

GR 8: Poster Session

Time: Tuesday 14:00–16:00

Location: H 2033

GR 8.1 Tue 14:00 H 2033

Realization of a Quantum Bouncing Ball Gravity Spectrometer — ●TOBIAS RECHBERGER¹, GUNTHER CRONENBERG¹, HANNO FILTER¹, PETER GELTENBORT², JÖRG HERZINGER¹, ANDREJ IVANOV¹, TOBIAS JENKE¹, MARIO PITSCHMANN¹, MARTIN THALHAMMER^{1,2}, and HARTMUT ABELE¹ — ¹Atominstytut, Technische Universität Wien, Stadionallee 2, 1020 Wien, Austria — ²Institut Laue-Langevin, 71 avenue des Martyrs, 38000 Grenoble, France

In this poster we present the neutron as a measuring tool and as an object for gravity research. It provides access to all parameters: distance, mass, curvature, energy-momentum tensor and torsion. We show that Gravity-Resonance-Spectroscopy, a new method developed for that purpose, allows to test Newton's inverse square law and to search for dark matter and dark energy candidates. It is also possible to probe neutron's electric neutrality. We use a method based on spectroscopy, as frequency measurements have shown spectacular sensitivity in the past.

GR 8.2 Tue 14:00 H 2033

Quantum gravity improved black holes — MARCO KNIPFER^{1,2}, ●SVEN KÖPPEL^{1,2}, and PIERO NICOLINI^{1,2} — ¹Institut für theoretische Physik, Goethe-Universität Frankfurt am Main, Deutschland — ²Frankfurt Institute for Advanced Sciences, Frankfurt am Main, Deutschland

We present recent developments in the field of short scale modified black holes (BHs). As a start we introduce a family of BH geometries due to the generalized uncertainty principle and the gravity self-complete paradigm. We show that the evaporation end-point of such black holes is a cold stable remnant. Secondly, we present the nature of black hole remnants at the light of recent developments on Planck scale deformations of quantum field theory. Comments about the extradimensional extension of the proposed models are offered at the end of the poster.

GR 8.3 Tue 14:00 H 2033

Sektormodell eines Wurmlochs — ●CORVIN ZAHN und UTE KRAUS — Universität Hildesheim

Wir stellen ein Anschauungsmodell des gekrümmten Raums eines Morris-Thorne-Wurmlochs vor. Es basiert auf der im Regge-Kalkül verwendeten koordinatenfreien, nur auf messbaren Abständen beruhenden Beschreibung der Raumzeit. Das Sektormodell verdeutlicht die dreidimensionale Raumkrümmung sowie die Topologie des Wurmlochs.

GR 8.4 Tue 14:00 H 2033

Is the Speed of Light 'c' a True Constant? — ●ALBRECHT GIESE — Taxusweg 15, 22605 Hamburg

The Michelson-Morley experiment has at the first glance given the impression that 'c' is a constant in relation to any system. However, at the second glance this constancy turns out to be pure measurement result.

H. Lorentz has pointed out that this apparent constancy is the result of well understood field behaviour, i.e. the contraction of fields. Einstein accepted this as a working explanation, but he disliked it as it made an ether necessary, which he didn't want. He insisted in a theory with a constant 'c' with respect to any system. To achieve this, he had to assume a variation of space and time depending on the actual conditions of motion.

Einstein extended this principle about 'c' to gravitational fields. Even though it can be directly measured that 'c' is reduced there, Einstein again stated its constancy and explained the measurement result as a change of space-time (which is not directly measurable).

It is logically possible to transform Einstein's equations based on a constancy of 'c' and a variable space-time into a model, where space and time are fixed as always assumed but 'c' variable. This results in a much simpler understanding of physics with predominantly similar results as with Einstein.

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

GR 8.5 Tue 14:00 H 2033

Special Relativity without time dilatation and length contraction. — ●OSVALDO DOMANN — Stephanstr. 42, D- 85077 Manching
Special Relativity derived by Einstein establishes a connection between

two inertial frames based on the fact, that light that is emitted from one inertial frame with light speed has the same speed measured from a second inertial frame independent of the relative speed between the frames. The transformation between the inertial frames makes abstraction of the origin of that phenomenon. The authors "Emission & Regeneration" Field Theory shows that light that arrives with a speed different than the speed of light to measuring instruments like optical lenses or electric antennae, is absorbed and subsequently emitted with light speed, what explains why always light speed is measured in the frame of the instruments. Transformations between inertial frames which are derived taking into consideration the behaviour of the instruments don't require the assumptions of time dilatation and length contraction to arrive to the relevant Special Relativity equations. (www.odomann.com)

GR 8.6 Tue 14:00 H 2033

The Question of Dark Energy — ●ALBRECHT GIESE — Taxusweg 15, 22605 Hamburg

Dark energy is considered to be one of the great mysteries in present-day physics. From measurements of the motion of supernovae type Ia, it is deduced that the universe is undergoing accelerated expansion. To explain this acceleration, it is assumed that the universe is filled with some type of ("dark") energy.

However, there are 2 very unspectacular explanations for the measurement.

Solution 1: The speed of light 'c' was higher in early times. This inserted into the Doppler equation for the determination of early speeds from red-shift yields higher speeds for early stars. So there is no acceleration.

Solution 2: From the present cosmological concept of inflation it follows that space was smaller in early times. This has caused (at constant 'c') higher frequencies for the eigenstates of the atoms, which in turn caused the frequency of spectral lines to be positioned towards 'blue' compared to now. So the resulting red-shift is higher than presently assumed and early stars have in fact been faster. No acceleration.

Further info: www.ag-physics.org/darkenergy

GR 8.7 Tue 14:00 H 2033

Überprüfungen der Weltpotentialtheorie — ●PETER WOLFF — Calfreisen, Schweiz

Die Weltpotentialtheorie (WPT) beschreibt die kosmische Gravitation der NKG (Neuklassische Gravitation) mit zugehörigem statischem Allmodell; die NKG wird in einem eigenen Vortrag vorgestellt. Ganz anders als auf lokalen Skalen unterscheidet sich die NKG auf kosmischen, homogen/isotropen Skalen wesentlich und grundsätzlich leicht überprüfbar von der ART.

Zur Überprüfung der WPT betrachten wir hauptsächlich die folgenden mehr oder weniger gut gesicherten Beobachtungen:

1. Die scheinbaren Supernova Ia-Helligkeiten als Funktion von z
2. Die scheinbaren Winkelgrößen von Galaxien als Funktion von z
3. Die Hintergrundstrahlung als Drei-Kelvin-Hohlkörperstrahlung
4. Die Temperatur der Hintergrundstrahlung als Funktion von z
5. Die Anisotropien der Hintergrundstrahlung auf Mikrokelvinskalen

Einen direkten Beleg der Existenz oder Nichtexistenz der Expansion des Alls der heutigen Schulkosmologie wird voraussichtlich erst das neue, europäische 39 m-Teleskop in Chile liefern können.

GR 8.8 Tue 14:00 H 2033

Die kosmischen Gleichungen und die Parameter des Universums. — ●NORBERT SADLER — Wasserburger Str. 25a; 85540 Haar

Das Universum kann als ein komplexes, thermodynamisches System verstanden werden und ist über die Algorithmen der "Statistischen Physik" und der "Explorativen-Faktoren-analyse" physikalisch und mathematisch definiert. Die Faktoren betreffen im Wesentlichen die Aufenthaltswahrscheinlichkeit von etwa (4/9) Protonen/1m, die Protonenenergie von (0.938GeV) sowie die Wechselwirkungs-Quanten.

Die kosmischen Gleichungen, definiert über die Entropie:

- (i) $(2\pi)x(\alpha(\text{QED}))=(0.0458:\text{bar.Mat.})$; die photonische, physikalische Wirklichkeit.
- (ii) $(0.0458)/((4.03/9)x \log(3.97/9))=((0.288:\text{gr.Mat.})$ ist Entropie der Gravitation.
- (iii) $2x\log(3.97/9)=(0.71;\text{dkl.E.})=\alpha(\text{QCD})/(0.288)$ ist die Entro-

pie der QCD.

(iv) $(3.97/9) \times \log(0.288; \text{grav. Mat.}) = -(0.2387; \text{dkl. Mat.})$ ist die Entropie der primordialen Nukleosynthese.

Aus obigen Gleichungen folgert für die dkl. Materie von 23.87%, bei CP-Verletzung u. Beta-Zerfall, ein Bosonen-Energieäquivalent von $(85.25 \text{ GeV}) \times (\text{CP-Verl.}; 0.0028) = (0.2387)$.

Die Parameter des Universums: $H = (0.938) / (0.2387 \times c = 1) = 70 \text{ km/Mpc}$; Die Reynolds-Zahl $(\text{Univ.}) \text{Re}(\text{Univ.}) = (H \times H) / \alpha(\text{Gravitation}) = 861$.

Weitere Information: www.cosmology-harmonices-mundi.com

GR 8.9 Tue 14:00 H 2033

Book: Special and general theory of relativity — •JÜRGEN BRANDES — Karlsbad, Germany

SRT and GRT are part of the foundations of physics. This will not be queried but is there more? The following argument demands it: There are two contradictory formulas about the total energy of a particle resting in the gravitational field [1]. From the formulas of radial free

fall one gets: $E = mc^2 \sqrt{(1 - 2GM/c^2)}$. This is at least qualitatively correct since removing the particle from the gravitational field needs energy. Doing this the total energy of the particle becomes $E = mc^2$ and therefore, within the gravitational field it has to be lower. On the other side, there is the equivalence principle. A particle resting in its local inertial system (i.e. the freely falling particle) has a total energy equal to its rest mass: $E = mc^2$. Both of the formula contradict each other. Certainly, they belong to different reference systems with one of them being accelerated, in fact. But: At time point $t = 0$ the free falling particle is also a resting one since its velocity $v = 0$. Only its acceleration $b \neq 0$. Special theory of relativity is applicable and therefore the freely falling particle at $t = 0$ as well as an always resting particle at the same position possess identical total energy $E = mc^2$.

Easy to solve? Look at [1], [2] and wonder at the reactions.

[1] J. Brandes, J. Czerniawski: *Spezielle und Allgemeine Relativitätstheorie für Physiker und Philosophen - Einstein- und Lorentz-Interpretation, Paradoxien, Raum und Zeit, Experimente*, 2010,

[2] Website <http://www.grt-li.de>