In CPH Theory I tried explain whether the propagation of electromagnetic waves are influenced by gravitation.

I return to this theme because my previous presentation of the subject does not satisfy me, and, moreover, because I now see that one of the most important consequences of CPH Theory former treatment can be tested experimentally. It follows from the CPH Theory that electromagnetic waves passing close to the gravitational field are effected by them. In CPH Theory the effect of gravitation on electromagnetic waves is different of Relativity.

As everyone know in General Relativity the frequency (and energy) of photons change in a gravitational field by following items;

1- Blueshift- when a photon with frequency ν falls in a gravitational field, its frequency changes to ν' that gives by;

$\nu' = \nu(1 + \phi/c^2)$, that ϕ is the GM/R, G is gravitational constant, M is the mass of body and c is speed of light.

The above formula used for Blue-shift. And means gravitational field works on photon and energy (frequency) of photon increases.

2- Redshift- when a photon with frequency ν is leaving a gravitational field, its frequency changes to ν' that gives by;

$$\nu' = \nu(1 - \phi/c^2)$$

The above formula used for Red-shift. And means gravitational field's works on photon is negative and energy (frequency) of photon decreases.

The above relations are not really, because Relativity not considered to structure of photon and had looked on photon like objects. In fact