

Why is about 87% of all mass in our universe invisible!?!

It's a result of our way of observing our physical reality. We view our reality, either directly through our eyes or through always other optical aids. In other words, we observe our reality using the (anti-symmetrical) spin1 [EM-field](#), i.e. analyzing photon-interactions. The [EM-field](#) has a big scope. This is because the photon is massless and therefore can not decay in principle but only be absorbed by other particles. A photon, always moves with the maximum speed with respect to any used inertial frame, so is only able to transfer energy through absorption of energy by other elementary particles. This is because the photon is a force-particle, i.e. [boson](#).

The [photon](#) describes mathematically EM-interaction, i.e. the interaction between electrically charged particles. Analog spin2 describes the gravitational interaction between masses. Only the spin1 [photon](#) and the spin2 [graviton](#) are massless. [Fermions](#) always have masses > 0 , because they follow mathematically from [DE](#) with open [BC](#). Open [BC](#) imply interactions in all space-like directions with at least always the [gravitational-field](#) and in the case of charged particles also the [EM-field](#). This is why also the lightest [fermions](#), i.e. the 3 [neutrino](#) families, all have masses larger than zero. Compliance with Einstein's [CAP](#) implies that [fermions](#) have to be described extended with open [BC](#) and [bosons](#) with closed [BC](#). This is why only [fermions](#) allow more so-called "particle families". Our universe has 3 elementary [fermion](#) families. Closed [BC](#) only allow one species of force-particles for each possible degree of freedom of all possible symmetry groups. This is why [SuSy](#) really is fiction!

The gravitational-field possesses energy, just like the [EM-field](#). However, gravitational energy cannot be visualized using the [EM-field](#), i.e. is invisible. This is exactly the reason why just so little of all the present energy is observed.

Invisible, that is uncharged, mass can only be explained by *elementary uncharged* particles. In "What are elementary particles?" the only allowed elementary uncharged particles are [neutrinos](#). Due to the light [neutrino masses](#), which are all measured indirectly, the [neutrino-density](#) should be very high compared to other elementary particle densities to explain the missing (invisible) mass in our universe. Here I would like to notice that neutrino's must be described as extended harmonic oscillating waves in the 2D-plane orthogonal to the direction of motion. This implies that so-called "uncharged" neutrinos as elementary particles also contain charge in their extended areas and that only the collected charge of this harmonic oscillating space must be chargeless! This is why also all neutrino's possess a non-zero [Bohr-magneton](#). And because even the neutrino is electrically charged, it is proven that all possible fermions are electrically charged:

All fermions both posses non-zero charge and mass!

However, the neutrino creation processes have a much higher probability-density compared to the neutrino absorption processes! This is caused by the Pauli exclusion principle. For example, think of the threshold neutrino energy, below which the (degenerate) matter is completely transparent to neutrinos. This is why most neutrinos send through our earth pass right through it as if the whole earth is transparent. As a direct result the neutrino density is *much* higher than generally assumed (< 300 neutrinos/cm³).

There is really nothing mysterious about it!

The [photon](#) and the weak nuclear forces (charged W^\pm and uncharged Z^0 bosons) are a result (also in the [SM](#)) of the [U\(1\)xSU\(2\)](#) gauge-symmetry. In this symmetry-group the SU(2) weak-nuclear forces and the massless U(1) photon appear mixed by the so-called [Weinberg-angle](#). The W^\pm -bosons are charged, so must be massive. This is why also the uncharged Z-boson of the same SU(2) symmetry-group must possess non-zero mass. This at once explains why the weak nuclear forces decay almost immediately into more stable [decay-products](#).

In the [SM](#) of [SR QFT](#) the spin2 [graviton](#) cannot be described mathematically like all other particles of the [SM](#). As a result of this fact the [graviton](#) isn't included in the mathematical analyzes of the simple [linear SR SM](#).

Instead the world-famous [Higgs-mechanism](#) is used to be able to add mass contributions of elementary particles to the [Lagrangians](#). However, this mechanism uses several “simple” incorrect [SR](#) assumptions. The most troublesome problem is the assumption that spinless elementary force-particles ([bosons](#)) exist. I.e. elementary particles without [spin](#), that is “intrinsic” angular-momentum, are assumed possible. Such elementary particles have **NEVER** been observed in any experiment up to this very day, so why solve the troublesome difficulties of the [SR SM](#) with such mathematical “[fictive](#)” particles!?!

As [Albert Einstein](#) already discovered in 1919, every mathematical description of our reality must include curvature of 4D-spacetime, i.e. **comply to the CAP**. Mathematically this implies that *all elementary particles must be described as harmonic oscillating waves in the 2D-plane orthogonal to the direction of motion* ([SR-worldline](#)). This extensiveness just describes the **only possible non-zero QM spin** of the [SM](#) of the “*simple*” [SR QFT](#)!

The average extensiveness in the 2D-plane orthogonal to the direction of motion (described from the inertial-frame with origin moving with the particle at its average position, i.e. the [SR-worldline](#)) is proportional with the constant [spin](#) x [Golden Ratio](#) x [Planck-length](#). Therefore, a spinless elementary particle can only move along its 1D-[SR-worldline](#) **and as a result of that cannot oscillate and also does not comply to Einstein's CAP!** Also, a non-oscillating elementary particle possesses no “intrinsic” energy proportional to a frequency, **so must be simple human-fiction!**

Besides these mathematical problems concerning the [Higgs-boson](#) it has been concluded from experimental data of both the [Tevatron](#) and the [LHC](#) particles accelerators that the rest-mass of the [Higgs-boson](#) is something like 125 GeV/c², so if it exists it is véry heavy. Such massive elementary bosons must have shorter decay-times than the weak-nuclear interaction particles. Such particles cannot explain why planets attract one-another at macroscopic distances. In the measurements up to this day no [Higgs-boson](#) is observed, because it is assumed to have decayed too soon and **only Higgs decay products** are looked for. And this fact makes the [Higgs-boson](#), if it exists, **an incorrect alternative** for the spin2 [graviton](#), which due to its massless character is able to interact over [macroscopic distances](#). As a result of these experimental results it seems logical to assume that the spinless [Higgs-boson](#) does **NOT** exist. Therefore it is actually already clear that the spinless [Higgs-boson](#) does not exist and that the [SM](#) should be re-written so that it conforms to the [CAP](#)!

Also see: <http://quantumuniverse.eu> or the Dutch version: <http://quantumuniverse.eu/Tom%20de%20Hoop.html> for a clear explanation of [QM](#) and why this mathematical description must be performed in the infinite dimensional complex [Hilbert-space](#)!

If someone doesn't understand this brief analysis of the characteristic mass completely, don't hesitate to send your questions to:

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