T 25: Andere Gebiete der Theorie

Zeit: Donnerstag 16:45–18:15 Raum: WIL-B122

T 25.1 Do 16:45 WIL-B122

Time dependence of the masses of the pions — •Lello Boscoverde — IdFP, Garching, Germany

Recent work in Eddingtonian cosmology has demonstrated the relation of the visible mass of the universe to the spacial extent of the pions. Building on this finding, we conclude the masses of the pions themselves are dependent on the age of the universe. We will present the previous work in this field as well as our new calculations.

T 25.2 Do 17:00 WIL-B122

The Methodological Problems of Particle Physics — •Alexander Unzicker — Pestalozzi-Gymnasium München

While the so-called standard model has been the dominating paradigm in particle physics for almost half a century, most researchers working with it would admit that it is an incomplete theory at best. Despite some ordering schemes, the overall number of its free parameters has greatly increased over the years, often accompanied by ad-hoc hypotheses such as 'confinement'.

Experimentally, the interpretation of today's collider experiments requires sophisticated modeling of huge backgrounds. Specific problems are here how to remove correctly radiation damping (given that no consistent theory of electrodynamics exists), and postulating lifetimes (top quark) during which the particle cannot even leave the collision region.

The standard model is about to develop new concepts, such as additional neutrino flavors and oscillations, while disregarding elementary questions such as to the nature of mass. From a historical perspective, the growing complications are likely to be symptoms of a scientific crisis, a phenomenon which has been described by the philosopher Thomas Kuhn. According to Kuhn however, there is no smooth transition from one paradigm to another. The only reasonable way to go beyond the standard model would be to abandon it completely.

T 25.3 Do 17:15 WIL-B122

Particle Physics under the Auspices of Quantum Gravity and Its GUT-Extension. Deriving Forces and the Quark Confinement. — •Claus Birkholz — Seydelstr. 7, D-10117 Berlin

Degeneracy classes of 'quanta' are providing 2 levels:

1) Quantum Gravity together with Hermitean conjugation,

2) the Grand Unification (GUT) of all forces of nature.

By 1), space-time and Einstein's General Relativity are fully quantized, revealing Dark Energy to be some quantum effect on cosmic scale determining the non-vanishing big bang radius of a non-singular universe.

By 2), gravitation is identified to be the singlet component related to a triplet of "internal" forces whose triple Kronecker terms are adding 4 additional fundamental forces. By using gravitation as a blueprint for "internal" interactions, this triplet structure explains the experimentally observed quark confinement.

Assuming a primeval universe to saturate all "internal" bonds, we deduce the experimental properties of (Cold) Dark Matter together with a mechanism how ordinary particles are condensing out of it. Particles are summing up the tiny masses of their "internally" saturated non-valence constituents plus (negligibly) their valence parts. Higgs particles are not needed.

T 25.4 Do 17:30 WIL-B122

Anwendung der E8 Gruppe in der Teilchenphysik u. der Kosmologie — •Norbert Sadler — Wasserburger Str.25a;85540 Haar

Durch Anwendung der E8-Gruppe auf den Mikro- und den Makrokosmos werden neue Erkenntnise in der Teilchemphysik und der Kosmologie erlangt. Def.:E8 besitzt 248 Freiheits-Grade in der Drehung eines 57 dim. geom. Objektes. Die 248 Frh. Grade bilden die Anzahl der "Feynman-Pfade" und das 57 dim. Objekt den "Entitätenkörper" ab.

(i) Die kosm. Struktur Gl.: 248=1/(5/9 alfa(QED)); 57=124x (4.13/9); (4Pi)alfa(QCD)=23.8% dunler Energie des Univ. Die asymptot. Freih.: 57=2x(alfa(QCD)/alfa(QED). Die quant. kosm. Freih.: 248=4/9(4Pi)(1.5 10**80 Prot.i.Univ.)Betrag l(Pl.) t(Pl.), mit 4/9=Wahrsch. 1 Entität/1m und mit 5/9 keine.

(ii) Die Massen der Elementart.: m(Prot.)=(h/4Pi)(sinh57)/1s ; m(Elektr.)=alfaQED)/(32x4/9)x1GeV; Pr./El.=57 x32. Das 57 dim. Obj. stabilisiert 32.66 Prot. Energieäquivalente 32.66=57x4.56% baryon. E. und bildet mit 32.66 x(alfa(QED))=23.8% deren dunkles HALO. Ist das 57 dim. Objekt die "Trägermatrix" der 32 bzw.56 SUSY-Teilchen?

(iii) Im LHC wurden durch Kollision zwei 57 dim. geom. Objekte destabilisiert: 2x(57(1+alfa(QCD)/2))=125.4 GEV. Die Massenbildung erfolgte über das 57 dim. Objekt.

T 25.5 Do 17:45 WIL-B122

Calculation of particle and quark masses solely using the fine structure constant alpha, the nucleon/electron mass ratio beta and the electron mass — •Karl Otto Greulich — Fritz Lipmann Institute Beutenbergstr.11 D 07745 Jena

A surprisingly simple relationship for particle and quark masses is given as m = x * y *me. Thereby y = 1 and x = 1 / alpha, beta and beta / alpha for a hypothetic mass m0, the nucleon and the Higgs boson. With y = 4/3 instead y = 1 one obtains the masses of the strange- , charm-, and top quark, with x = beta / alpha and y = 2 / pi the Z Boson and with the pi - 2 fold thereoff the W Boson. The aforementioned m0 is the building block for calculating, as integer multiples, all other meson- and baryon masses with better than 2 % accuracy.

References: K.O. Greulich J Mod Phys 1, 300 - 302 (2010); K.O. Greulich SPIE Proceedings 8121-15, (2011); for downloads see http://www.fli-leibniz.de/www_kog/ then klick *Physics*

T 25.6 Do 18:00 WIL-B122

The Origin of Mass - without Higgs — •Albrecht Giese — Taxusweg 15, 22605 Hamburg

The Higgs mechanism is presently understood to explain the origin of mass in the physical world. However, some points remain open. The theory does not provide an independent determination of the mass of an individual particle. Furthermore, the necessary strength of the Higgs field is far larger than the vacuum field measured in astronomy. And finally, the parameters of the new particle found at CERN seem to deviate from the needs of the theory.

In contrast, we will present a model of mass that faces none of these problems. It is classical in that it does not need quantum mechanics. In this approach, inertial mass is a consequence of the speed of light being finite. This provides a precise result for mass based on the size of the particle. The underlying particle model also explains the magnetic moment (of charged particles) and spin classically, as well as further properties normally determined using QM and relativity.

Further information: www.ag-physics.org/rmass