Bijective Epistemology, Higgs mechanism and Higgs boson

Amrit Sorli
Foundations of Physics Institute, Slovenia
sorli.amrit@gmail.com

Abstract
Bijective epistemology requires that each element in the scientific model correspond exactly one element in the physical world. Bijective epistemology is based on bijective function of set theory where each element in a given set model correspond exactly one element in a given set physical world. Higgs boson is an artificially made particle with extremely short life time and has no existence in physical world. Higgs mechanism is an element of set model which has no Higgs boson as an element in set physical world because Higgs boson does not exist in physical world. Higgs mechanism as an element of set model has its counterpart in set physical world in some other element which generates inertial and gravitational mass which are inseparable.

Key words: Higgs mechanism, Higgs boson, Bijective epistemology

1. Introduction
Higgs mechanism is a theoretical model which describes origin of mass of elementary particles. In Bijective epistemology each model in set model \( Y \) corresponds exactly one element in set universe \( X \) [1]. Higgs mechanism \( Hm_Y \) is an element in set model \( Y \):

\[
Y : Hm_Y \quad (1).
\]

Higgs boson is an artificially made particle with a lifetime \(10^{-22}\) second and does not exist in a physical universe on its own. Higgs boson existence is created by collision of two protons. That’s why Higgs boson \( Hb_X \) is an artificial element of set model universe \( X \):

\[
X : Hb_X \quad (2).
\]

Between Higgs boson \( Hb_X \) as an artificial element of set physical universe \( X \) and Higgs mechanism \( Hm_Y \) as an element of set model \( Y \) there is no bijective function:

\[
f : X \rightarrow Y \quad (3),
\]

because Higgs boson does not exist in physical universe on its own. Higgs boson is not a consistent part of the set physical world \( X \) as for example is proton. Higgs boson is “made up” by technology. Between Higgs boson and Higgs field there is no direct epistemological correspondence.
2. **Higgs mechanism and variable energy density of quantum vacuum**

   In our model of dynamic quantum vacuum Higgs mechanism model $H_{m_Y}$ describes actual energy density of quantum vacuum which is diminished because of presence of a given particle or massive object. This model is valid from the photon scale to the scale of the galaxy. Inertial mass and gravitational mass have both origin in diminished energy density of quantum vacuum [2].

   Few other papers expose “weakness” of Higgs mechanism [3] and epistemological weakness of the idea that Higgs boson has its inherent mass [4]. In our model inertial mass and gravitational mass are epistemologically inseparable and have the same origin [2].

3. **Conclusions**

   Higgs boson is not more than a characteristic flux of quantum vacuum energy which is released by collision of two protons. Presenting Higgs boson as a particle that gives mass to other particles is epistemologically inadmissible. Explanation of mass and gravity requires introduction of quantum vacuum as a fundamental arena of the universe.

References: