T 88: Miscellaneous

Time: Friday 9:00–10:30 Location: ZHG105

T 88.1 Fri 9:00 ZHG105

A semi-classical particle model explains mass and other data quantitatively — •Albrecht Giese — Taxusweg 15, 22605 Hamburg

We present a particle model that is an evolution of Louis de Broglie's original approach. It is mostly classical, but has properties that are largely superior to QM calculations. At first, a classical model of inertial mass is explained which, unlike the Higgs model, gives precise results without the use of free parameters. It also allows, in contrast to the mere postulations of QM, the derivation of known rules/facts such as frequency-energy, the Bohr magneton, the fine structure constant. And it derives the structure of the strong field inside particles. This was previously in great conflict with quantum chromodynamics (QCD), but is now in agreement after a recent QCD modification.

Further info: ag-physics.org/rmass

T 88.2 Fri 9:15 ZHG105

Notational invariance of the standard model — •Lello Boscoverde — Istituto della Fava Pazza, Garching, Germany

I will present the concept of notational invariance, the history of its development, and example applications relevant to contemporary particle physics.

T 88.3 Fri 9:30 ZHG105

Comment on the Sommerfeld Fine Structure Constant tension — •Manfred Geilhaupt — University of applied Sciences HS Niederrhein

In todays physics, the fine-structure constant (alpha) is a fundamental physical constant which quantifies the strength of the electromagnetic interaction between elementary charged particles. The constant alpha was introduced in 1916 by Arnold Sommerfeld. However, alpha still is an unsolved theoretical and even experimental physical problem up to now! Alpha from atomic interferometric experiments shows a large difference compared to their high accuracy:

1. 2018 Parker et al. 1/137.035999046(27), atomic interferometer experiment

2. 2020 Morel et al. 1/137.035999206(11), atomic interferometer experiment

3. 2011 More et al. 1/137.035999084(15), quantum hall experiment. The 2011 last experimental von Klitzing constant RK=25812.807442(30)Ohm accuracy can be increased by an order of magnitude today. So the RK=e^2/h makes the difference.

4. 2019 form Codata given alphaC= 1/137.035999177

5. 2019 from Codata given alphaRKC=1/137.035999127 based on RKC= 25812.807450(00)Ohm (exact defined) does not match. The presentation contains two answers to the question about tension. Critics appreciated. (A. Einstein: Ein Problem kann man nicht mit der Denkweise lösen, durch die es entstanden ist.)

T 88.4 Fri 9:45 ZHG105

Uniqueness of unification — •Christoph Schiller — Motion Moutain Research, Munich

A unified description of motion that includes general relativity and the standard model of particle physics with massive neutrinos must be unique, without inequivalent alternative, and must agree with the observed invariant Planck limits for speed, action, entropy and force. It is first argued that the Planck limits imply

* that space, horizons, wave functions and fields are neither continuous nor discrete,

* that nature at the Planck scale cannot be described with equations,

* that all motion in nature – that of quantum particles, of black hole horizons, and of curved space – results from unobservable filiform, and tangled constituents of Planck radius that follow a simple *fundamental principle.*

For fermions, this closely resembles the description used by Dirac in his lectures. Step by step, it is found that other constituents, other descriptions of quantum effects and wave functions, other gauge groups, other elementary particles, other Feynman vertices, other values of the fundamental constants, other numbers of dimensions, other theories of gravitation, and other Lagrangians contradict the observed Planck limits. As a result, a unified description of motion must be based on the topology and statistics of tangled constituents. In total, only the fundamental principle implies general relativity and the standard model with massive neutrinos. Any measurable deviation is excluded.

Details and publications at https://motionmountain.net/research

T 88.5 Fri 10:00 ZHG105

Compositeness and spatial extension of fundamental particles in a circular extra space — •Hans-Dieter Herrmann — Berlin

A particle model is proposed living in space-time as well as in an extra space complementing space-time, called basic space. The models in basic space called 'birotons' consist of two 'rotons' with nearly equal masses. Birotons have a composited spin of 1/2 h_bar and show four spinor-like states. The rotons perform a circular motion with a 4π- resp. a 2π-cycle. This geometric difference causes a symmetry violation corresponding to the weak parity violation. The mass symmetry and the spin-asymmetry between the two rotons represent an internal super-symmetry.The charge of the biroton is attached to only one of the two rotons, this results in gyromagnetic factors of 1 and 0 for the rotons, however nearly 2 for the biroton. The biroton has two modes of translation: a local mode (corpuscle-picture) and a nonlocal mode (corresponding to a picture of two parallel probability waves). In the nonlocal mode the rotons including their partial masses have different positions in space-time that causes quantum nonlocality as well as a nonlocal gravity of the same origin. The dual space-concept applied for the model contruction has a philosophical foundation, see https://philarchive.org/archive/HERACQ.

T 88.6 Fri 10:15 ZHG105

Kaluza + spin — •Thomas Schindelbeck — IRAEPH Mainz

A modified Kaluza model plus Spin 1/2 as boundary condition provides the symmetry of the elementary fermion zoo, a converging energy series that covers the range from the electron to the Higgs, as well as other particle properties such as magnetic moment or coupling constants.

The calculations are ab initio and typically yield an accuracy in the range of QED corrections.

https://zenodo.org/record/3930485