Protosimplex
Results of Heims quantum field theory

The German physicist Burkhard Heim compiled a uniform field theory of matter since 1949, which goes beyond a mathematical description of the material world. His concept opens bridges to an understanding of life, psyche and spirit as interacting elements of the material world.

The philosophy of Heim's quantum field theory is actually **the representation of the laws of the material world by the physical characteristics of space**.

Among other things it describes and calculates fundamental particles of matter by geometrical processes, which result from the characteristics of space.

The substantial features presented in Volume 1 and Volume 2 of 'Elementary structures of matter' are:

1. **Existence of a six-dimensional space (R_6)**. Physically accessible four-dimensional space-time (R_4) is situated embedded in R_6. Distinction of *three real* (height, width, depth) and *three imaginary* coordinates (time, entelechy, aeon). Therefore the usual space-time model, the four-dimensional view of the world is thus extended by two dimensions: *x_5 (entelechie)* analysing permanently updating organization statuses in x_4 (time), and *dimension x_6 (aeon)* controlling direction of this ambiguous updating process in x_4. According to this it is differentiated between manifest and latent events. The directions of the imaginary transcoordinates x_5 and x_6 are reversible.

2. **Quantization of multidimensional space** due to a not fall belowable geometrical unit area, which corresponds in order of magnitude to the square of the Planck's length.

3. **New cosmology** and Hermitian geometry resulting from this. Fundamental tensor existing in R_6 is constructed of non-Hermitian fundamental tensors describing multiple geometry.

4. **Geometrical description of elementary particles**, physical interpretation of geometrical terms. Within the mikromare area energy impulse tensor can be set proportionally to geometrical symbols similar to Christoffel symbols. Analogies to Einstein equations form an principle of equivalence but no proportionality. In micromar area they are transferred into geometrical eigenvalue equations.

5. In the entire theory $g, \hbar, e_0 y_0$ only are used as empirical **natural constants**.

6. **Structures of elementary particles** are strongly structured, hierarchically arranged geometrical objects which modify their structure cyclically in sense of internal dynamics.

7. **Derivation of strictly valid symmetry laws of elementary particle and determination of their proper masses**.

8. **Existence of a 'world equation'.** An approximation supplies Einstein's field equations of ART, another approximation supplies Dirac's equations of quantum electrodynamics however.

In Volume 3 Heim and Dröscher succeed to understand coupling constants and their (geometrically representable) interaction fields from closed mathematical formalisms. Thereby it comes to following extensions of the Heim theory:

1. **Extension of R_6 to a coordinate space R_{12} with 12 dimensions**, which permits to calculate all well-known and still unknown interaction fields (Dröscher's dimension law). In each point of R_8 a tangential space with Euclidean coordinates can be established so that a functional dependency concludes. Expressions can be formed representing not only well-known interaction fields *but also fields still unknown*. Transcoordinates are transformed into R_4 by

$$R_{12} = R_3(x_1 \ldots x_3) \cup T_1(x_4) \cup S_2(x_5, x_6) \cup I_2(x_7, x_8) \cup G_4(x_9 \ldots x_{12})$$

2. **Representation of the quantum-mechanical probability amplitudes as result of transformation processes from G_4 into the material world:** Based on twelve-dimensional R_{12} the coordinates of the G_4 can not be transferred in R_4 directly. But by means of a mediator space they are transformed into an R_4a ($x_1^* \ldots x_4^*$). The function of representation is only determined during this figure process by a suitable parameter selection. This transformation supplies in R_4 the probability amplitudes known from quantum theory. Therefore it corresponds to the wave nature of quantum dualism.

3. **Different characteristics of interaction fields** are caused by curved coordinates at least of one specific subspace of R_{12}. Possible dimension numbers are not only subspaces of R_{12} but as well further dimension numbers can be relevant ranging over R_{12}. A quantity algorithm is found which determines these dimension numbers.

4. **Origin of matter (cosmogony of an elementary universe about $4*10^{17}$s ago):** At this time shrinking of only one length element had taken place to Planck's elementary length because a mass in the order of magnitude of the Planck' mass developed and the length element was reduced due to the curvature of space and time coordinates. This length element disintegrated in further consequence and divided itself to a multiplicity of elements which led to the generation of mass from a strongly curved space-time area. This process persisted for a long time until it produced masses with 1/3 nucleon mass. Some of these elementary masses continued to disintegrate finally still to electron and positron masses and then dematerialized to photons. The particles generated finally to nucleon masses, so that together with still remaining electrons formation of hydrogen became possible. This scenario is able to calculate the mass of observable universe quite as well as the diameters of "space bubbles" and galaxies.

5. **Calculation of physical coupling constants:**
   The dimension number set D = { (36), (12, 28, 24), (4, 64) }has a substantial meaning for calculation of coupling constants in the moments of developing or disappearing of quantums of interaction. By applicating possible operations (+.), (.+), (++), (..) on this dimension number set the coupling constants of the electromagnetic, weak, strong and gravitative interaction could be produced.

6. So-called **constants of transformation** complete the quantity of the known coupling constants. They occur only together with the latters. These constants of transformation cause not only transfer of massless into ponderable interaction quanta but possibly also the transformation of photons of quite special density and energy into vector gravitons as well as the production of interaction quanta with an extremely small and empirically unknown coupling constant from vector and tensor gravitons. Coupling constants of electromagnetic, weak and strong interaction are thus energy-dependent sliding type.

7. Additional is shown that a **dependency of coupling constants on specific energy values** exists which were determining partly history of the development of the universe.

8. finally **times of exististence of elementary particles** are developed from the Heim Theory. This is pointing to a real physical existence of hyperspaces and their subspaces which are used within the Heim Theory.

Dröscher / Heim 'Strukturen der physikalischen Welt und ihrer nichtmateriellen Seite' (preface, summary, OP)