**Deutsche Physikalische Gesellschaft**

**Slide 1**

**“Emission & Regeneration” Unified Field Theory.**

By Osvaldo Domann

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**Gravitation as the result of the reintegration of migrated electrons and positrons to their nuclei.**

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**Slide 2** As a mathematical theory, physics should have a pyramidal shape, where few postulates at the top allow the deduction of all known laws from top to bottom.

Our standard theory (Mainstream Physics) starts formulating mathematically the basic laws for individual particles, namely, Coulomb, Ampere, Lorentz, Maxwell and Gravitation.

At a second level, thermodynamic laws are introduced with the help of state variables to describe assemblies of matter.

Then the particle’s wave is postulated which allows the definition of differential equations of the wave function to describe mathematically the quantized behavior of many particles in nature (Schroedinger).

Up to this point of the theory, no explanation is given about the origin of the forces, momenta and charge of particles.

Theoretical and experimental efforts are made at the bottom level to find and infer interaction laws between particles postulating Strings, Branes, Loops, Twistors, etc.

Proposed approach

The intention of the proposed approach is to explain what happens in the space between two charged particles or two masses that generates the forces we measure at the particles.

The proposed approach starts postulating Fundamental Particles (FPs) and the interactions between them in that way that it becomes possible to derive mathematically the basic laws which are the starting point of our standard model.

The recursive method used to derive the interactions between FPs makes sure, that the approach is in accordance with experimental data.

**Slide 3** Standard theory models particles with the rest mass concentrated in a small volume in space. If the particle is charged a radially electric field ***E*** is added and if the particle moves a magnetic field ***H*** is generated whose direction is a function of the sign of the charge and the direction of moving.

The proposed approach models particles as focal points in space where rays of Fundamental Particles (FPs) cross from infinite to infinite. FPs moving to the focal point are called regenerating FPs while FPs moving away from the focal point are called emitted FPs.

The total energy of a particle like the electron or positron is stored as rotation in FPs which therefor have longitudinal *Js* and transversal ***Jn*** angular momenta.

The transversal angular momenta are generated at the FPs when the focal point moves and their directions follow always the right screw law in the moving direction independent of the charge of the particle.

**Slide 4**  The idea of the proposed approach is that the relativistic energy of a particle is distributed at FPs in space and not concentrated at one point as postulated by standard theory.

To calculate the part of the relativistic energy that corresponds to a FP first the total relativistic energy ***Ee*** is expressed as the sum of the two terms ***Es*** and ***En,*** where ***Es*** is the energy stored as longitudinal rotation at the FPs and ***En*** the energy stored as transversal rotation at the FPs.

Then with the help of a distribution function ***dk*** the differential energies ***dE*** for a differential volume ***dV*** for each FP is defined as well as the corresponding angular momenta ***J*** for a common angular frequency ***v***.

The picture shows the unit vector ***Se*** for the longitudinal angular momentum of an emitted FP and the unit vectors ***s*** for the longitudinal and ***n*** for the transversal angular momenta for a regenerating FP.

The picture also shows opposed transversal angular momenta ***n*** and ***–n*** which generate the linear momentum ***p*** at the focal point of the moving particle.

**Slide 5**  The slide shows how out of opposed transversal angular momenta ***Jn*** and ***–Jn*** a differential linear momentum ***dp*** is generated and calculated.

Also the equations are shown to calculate linear momenta out of opposed transversal angular momenta.

**Slide 6**  A moving electron or positron emits FPs with longitudinal angular momenta ***Je*** and is regenerated by FPs with longitudinal ***Js*** and transversal ***Jn*** angular momenta. Opposed transversal angular momenta ***Jn*** generate elementary linear momenta ***p***elem at the particle.

The charge of a particle is defined by the rotation sign of the longitudinal angular momenta ***Je*** of emitted FPs.

The electron and the positron are the constituents of the neutron and proton.

As all the transversal angular momenta ***Jn*** of electrons and positrons of a nucleus follow the right screw rule independent of the sign of the charge, all opposed transversal angular momenta ***Jn*** of the constituents add and generate the momentum of the particle.

The time delay between emitted and regenerating FPs explains the inertia of a particle.

The neutrino consists of one pair of FPs with opposed angular momenta ***h*** carrying a potential linear momentum ***p***.

The photon consists of a sequence of pairs of FPs with opposed angular momenta ***h*** carrying a sequence of potential linear momenta ***p***.

**Slide 7**  For each ***dV*** of a FP corresponding ***dH*** fields are defined as the product of the square root of the energy with the distribution function ***dk.*** The relation between the angular momentum ***J*** and the field ***dH*** is shown.

**Slide 8**  Characteristics of the introduced Fundamental Particles.

* Fundamental Particles are postulated.
* FPs move with light speed relative to the focal point.
* FPs store energy as rotations in moving and transversal directions
* FPs interact through their angular momenta or dH fields.
* Pairs of FPs with opposed transversal angular momenta generate

 linear momenta on *subatomic particles*.

Classification of BSPs

* Basic Subatomic Particles (BSPs) are the positrons, the electrons

 and the neutrinos

* Complex Subatomic Particles (CSPs) are composed of BSPs and are

 the proton, the neutron, nuclei of atoms and the photons.

**Slide 9**  Interaction laws between two BSPs

1) Interaction between two static BSPs (gives the Coulomb law)

2) Interaction between two moving BSPs (give the Ampere, Lorentz and Bragg laws)

3) Interaction between a moving and a static BSP (give the Maxwell and Gravitation laws)

These three interactions between BSPs correspond to the three following interactions between the longitudinal and transversal ***dH*** fields of the Interacting BSPs.

1. Longitudinal x longitudinal (Coulomb)
2. Transversal x transversal (Ampere)
3. Transversal x longitudinal (Induction)

The three following slides show each of the interactions in detail.

**Slide 10** The cross product interaction between the longitudinal angular momentum ***Je1*** of an emitted FP of a positron with the longitudinal angular momentum ***Js2*** of a regenerating FP of an electron generates a transversal angular momentum ***Jn2***. Together with the symmetrically opposed transversal angular momentum ***–Jn2*** a differential linear momentum ***dp2*** is generated at the electron.

To get the total linear momentum ***p2*** of the Coulomb law the integration over the whole space is necessary.

**Slide 11** The generation of linear momenta ***dp*** between two parallel moving BSPs is similar to the Coulomb case except that now transversal ***dHn*** instead of longitudinal ***dHs*** fields interact through cross product.

**Slide 12** In the case of the induction law, opposed transversal ***dHn*** fields from the FPs of the moving BSP, which define its linear momentum ***dp,*** are passed to regenerating FPs of the static BSP.

The moving BSP passes its linear momentum to the static BSP according the momentum conservation law.

**Slide 13** If the equations derived with the proposed approach for the Coulomb and the Ampere forces are equated with the corresponding standard equations for the Coulomb force ***F***stat and Ampere force ***F***dyn, an equation for the time ***Delta t*** proportional to the radii ***r***o1 and ***r***o2 of the focal points of the particles results.

The radii are functions of the energy of the particles as shown. For non-relativistic particles the time ***Delta t*** is constant and independent of the speed of the particle.

**Slide 14** The linear momentum for two static BSPs derived in **Slide 10** as a function of the distance has the following shape. The linear momentum is proportional to the force because the time ***Delta t*** is constant. The following zones are important:

**Zone 1 from 0 to 0.1** This is the zone where electrons and positrons coexist without repelling or attracting each other. The force between them is zero and no strong forces or gluons are required to hold them together.

**Zone 2 from 0.1 to 1.8** This is the zone where electrons and positrons from zone 1 migrate and are then reintegrated to zone 1 or expelled with high speed when their FPs cross with FPs of the remaining BSPs from zone 1. At stable nuclei all migrated electrons and positrons are reintegrated to zone 1 while at unstable nuclei part of them are expelled.

No special weak force is required to explain radioactivity of nuclei.

**Zone 5 from 518.0 to infinite** This is the zone where the Coulomb law is valid.

**Slide 15** The diffraction of an electron at a crystal is due to an interaction of the Ampere type derived in **Slide 11** between the shot electron and a parallel reintegrating BSP of the nuclei. The diffraction is quantized according the number of reintegrating BSPs that interact with the shot electron.

**Slide 16** The Newton gravitation force is an induction force derived in **Slide 12** between reintegrating BSPs of one body and static BSPs of the other body.

The linear momentum ***dp***b of the reintegrating BSP at Neutron 1 is passed to a BSP of Neutron 2 (now called ***dp***p) remaining finally only the two opposed linear momenta ***dp***a and ***dp***p at the two neutrons.

That explains why neutral particles attract each other with a force that is inverse proportional to the square distance.

**Slide 17** The interaction between parallel reintegrating BSPs of two bodies generates the Ampere component of the gravitation force, which is inverse proportional to the distance. The Ampere force between parallel currents is derived in **Slide 11**.

 The generated force is an attraction force for parallel currents ***i***m1 and ***i***m2 of the same sign and a repulsion force for currents of different sign. Neither dark matter nor dark energies are required.

**Slide 18** As previously explained, the total gravitation force due to the reintegration of BSPs has an Induction and an Ampere component. For sub-galactic distances the Newton gravitation force is predominant and the Ampere component can be neglected. For galactic distances the Newton component can be neglected and an attraction Ampere gravitation force explains the flattening of galaxies’ rotation curve while an repulsion Ampere gravitation force explains the accelerated expansion.

**Slide 19** Quantification of forces.

All forces are expressed as the product of a frequency ***v*** with a constant elementary momentum ***p***elem. The frequencies for the Coulomb force (***v***C), the Ampere force for parallel currents (***v***A), the Newton component (***v***G) and the Ampere (***v***R) component of the gravitation force are shown.

**Slide 20** Findings

- Probability and quantification are inherent to the model

- All forces are generated by only one type of field ***dH***

- The generation mechanism of forces out of the ***dH*** field is defined

- The origin of the charge of a particle is defined as the rotation sign of emitted FPs

- The inertia of particles with rest mass is explained as the time delay between emitted and regenerating FPs

- No strong force is required to explain coexistence of charged particles with same sign

- No weak force is required to explain radioactivity

- No dark matter is required to explain flattening of galaxie’s speed curve.

- No dark energy is required to explain accelerated expansion

**Slide 21**

 Thank you for your attention.