

# The Phoenix-II Theory - A Diamond at the Heart of All Matter and Energy

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## Introduction

A diamond:[\[1\]](#)



The Phoenix-I successfully described all matter and energy particles electric charges exchanges. But its did not submit further speculations. Drawing from the conclusions of Phoenix-I Theory, Phoenix-II Theory will propose simple mechanisms which may, with simplicity, account for many properties of the Standard Model.

But first, let us remember the key points of Phoenix-I Theory.

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## The Phoenix-I Theory (Accounts for Electric charges)

Following observations from particles decay, it has been deduced that if preons were to exist, there would have to be 2 flavours of them. Primeons (symbol "b") are preons which carry an electric charge of -0.1666. Logosons (symbol "a") carry an electric charge of +0.1666.

All known particles have no more, no less than 6 preons each.

bbbbbb: electron

abbbbb: up antiquark

aabbbb: down quark

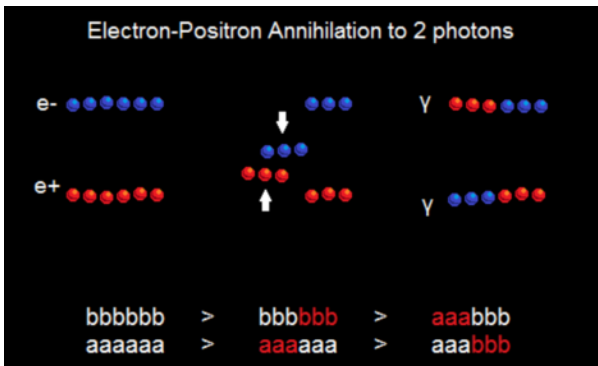
aaabbb: neutrinos/bosons

aaaabb: down antiquark

aaaaab: up quark

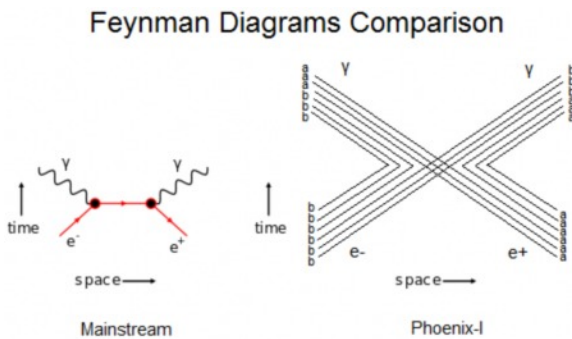
aaaaaa: positron

This very suggestion already explains the charges of all particles, but also the exact mechanism during particle decay. It also exposes in vivid details the exact mechanism behind particle-antiparticle annihilation to photons:



In the model, particles decay by exchanging usually 3 preons with another particle.

Compare a standard Feynman diagram of the phenomena,<sup>[2]</sup> with Phoenix-I's Feynman diagram of the same phenomena:



These concepts are still retained in Phoenix-II, although in Phoenix-II preons don't form strings but actual 3-d solids.

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### Abstract - The (speculative) Phoenix-II Theory:

The deductive-only, Phoenix-I Theory is not enough to account for finer properties of matter and energy, such as spin. But, since the Phoenix-I does provide a firm base, at least when it comes to electrical charges, then it is now possible for us to build hypothesis about the additional properties of these preons, a collection of hypothesis which can be dubbed, Phoenix-II, and verified to be in agreement with scientific observations. The Phoenix-II Theory now accounts for, but is not limited to,

- the three generations of fermions
- the spins of all matter and energy particles
- the antiparticles of all matter particles, and CT-symmetry
- the kaon oscillation mystery
- the anomalous magnetic moment of the muon
- the neutrino's oscillation into another flavour

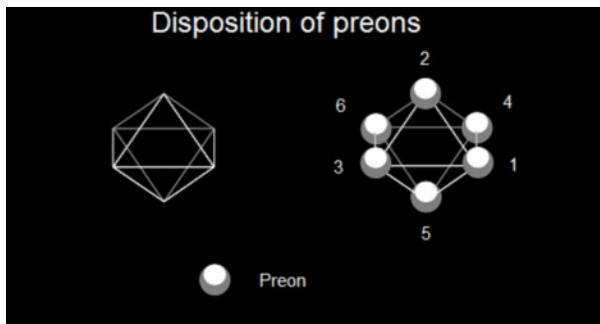
Its limits are still yet to define, since it also proposes a cause for,

- the observed rest mass
- the EMC effect

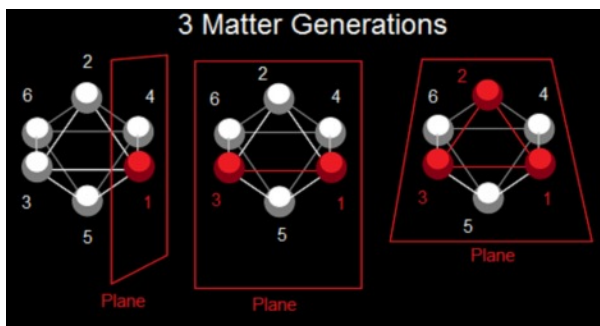
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## Generations of fermions

First of all, what solid will a group of 6 preons form if they were all to have the same distance from the center of such said group? A quick search in geometry will provide the answer: an octahedron. The same solid than a crystal of diamond will crystallize into. In other words, inside any given elementary particles, there will always be 6 preons forming an octahedron, with one preon at each vertices. One could say that around the (for now assumed to be empty) center of a group-particle, there can be 6 probable position of a preon. These positions are fixed relative to each other (except when decay occurs, where preons will be exchanged in a manner which is covered by Phoenix-I), but the group itself (in other words, the elementary particle which the preons form) can rotate relative to another group or even in Time. Additionally, one could in theory assign the numbers (1, 2, 3, 4, 5, and 6) to each of the preons inside of the octahedron.



As with any solids, an octahedron can have a quantity of positions relative to a plane. It would seem that at the preonic level, only an integer number of preons is allowed to touch the "Plane", a plane which is exactly perpendicular to the group's momentum direction. This allows only 3 states to be possible: vertice touches Plane, edge touches Plane, and whole face touches Plane.



It would be safe to assume that these 3 states may have a relation with the group's mass. This... seems possibly to be the mechanism behind the 3 generations of fermions. It might be that a generation-1 fermion will have only one preon touching the Plane; a generation-2 fermion will be composed of the exact same things than its generation-1 counterpart, but two preons will touch the Plane, rending it more massive; and a generation-2 fermion will be composed of the exact same things than its generation-1 and generation-2 counterparts, but three preons will touch the Plane, rending it even more massive.

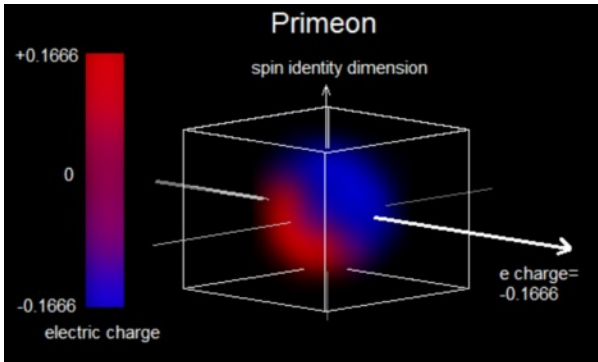
The existence of a 4th generation of matter is not included in the Phoenix-II, but it can support it.

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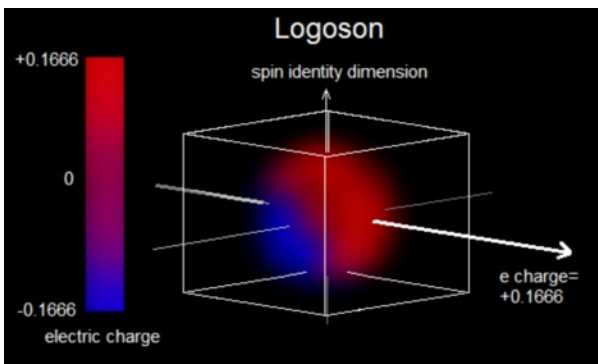
## Spins

In Phoenix-II's hypothesis, primeons, instead of being monopole-like particles, would in fact be bidirectional wave-like packets whose e-negative charge curve is aligned forward in time, with their momentum direction. Their e-positive charge curve is facing the past.

a rendering of such a primeon would roughly look like:



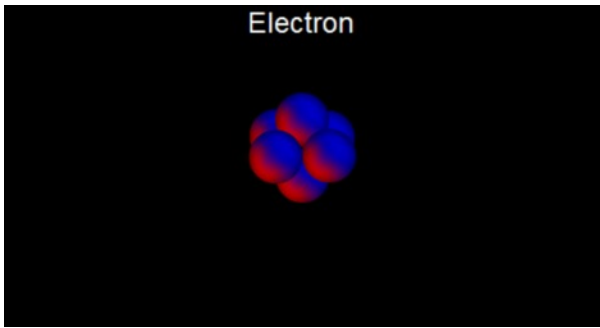
Logosons would look like normal primeons which would have been rotated on an angle of 180 relative to normal primeons. This means their positive curve is aligned forward in time, with their momentum direction.



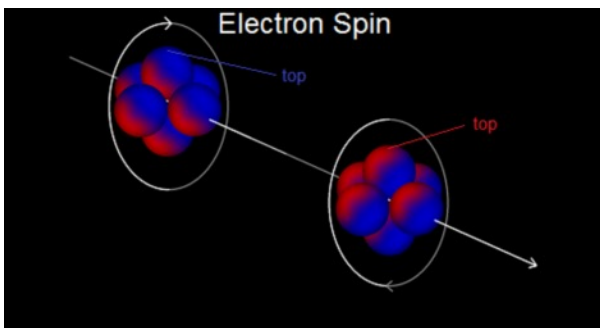
With this speculation comes the resolution of the monopole problem.[3] We see now that preons are not true magnetic monopoles, but really dipoles. The reason why they act a bit like monopoles is caused by the fact that their other, "inactive" pole is facing the Past (out of or normal time, that is, away from the so-called "arrow of time"[4]).

With this proposition, comes the possibility to account for the spin of the group of preons (in other words, the spin of the elementary particle which the preons form).

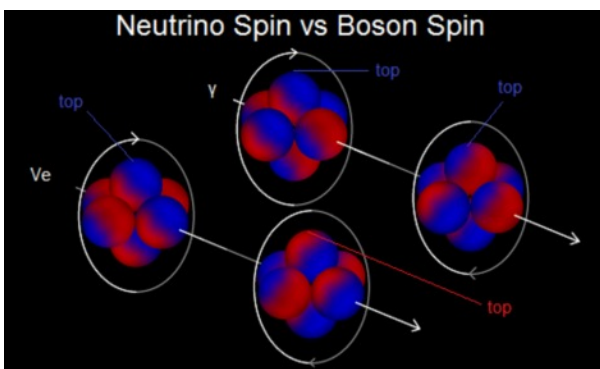
Consider an electron. These are composed, according to Phoenix-I, of 6 primeons. Now, it was already stated (in the beginning of this chapter) that primeons are "bidirectional" charge waves. They also have a vertical charge of -0.1666 (here upward) and +0.1666 (here downward). Now, if one was to render our electron using this new hypothesis, the electron would in fact look like this:



Which is alot more of a detailed picture than the one painted in Phoenix-I's basics. The group's momentum direction is aligned with the electron's charge of  $(6 \times -0.1666) -1$ . But it also has an equivalent top-most electric charge value  $(-0.1666)$ . As the electron spins on its axis, the group of preons flip. Once the group achieves  $1/2$  spin, the group shows the inverted top-most value. At each  $1/2$  spins on its axis, the electron's top-most value changes.



This brings us the ability to now differentiate photons (spin = 1) from neutrinos (spin =  $1/2$ ). The secret resides in the neutrino's preonic sequencing. In essence, a neutrino's sequence is different from a boson in the fact that its top-most preon (preon 2 according to figure 2) is identical to its bottom-most preon (preon 5).



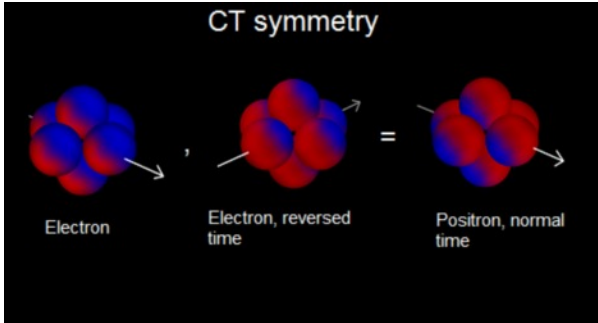
This causes one (neutrinos) to show an inverted top-most property after a  $1/2$  spin, and causes the other (gauge bosons) to have its properties independent from rotation, giving it a spin of 1.

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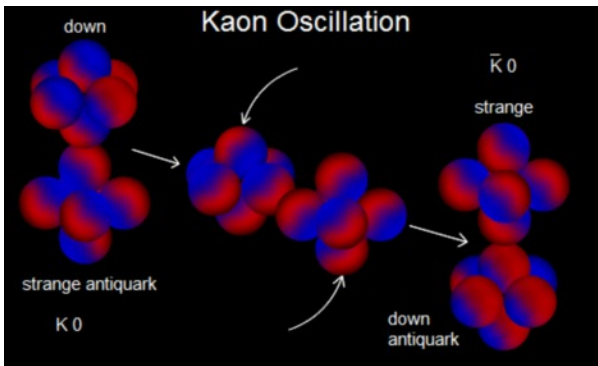
### Antimatter, CT-symmetry, kaon oscillation

Even in Phoenix-II, a particle (group of 6 preons) going back in time looks exactly like its antiparticle going

forward in time.



This might explain why neutral kaons turn into their own antiparticles while propagating.[5] The phenomena could be caused by a rotation of the meson along its group axis as it propagates.



As it rotates half a circle, the preons in the quarks would follow the group rotation, and at one point, their "back" would face the momentum direction instead of the past, causing the meson to appear as its own antiparticle.

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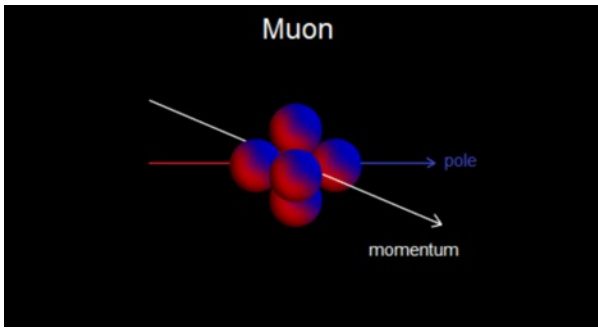
### The muon's anomalous magnetic moment

The muon is a second-generation lepton. As postulated in the chapter titled, "generations of fermions", a muon's preonic composition is exactly similar to an electron's:

bbbbbb

In such a particle, the negative magnetic pole is aligned on the preon 1, on an axis passing from preon 6 to preon 1. In an electron, such axis is exactly aligned with the electron's momentum direction.

But unlike an electron, a muon has both its preons 1 and 3 aligned to the Plane, which is an imaginary plane exactly perpendicular to the particle's momentum direction.



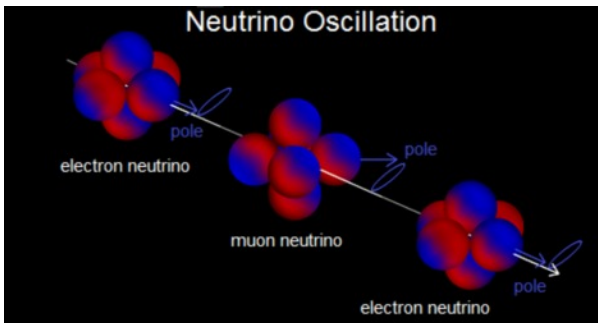
As a muon travels in space, its negative magnetic pole (which is still aligned on preon 1) is, thus, misaligned with the momentum direction, causing the particle to show an anomalous magnetic moment.[6]

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### Neutrino oscillation

As a neutrino travels in space, it undergoes an oscillation,[7] in which a neutrino will change its very flavour as it travels near the speed of light. This phenomena too might be explained by Phoenix-II.

The mechanism behind such a change in flavour might be nothing more than a precession of the particle's poles as it travels forward. In the beginning, the preon 1 inside an electron neutrino would be exactly aligned with the particle's momentum direction. As the neutrino travels through space, the "preon 6 - preon 1" axis gets misaligned and undergoes a precession. If the misalignment is towards preon 3 (more probable), the neutrino becomes a muon neutrino. And then it spends its travel toggling between a muon or an electron neutrino:



Similarly, if the misalignment is towards both preons 2 and 3 at equal magnitude (less probable), then the neutrino becomes a tau neutrino. And its precession will make it oscillate between being an electron or a tau neutrino.

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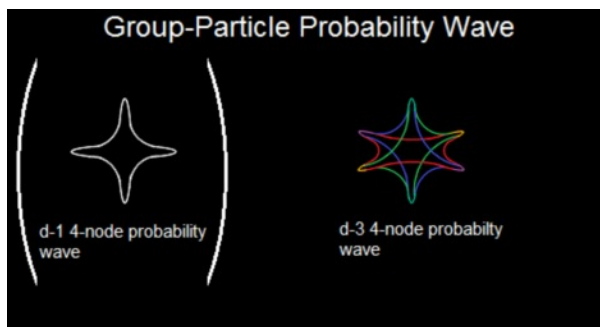
### Rest mass

As no current particle theories can account for the rest mass of most particles,[8] the Phoenix-II theory is no different. But Phoenix-II theory does notice an interesting link between mass and the group-particle's alignment. Because of the neutrino oscillation, and because of the observed neutrino difference from bosons, Phoenix-II uncovers evidences that the rest mass of a particle is strongly related to its preonic sequencing and its charge direction relative to the particle's momentum direction. In other words, the shift of a group-particle would be the cause (if not result) of its mass, along with its internal sequencing.

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## EMC Effect

It would be logical to speculate that since preons may not move relative to each other, their position inside a group-particle (for instance a quark) could be determined by a probability wave, not unlike those for electrons surrounding atoms. This probability wave would be an integer (here "4") transposed as not as the amount of amplitudes of a closed d-1 brane loop, but of a closed d-3 brane loop. Which would look like this:



With preons most likely to be in the peaks of the probability waves. Thus, preons may have only but a small chance to form particles which has either more, or less, than 6 preons.

A possible speculation regarding the still unexplained EMC effect<sup>[9]</sup> could be provided by this assumption. In a heavier atom, it could be that quarks, which are made of preons bound by a probability wave, are surrounded by higher energies and by other probability waves. Thus, this presence of additional probability waves could lead to a constructive interference, and force the quark's probability wave to expand, and thus explain why, in the end, the self-volume of an iron's quark is larger than a deuteron's.

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### Conclusion: two preons... or only one?

The Phoenix-I part explains transfer of charges and accurately supports particle decays. The Phoenix-II part explains spins to oscillations and more. Together, the Phoenix-I/II Theory forms a device to account for most properties of the Standard Model, reducing the latter to only 2 kind of preons: primeons, and logosons. Or does it really stops here? For the Theory has one last surprise in store for us all:

As it has already been noticed, the logoson is an exact replica of the primeon, the only difference being that the logoson looks like a primeon rotated on 180 degrees. It could be that both the logoson and the primeon are really the same particle, but an unknown, space-time related event caused the rotation to occur, perhaps as part of a symmetry conservation. In which case, the Phoenix-II Theory would be the only preonic theory ever to explain all these things... *with only one particle.*

This conclude the part II of my essay on the preonic composition of all matter and energy.

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### References:

[1]<http://en.wikipedia.org/wiki/Diamond>, 2010

[2][http://en.wikipedia.org/wiki/Electron-positron\\_annihilation](http://en.wikipedia.org/wiki/Electron-positron_annihilation), 2010



[3][http://en.wikipedia.org/wiki/Magnetic\\_monopole](http://en.wikipedia.org/wiki/Magnetic_monopole), 2010

“The most recent such experiments suggest that monopoles with masses below 600 GeV/c<sup>2</sup> do not exist, while upper limits on their mass due to the very existence of the universe - which would have collapsed by now if they were too heavy - are about 10<sup>17</sup> GeV/c<sup>2</sup>.”

[4]<http://en.wikipedia.org/wiki/Time>, 2010

[5]<http://en.wikipedia.org/wiki/Kaon>, 2010

[6]<http://en.wikipedia.org/wiki/Muon>, 2010

“The (muon’s) anomalous magnetic dipole moment is the difference between the experimentally observed value of the magnetic dipole moment and the theoretical value predicted by the Dirac equation. “

[7]<http://en.wikipedia.org/wiki/Neutrino>, 2010

[8][http://en.wikipedia.org/wiki/List\\_of\\_unsolved\\_problems\\_in\\_physics](http://en.wikipedia.org/wiki/List_of_unsolved_problems_in_physics), 2010

“Is there a theory that can explain the masses of particular quarks and leptons in particular generations from first principles? “

[9][http://en.wikipedia.org/wiki/EMC\\_effect](http://en.wikipedia.org/wiki/EMC_effect), 2013