

Large-scale rotating Higgs fields as a cause of dark-matter gravity

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This paper describes a hypothesis whereby dark-matter gravity is induced through a large-scale rotation of Higgs fields. In such a model, no 'true' dark matter would need to exist to account for the dark-matter gravitational effect.

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The Higgs mechanism : the ex-Prime Minister analogy

David J. Miller (Physics and Astronomy, University College London) used the following analogy to explain the Higgs mechanism:



“Imagine a [cocktail party](#) of political party workers who are uniformly distributed across the floor, all talking to their nearest neighbors. The ex-Prime- Minister enters and crosses the room. All of the workers in her neighborhood are strongly attracted to her and cluster round her. As she moves she attracts the people she comes close to, while the ones she has left return to their even spacing. Because of the [knot of people](#) always clustered around her she acquires a greater mass than normal, that is, she has more momentum for the same speed of movement across the room. Once moving she is harder to stop, and once stopped she is harder to get moving again because the clustering process has to be restarted. In three dimensions, and with the complications of relativity, this is the Higgs mechanism. In order to give particles mass, a background field is invented which becomes locally distorted whenever a particle moves through it. The distortion - the clustering of the field around the particle - generates the particle's mass. The idea comes directly from the Physics of Solids. Instead of a field spread throughout all space a solid contains a lattice of positively charged crystal atoms. When an electron moves through the lattice the atoms are attracted to it, causing the electron's effective mass to be as much as 40 times bigger than the mass of a free electron. The postulated Higgs field in the vacuum is a sort of hypothetical lattice which fills our Universe. We need it because otherwise we cannot explain why the Z and W particles which carry the Weak Interactions are so heavy while the photon which carries Electromagnetic forces is massless.

Now consider a rumor passing through our room full of uniformly spread political workers. Those near the door hear of it first and cluster together to get the details, then they turn and move closer to their next neighbors who want to know about it too. A wave of clustering passes through the room. It may spread out to all the corners, or it may form a compact bunch which carries the news along a line of workers from the door to some dignitary at the other side of the room. Since the information is carried by clusters of people, and since it

was clustering which gave extra mass to the ex-Prime Minister, then the rumor-carrying clusters also have mass. The Higgs boson is predicted to be just such a clustering in the Higgs field. We will find it much easier to believe that the field exists, and that the mechanism for giving other particles mass is true, if we actually see the Higgs particle itself. Again, there are analogies in the Physics of Solids. A crystal lattice can carry waves of clustering without needing an electron to move and attract the atoms. These waves can behave as if they are particles. They are called phonons, and they too are bosons. There could be a Higgs mechanism, and a Higgs field throughout our Universe, without there being a Higgs boson. The next generation of colliders will sort this out. “

An extension to the “ex-Prime Minister analogy”

Let’s extend the ex-Prime Minister analogy with a few additional assumptions:

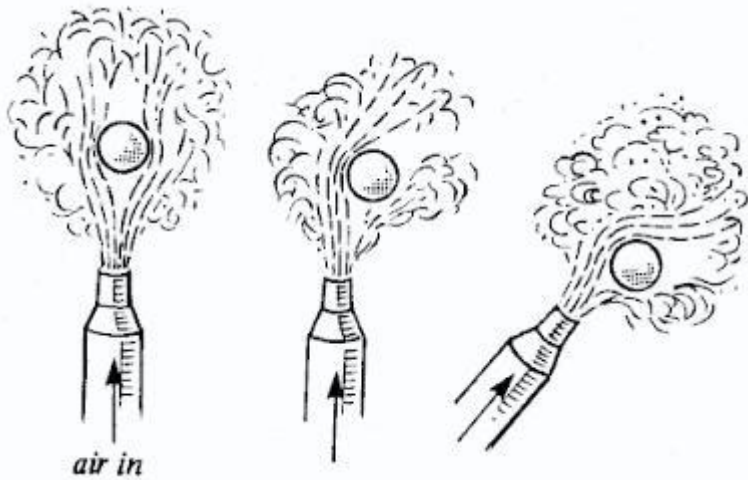
1. The political party workers who are uniformly distributed across the floor, in addition to talking to their nearest neighbors, are continuously walking around in random directions in search for the latest news.



(if the party workers would have been sitting on chairs, then there wouldn’t be a Higgs effect in the first place)

2. Upon the arrival of the ex-Prime Minister, some of the party workers start to perform a dance act around her. By doing so, the party workers changed their initial random directions into a synchronized movement around the ex-Prime Minister. The energy that we associate with the ex-Prime Minister is actually contained in the decreased entropy residing with dancing party workers. The individual dancers don’t move faster than their fellow party workers, but they move in a more synchronized way.
3. The party workers who surround their dancing counterparts feel less interaction with dancers. From the perspective of these ‘observer’ party workers, the dancers have changed the direction of their motions in a way that they are now moving more left-and-right than back-and-forth relative to themselves.

4. The party workers, by dancing around the ex-Prime Minister, induce a Bernoulli effect:



Through their directional movement, the 'dancing party workers' create a low-pressure zone around them and thereby make room for the other party workers to come closer to the dance act. As a consequence, the density of party workers around the ex-Prime Minister has increased (both those dancing and those observing). This increased 'party worker' density is compensated by an equivalent decrease of 'party worker' velocity. The incremental 'party worker' density around the ex-Prime minister corresponds with the extra mass associated with the ex-Prime minister.

5. When the ex-Prime Minister starts to cross the room, the 'party workers', in addition of having decreased their entropy to accommodate for the dance act, will now further decrease their entropy to accommodate for the movement through the room. As a consequence, the 'party worker' density will further increase because of the additional Bernoulli Effect.

While the dance act is progressing through the room, new party workers start to participate to the dance act while others are left behind. So, looking downwards from the ceiling of the meeting room, it looks like the dance act (the increased 'party worker' density) is moving forward as a longitudinal wave.

6. An acceleration of the forward moving dance act takes an amount of energy that is equal to the aggregated amount of increased 'party worker' density.

A larger scale analogy

The following picture shows Muslims who are circling around the Kaaba:



By walking in the same direction around the Kaaba:

- The entropy of the mass has decreased (by requiring a uniform direction)
- The density of the mass has increased as compared to the situation whereby the individual Muslims would have walked in random directions
- The synchronized movement around the Kaaba contains a significant amount of energy that would not be present if the Muslims would have walked with the same speed but in random directions. A single individual who would try to stand-still would need to exercise a significant force.

Standard Model of particle physics

As per the analogy:

Every Particle as per the Standard Model of Elementary Particles can be regarded as a unique 'dance act'. These unique 'dance acts' are contained within the sea of constituting particles that together form the Higgs field: HCP (Higgs Constituting Particles).

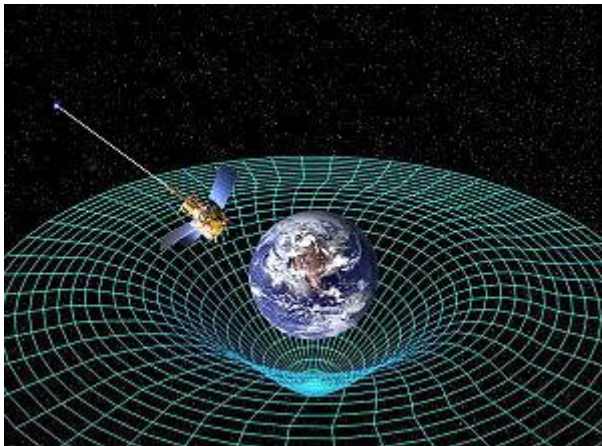
In free space, the HCP's move in random directions and with a speed comparable with the speed of light.

Gravity field

Albert Einstein (The General Theory of Relativity: Chapter 22 - A Few Inferences from the General Principle of Relativity:

"In the second place our result shows that, according to the general theory of relativity, the law of the constancy of the velocity of light in vacuum, which constitutes one of the two fundamental assumptions in the special theory of relativity and to which we have already frequently referred, cannot claim any unlimited validity. A curvature of rays of light can only take place when the velocity of propagation of light varies with position. Now we might think that as a consequence of this, the special theory of relativity and with it the whole theory of relativity would be laid in the dust. But in reality this is not the case. We can only conclude that the special theory of relativity cannot claim an unlimited domain of validity ; its results hold only so long as we are able to disregard the influences of gravitational fields on the phenomena (e.g. of light)." -)

From the perspective of a Higgs field that is constituted of HCP's, the following picture depicts the velocity of the surrounding HCP's:



The decreased velocity of the HCP's nearby the Earth goes along with an equivalent increase in HCP density. The velocity of the HCP's is as such that light propagates with velocity 'c'.

The decreased velocity and increased density of the HCP's around the Earth is the aggregated influence of all elementary particles contained within the Earth.

Inertia

The inertial mass of the Earth is the total mass that corresponds with the increased density of all contributing HCP's. This implies that the inertial mass of the Earth is not just contained within the Earth, but is as well contained in the HCP's surrounding the Earth.

The distribution curve representing the density of the HCP's and the distribution curve representing the velocity of the HCP's are the exact opposite of each other.

Both distribution curves move along with the Earth.

As a consequence, the inertial mass (contained in the increased density of the HCP's) and the gravitational influence (exercised through the decreased velocity of the HCP's) are equivalent to each other.

Gravity

Gravity is the tendency of objects to move towards HCP's with the lowest velocity.

As per $E = m.c^2$, energy is released when an object (the energy contained in the 'dance act' as per the analogy) moves towards an area of decreased HCP velocity.

When an apple falls from a tree, the kinetic energy of the falling apple (right before hitting the ground) is the energy that was first contained in the apple and became available as a consequence of a reduction of c in the equation $E = m.c^2$.

(The speed of light within the tree is slightly greater than the speed of light at the ground).

Gravity has no propagation delay

2 moving objects attract each other towards each other's 'current position'.

This is because the distribution curve representing the density of the HCP's (the inertial mass) and the distribution curve representing the velocity of the HCP's (the gravitational mass) are the exact opposite of each other. Both distribution curves move along with the moving objects.

As a consequence, there is no 'propagation delay' in the gravitational force between the objects.

The curvature of light due to relativistic aberration

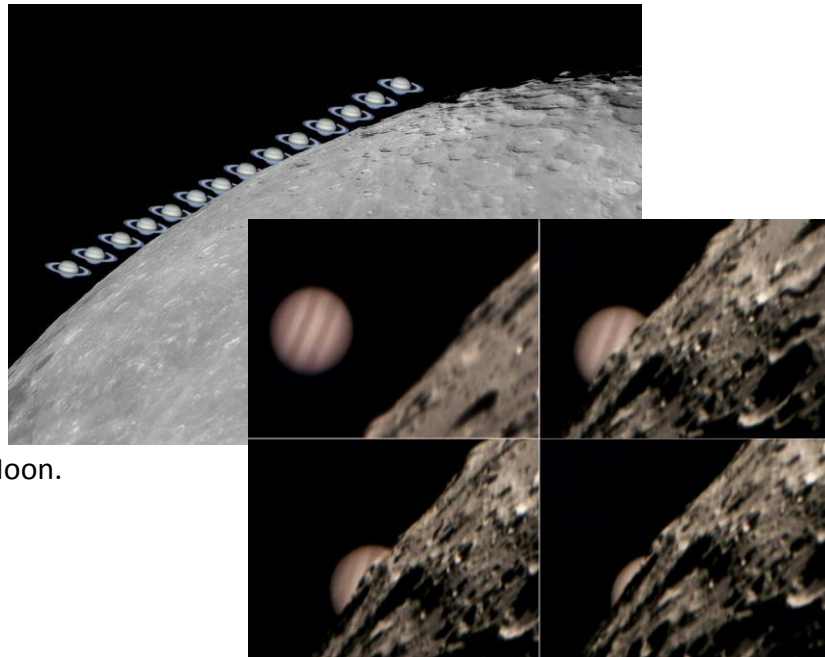
The paper: "The curvature of light due to relativistic aberration"

<http://www.gsjournal.net/Science-Journals/Essays/View/4332> summarizes the different forms of aberration for nearby and remote objects and provides supporting evidence that the physics of the aberration of light must be a combination of local and remote effects whereby light follows a curved path as a consequence of relativistic aberration.

Example:

Light originating from planets is subject to aberration whereas light originating from the Moon isn't.

Nevertheless, when planets are occulted by the Moon, their images never overlap with the image of the Moon. This implies that photons originating from the planets must have been subject to aberration before passing the Moon.



Relativistic aberration explains aberration through the relative motion of reference frames. The proposed 'preferred reference frame' at any point in the Solar System is one that rotates with the same speed as a planet would have at that same position.

These rotating 'preferred reference frames' can be associated with a Higgs field of which the HCP's are rotating around the Solar System (or at a larger scale around the Galaxy).

Special Relativity

As per the analogy, a moving object is a longitudinal wave of HCP particles.

A moving object (the dance act) can therefore never be faster than the speed of the HCP particles (of which the speed correlates with the speed of light).

Increasing the speed of an object (the dance pattern as per the analogy) relative to the Higgs field will increase the Bernoulli Effect and as a consequence will:

- increase the HCP density
- decrease the HCP velocity (and thus the decrease the speed of light)

The decreased HCP velocity will slow down any physical process, including the decrease in clock frequency of atomic clocks.

The following paper puts special relativity in the context of a velocity relative to a preferred reference frame (the Higgs field):

The Twin Paradox; a GPS satellite thought experiment

<http://www.gsjournal.net/Science-Journals/Essays/View/4417>

In reference to the **Hafele–Keating experiment**: the most important consequence of the proposed approach is a different interpretation of what the velocity of an airplane must be to show the highest possible atomic clock frequency:

- Special Relativity: an airplane must maintain a velocity to keep the same position relative to distant stars (in other words: the Earth inertial frame)
- Rotating Frame: an airplane must maintain a velocity to keep the same position relative to the Higgs field. Since the Higgs field rotates around the Solar System, the plane must keep the same position relative to the Sun



The difference between both approaches is very small (1 rotation per year) and can only be detected with high-precision and long-term GPS measurement techniques such as described in:

Anomalous harmonics in the spectra of GPS position estimates (February 2007)

J. Ray Æ Z. Altamimi Æ X. Collilieux Æ T. van Dam

http://www.ngs.noaa.gov/CORS/Articles/pos-harmonics_gpssoln08.pdf

“We find no confirmation of the anomalous GPS position harmonics (multiples of ~ 1.04 cpy) in corresponding results from VLBI or SLR, nor in geophysical loadings due to atmospheric pressure, non-tidal ocean bottom pressure, or continental water storage. Because of this and the fact that the anomalous period of ~ 350 days matches the GPS constellation repeat cycle, it seems likely that the harmonics are a consequence of some technique error.”

A large-scale rotating Higgs field



The velocity gradient in the Higgs field that rotates around the Galaxy induces a Bernoulli Effect. This Bernoulli effect increases the density of the HCPs (and induces a corresponding velocity decrease).

This increased HCP density (and associated decrease in HCP velocity) increases the strength of the gravity field within the Galaxy. This strengthened gravity field is what we associate with the presence of 'Dark-Matter'.

The dark-matter halo's that are measured within observed galaxies are in effect rotating Higgs fields whereby the magnitude of the Dark-Matter-Gravity is dependent on the speed differentials along the rotating Higgs Fields.

When rotating Higgs Fields encounter each other (e.g. through the collision of galaxies), then these rotating Higgs Fields will interact with each other. The effect of the interaction thereby depends on the how the interacting Higgs fields rotate relative to each other before the collision:

http://www.nasa.gov/mission_pages/hubble/science/dark-matter-core.html



Conclusion / Summary

Building upon the concept of a Higgs-field that is composed of constituting particles (HCP's) which rotate around galaxies, dark-matter-gravity can be explained without the need for 'true' dark matter.

The proposed principle implies that dark-matter gravity is a self-enforcing mechanism during star formation: the gravitational forces increase exponentially during star formation to levels that are significantly higher than what could be assumed based on current measurements.

The large-scale rotation of the Higgs field and the associated differences in HCP density/velocity within our Solar System may as well explain the [Ecliptic alignment of CMB anisotropy](#) :

Some large features of the microwave sky, at distances of over 13 billion light years, appear to be aligned with both the motion and orientation of the Solar System. Is this due to systematic errors in processing, contamination of results by local effects, or an unexplained violation of the Copernican principle?