About the nature of curvatures and their influence on space time

<u>The apparent speed of the photon</u>

The speed of a photon in vacuum is 299 792 458 ms^{-1}. In a medium like water, air or glass the speed will seem to be slower. This seems to be caused by higher curvatures close to particles the photon meets on its way through these materials.

Below you will find an figure in which photons have tracks through different curvature fields (Fig. 1). Note that the photons have different speeds on different positions for the outside observer, depending on the experienced curvature. When you are traveling on the back of a photon you will not experience a delay, you will travel with constant speed.

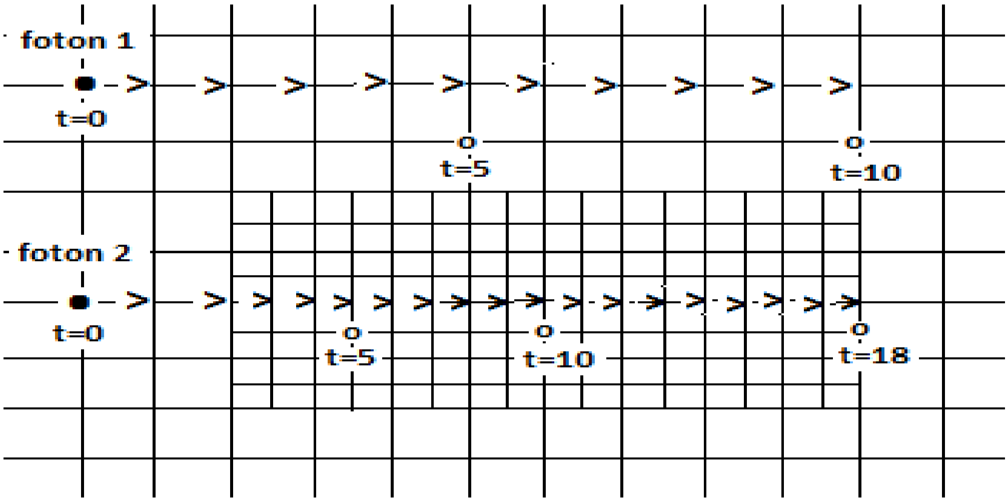


Fig. 1 (Schematical view of two dimensional plane speed differences of two photons moving through different curvature fields as seen for an outside observer.)

In a more realistic way the principle of apparent speed-delay is shown in figure 2. Here we see two photons traveling within the curvatures of a huge object. In this example the blue photon had no significant interaction with curvatures of the smaller object. We can state that the distance of the blue photon to the smaller object is relatively big. The red photon finds the smaller object in its track and is temporary caught by the curvatures of this object. The track of the red photon will give the outside observer the impression that the red photon is traveling slower than the blue photon but in fact it is traveling with constant speed.

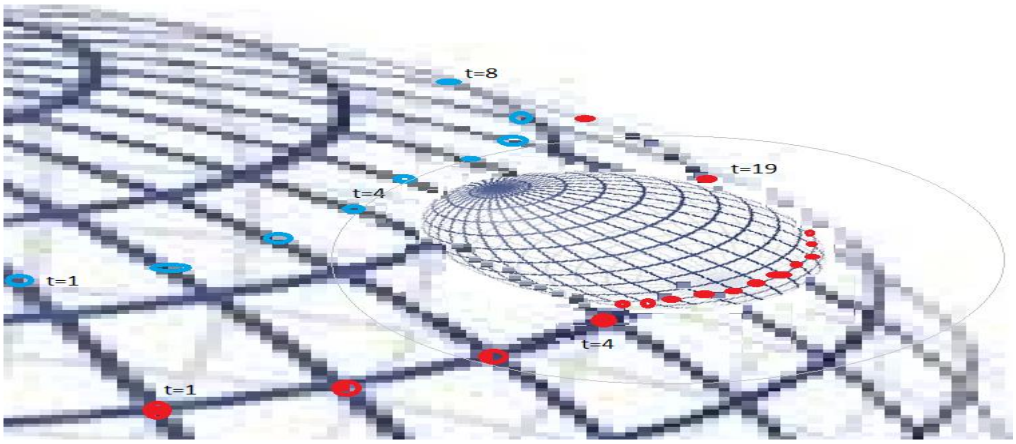


Fig. 2 (Schematical view of three dimensional plane speed difference of two photons moving through different curvature fields as seen for an outside observer)

The apparent stability of particles

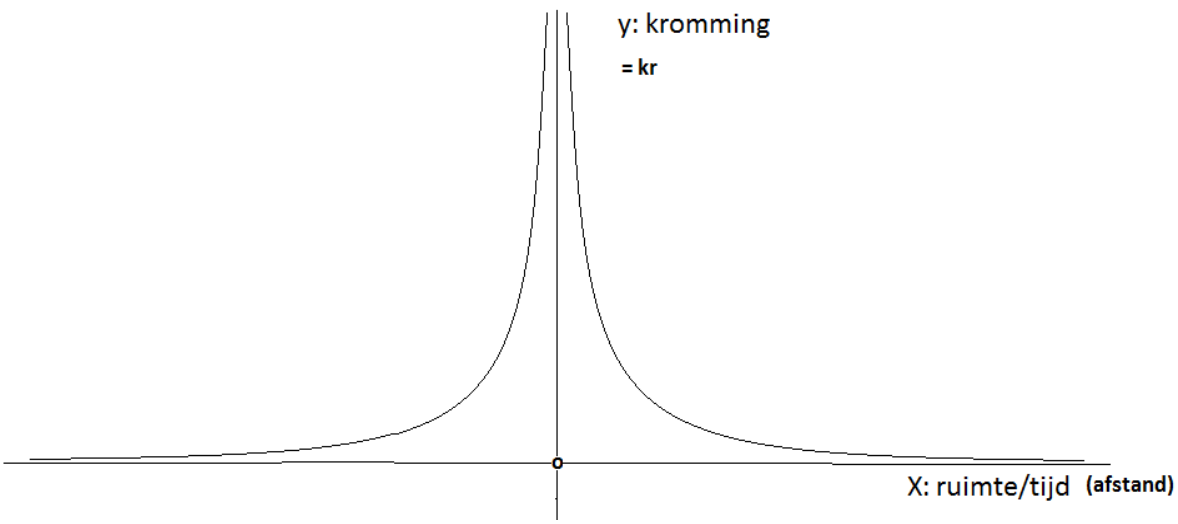
The same principle as described above we can find within specific particles. When curvatures get extreme because of short distances within particles the outside observer will find that elements of the particle seem to come to a full stop. This seems the case for the outside observer but the inner particles (dimensional basics, quarks, protons, neutrons) are still racing through space/time with enormous speed.

Parallel universes.

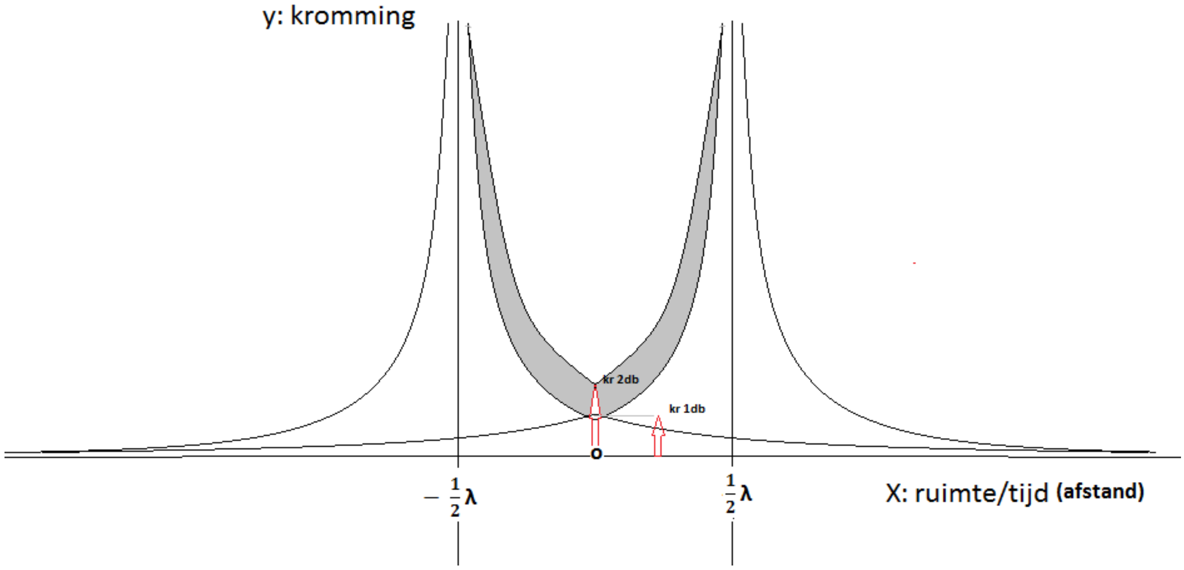
In the main article we published on the site www.dbphysics.org on 20 November 2016 and on the site pages ‘Partum Figura’ and ‘Arithmeticam’ you can find how curvatures can be mathematically simulated and calculated. The basis of the theory is: *The most elementary particle in existence is the dimensional basic.* This particle has only one property: *An infinite curvature in the center.* The particle itself has no dimensions (no length, no width, no heights). The particle is found everywhere in the universe. The particle is always moving through space/time. Through agglomeration, or rather joint interaction, the particles form phenomena that at a certain moment rise above the observational limit. All particles we can detect are interactions of the dimensional basics.

The accompanying formula is: $\sqrt{x^2 + y^2 + z^2} \times Kr = 1$ (0).
In the formula Kr = curvature [m^{-1}], x,y,z are coordinates in space/time [m].

We can use a simplification of formula (0): Kr = abs $\frac{1}{x}$ (1).
In the formula Kr = curvature [m^{-1}], x = space/time [m].



The hypothesis is that the 2-db-particle is a photon. A depiction of curvatures that the observer can detect is shown below. The wavelength of the photon is equal to the distance λ between both particles.



A photon in the red spectrum has λ = 620 nm. A gamma-photon has λ = 0.001 nm.

In animation 1 on the site page 'Celeritas Temporis' we animated one photon close to a black hole. At a certain point the photon can no longer escape and is being captured by the black hole.

In our universe photons have a certain range for λ (let's say 1000 nm up to 1 x 10-3 nm), they are part of the electromagnetic spectrum where λ can have any value between zero and infinity. Theoretically λ in our universe cannot be higher than the size of our universe. We suggest that in a black hole photons and all particles operate within a range that is much smaller than the λ we can detect on earth. Theoretically λ in this black hole cannot be bigger than the size of this black hole. In our universe there is a limit to density of db's, culminating in a black hole when the density gets beyond a boundary because of the high quantity of db-particles. The curvature of the black hole depends on the size of the black hole and is a result of its internal db quantity.

The Pauli principle will not be violated since the db-particle will never get in the same position as another db-particle. They can get close in a circling way while under the influence of each other's curvature. Again we can say that what will appears to be instantaneous and linear in time and space for particles involved will appear to be a slow process for an outside observer. This means that within a black hole time will operate at a different level. The increasing curvature in the black hole system makes that time slows down for the outside observer.

Philosophizing further we can imagine that if the λ range of the electromagnetic spectrum is not infinite in our universe, our universe is not infinite in space time and our universe may be a black hole for an observer above our universe. This observer is living in a universe where all the particles operate within a range that is much larger than ours. For this observer things on earth move rather slow.

Deuterium exists only out of one proton and one neutron. The proton and the neutron are traveling within their own complex movements. The timing within the described process is depicted in figure 3. In figure 3 the proton is held statically. The observer is theoretically situated on the proton. Proton and neutron tend to circle in each other's curvature as shown in figure 3. In a Newtonian way they will approach each other as shown and then remove from one another. What appears to be instantaneous and linear in time and space for the proton and the neutron will appear to be a slow process for an outside observer. When the distance between the proton and the neutron becomes more narrow the movements seems to slow down for the outside observer. Movements seem to speed up again when the distance between the proton and the neutron gets bigger. The nearest point appears to be an “anchor” for the outside observer. Speed seems to come here to a full stop because of extreme curvatures. The deuterium core appears to be stable but it is all a matter of perspective.

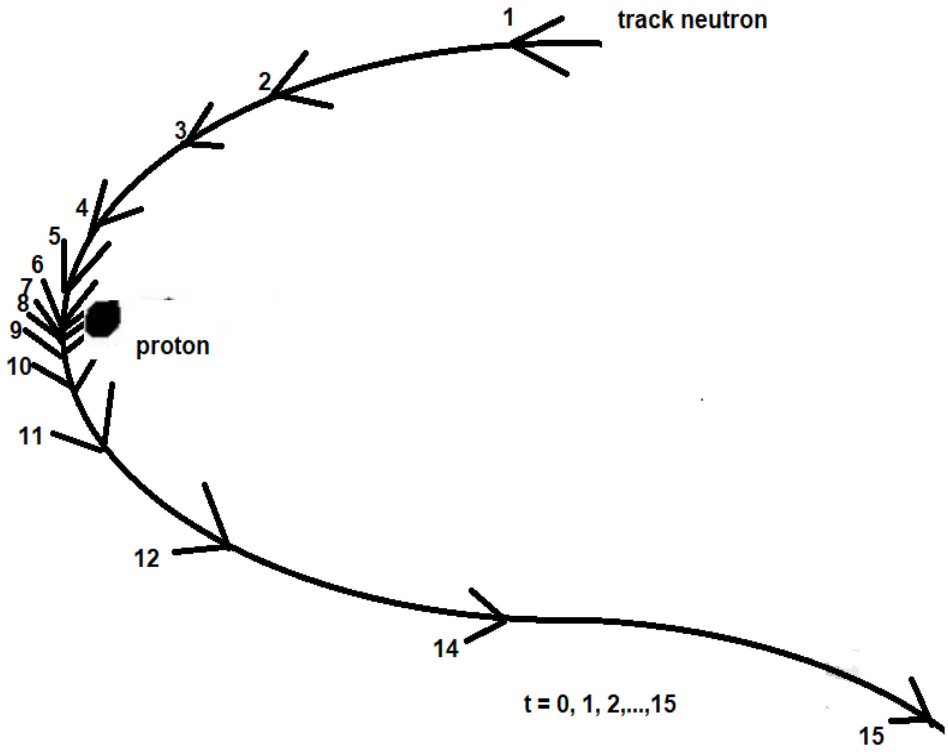


Fig 3: (Schematical view of three dimensional plane trajectory of a neutron to a proton as seen for an outside observer)

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