1942th Conference

Planetary Science 2018

International Conference on

Planetary Science and Particle Physics

August 27-28, 2018 | Boston, USA

e-Poster

S Orlov, J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Genesis of the planet of earth

S Orlov
Petrozavodsk State University, Russia

In the author's theory of vortex gravity, the evidence is offered that gravity in space is created by etheric vortices. In the center of the vortex, micro vortices are formed, which give rise to atoms. The speed of rotation of the ether and the force of gravity in each vortex is constant. Consequently, the volume of the creation of atoms is also constant. The newly created atoms are constantly squeezed out from the core of the celestial body into its magma. In Magma, there are extreme temperature conditions and ultrahigh pressure. Under these conditions, all substances of planets and stars are created from atoms - minerals, liquids, gases and organic molecules. Since magma is constantly overfilled with newly formed atoms and substances, the excess of this matter breaks through the earth's crust and pours out in the form of volcanic lava. The increase in the mass of the Earth, on the basis of the law of conservation of the angular momentum of rotation, causes a slowing down of the rotation of our planet and a change in the radius of its orbit. In modern studies, a deceleration of the Earth's rotation of 0.00002 seconds per year is determined. In accordance with the law of conservation of the angular momentum of rotation (M V R = const), this deceleration should be caused by an increase in the mass of the Earth by a value of 1,036 x 1015 kg/year. The same law of conservation of the angular momentum of rotation is also applicable when the Earth is circling the Sun. That is, increasing the Earth's mass reduces the radius of the Earth's orbit and increases its orbital velocity. Consequently, in the past mega-history of our planet, one revolution around the Sun took more time, inversely proportional to the age of the planet. That is, the year was longer. At the same time, one revolution of our planet around its axis occurred faster. That is, the day was shorter. In the future, the earth's year will be shortened, and the earth's day will be extended. As a proof of the proposed model of the genesis of our planet, I propose the following information. According to geologists, the total mass of poured volcanic lava per year is measured in tens of cubic kilometers. This volume corresponds to a mass in the order of 1015 kg. Thus, the actual mass of volcanic lava poured in a year is equal to the value of the increase in mass calculated by the proposed model. Consequently, cosmic, ethereal whirlwinds are the creators of all forms and types of matter known to us.

Biography

S Orlov graduated in 1985 he graduated from the Petrozavodsk State University. Civil engineer. Pensioner. He has published 9 articles. He has extended his valuable service in field of Space science for several years and has been a recipient of many award and grants. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his wide range of publications in various national and international journals.

ion@sampo.ru

Notes:

1942th Conference

Planetary Science 2018

International Conference on

Planetary Science and Particle Physics

August 27-28, 2018 | Boston, USA

Accepted Abstracts

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Is dark matter really necessary

Christian Marchal
French National Office for Aerospace Researches and Studies, France

The notion of Dark Matter was invented in the thirties by Fritz Zwicky as a necessary explanation of the dynamical equilibrium of the galaxies and clusters of galaxies. However, that equilibrium is possible, without Dark Matter, if it is not perfect and if the galaxies keep almost all their stars but loose continuously into outer space a small part of their clouds of gas. A similar phenomenon exists in the Solar System that looses continuously the Solar Wind (several millions of tons per second) into interstellar space. For the clusters of galaxies, the gravitation is not the main dynamical phenomenon, it is the expansion of Universe. Even without dark matter, the dispersion of clusters is slower than the expansion and so the clusters keep their individuality and their existence.

clbmarchal@wanadoo.fr

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

SunQM-1: Quantum mechanics of the Solar system in a {N,n//6} QM structure

Yi Cao
USA

Finally, I find a way to extend Bohr's atom model (which was inspired by the Solar system structure) to our Solar system structure. In this paper, I present that how I decoded the quantum mechanics for our Solar system by introducing a {N,n//6} QM structure model. In the newly established Solar QM {N,n} structure, Sun core has a size of {0,1}, Sun surface has a size of {0,2}, Mercury, Venus, Earth, and Mars are at {1,n=3..6}o orbits. Jupiter, Saturn, Uranus, Neptune, and Kuiper belt are at {2,n=2..6}o orbits. Oort cloud is at {4,n=1..5}o orbits. There are four undiscovered planets/belts at orbits of {3,n=2..5}o. More interestingly, white dwarf, neutron star, and black hole are assigned to {-1,1}, {-3,2} and {-3,1} in the same model. From these results, I constructed a Solar QM {N,n} structure periodic table (similar to the chemical element's periodic table). A Solar QM {N,n} structure periodic plot is also presented here which shows some more detailed (and visualized) information.

yicaojob@yahoo.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

A comparative entropy based analysis of cu and fe3o4/ methanol powell-eyring nanofluid in solar thermal collectors subjected to thermal radiation, variable thermal conductivity and impact of different nanoparticles shape

Wasim Jamshed
Penn State York, USA

The efficiency of any nanofluid based thermal solar system depends on the thermophysical properties of the operating fluids, type, and shape of nanoparticles, nanoparticles volumetric concentration in the base fluid and the geometry/length of the system in which fluid is flowing. The recent research in the field of thermal solar energy has been focused to increase the efficiency of solar thermal collector systems. In the present research, a simplified mathematical model is studied for inclusion in the thermal solar systems with the aim to improve the overall efficiency of the system. The flow of Powell-Eyring nanofluid is induced by non-uniform stretching of the porous horizontal surface with fluid occupying a space over the surface. The thermal conductivity of the nanofluid is to vary as a linear function of temperature and the thermal radiation is to travel a short distance in the optically thick nanofluid. Numerical scheme of Keller box is implemented on the system of nonlinear ordinary differential equations, which are resultant after application of similarity transformation to governing nonlinear partial differential equations. The impact of non-dimensional physical parameters appearing in the system has been observed on velocity and temperature profiles along with the entropy of the system. The velocity gradient (skin friction coefficient) and the strength of convective heat exchange (Nusselt number) are also investigated.

Wasiktk@hotmail.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Modeling the Impact of climate change on water resources of upper Kharun catchment

Navneet
Germany

The Upper Kharun Catchment (UKC) is one of the most important, economically sound and highly populated watersheds of Chhattisgarh state in India. The inhabitants strongly depend on monsoon and are severely prone to water stress. This research aims to assess the impact of climate change on water balance components in UKC. We applied the Soil and Water Assessment Tool (SWAT) in the Upper Kharun Catchment/India. High-resolution input on land use including explicitly irrigation issues and three climate simulations of PRECIS regional climate model were used. The station-level bias-corrected PRECIS (Providing REgional Climates for Impact Studies) projections generally show increasing trends for annual rainfall and temperature. Hydrological simulations, performed by SWAT (Soil and Water Assessment Tool), indicate over-proportional runoff-rainfall and under-proportional percolation-rainfall relationships. Simulated annual discharge for the 2020s will decrease by 2.9% on average (with a decrease of 25.9% for q1 to an increase of 23.6% for q14); for 2050s an average increase by 12.4% (17.6% decrease for q1 to 39.4% increase for q0); for 2080s an average increase of 39.5% (16.3% increase for q1 to an increase of 63.7% for q0). Respective ranges on percolation: for 2020s an average decrease by 0.8% (12.8% decrease for q1 to an increase of 8.7% for q14); for 2050s an average increase by 2.5% (10.3% decrease for q1 to 15.4% increase for q0); for 2080s an average increase by 7.5% (0.3% decrease for q1 to 13.7% increase for q0). These over- and under-proportional relationships indicate future enhancement of floods and question sufficiency of groundwater recharge.

nkumar@uni-bonn.de

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Large interstellar polarisation survey: On the importance of analysing single cloud sight-lines

Ralf Siebenmorgen
Germany

We study the variability of the dust characteristics from cloud-to-cloud in the diffuse ISM. We took low-resolution spectro-polarimetric data obtained in the context of the Large Interstellar Polarisation Survey (LIPS, arXiv:1710.02439) towards 59 sight-lines in the southern hemisphere, and we fitted these data using a dust model composed of silicate and carbon (arXiv:1705.07828). Particles sizes range from the molecular to the sub-micrometer domain. Large (>6 nm) spheroidal dust that is of a prolate shape and made of silicate account for the observed polarisation curve (arXiv:1308.3148). For 32 sight-lines we complemented our data set with UVES archive high-resolution spectra, which enable us to establish the presence of single-cloud or multiple-clouds towards individual sight-lines. We find that the majority of these 32 sight-lines intersect two or more dust clouds, while eight of them are dominated by a single absorbing cloud. We confirm several correlations between extinction and polarisation characteristics and the dust parameters, but we find also several previously undetected correlations between these parameters that are valid only in single-cloud sight-lines (arXiv:1711.08672). We observe that interstellar polarisation from multiple-clouds is smaller than from single-cloud sight-lines, showing that the presence of second or more clouds depolarises the incoming radiation. We find large variations of the dust characteristics from cloud-to-cloud. However, when we average a number of clouds we always retrieve similar mean dust parameters. Typical dust abundances of the single-cloud cases are [C]/[H] = 92 ppm and [Si]/[H] = 20 ppm. Further, we present the status of our search of single-cloud sight-lines and discuss the impact of grain porosity on the extinction and the optical-to-submillimeter polarisation.

Ralf.Siebenmorgen@eso.org

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

The electron and its symmetry in empirical approach to the Standard Model development

Sergey Sukhoruchkin
Petersburg Nuclear Physics Institute, Russia

Unexpectedly accurate relations between nucleon masses and the electron rest mass as well as the role of QCD-based gluon-quark-dressing effect are considered in this review. In the Standard Model, particle masses are empirical parameters. However, different authors including Y. Nambu and R. Feynman turned attention to certain particle mass relations which are used in this work:

1) pion's mass splitting δ mπ=4594 keV is close to 9me=4599 keV. Hence the doubled value of pion's ß-decay energy is close to δ=16me.

2) Empirical relations found by Y. Nambu and A. Hautot mN=mμ + 6mπ and mπ/mμ = 17/13, allow to introduce the period of (mπ + mμ)/(17+13)=8174 keV, close to δ=8176 keV. Masses mμ, mπ, and mN are close to nδ (with n=13,17,115 where n is a number of the period δ). Pion's parameters fπ =130.7 MeV and ΔmΔ=147 MeV=(mΔ-mN)/2 correspond to n=16 and 18.

From CODATA evaluation one can find that the shift of the neutron mass value relative to 115δ - I am equal to δmn=161.56(6) keV which accounts an integer ratio with nucleon mass splitting δmN=1293 keV: δmN/δmn=8•(1.0001(1)). It was considered as a presence of fine structure with the period 161 keV=δmn=δmN/8. Discreteness with CODATA parameter δ=16me extended up to the higher energies. Lepton ratio L=mμ/me=207 was found between vector boson masses MZ, MW and constituent quark masses Mq, M'q. Long-range correlation with δ was noticed between the scalar mass and the top-quark mass as well. Mass grouping effect at 58 GeV observed in the L-3 experiment by S. Ting and coworkers as well as a remark by F. Wilczek about the distinguished position of the top-quark in the particle mass spectrum will be discussed.

sukhoruchkin_si@pnpi.nrcki.ru

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Gravitational properties of an atom equivalence of energy and atomic gravity

S Orlov
Petrozavodsk State University, Russia

The strength of any substance is created by interatomic forces of attraction. By the nature of the interatomic forces, the following types of bond in solids are distinguished: ionic, covalent, metallic, hydrogen, the Van der Waals bond. In this paper, we propose to consider a new model of interatomic bonds. The proposed physical model is based on the author's theory of vortex gravity, cosmology, and cosmogony. In this theory, the evidence is offered that gravity, celestial bodies, and atoms create etheric vortices. Ether, as an extremely dense gas, permeates any substance, except for atomic nuclei. In theory, an equation was calculated for determining the forces of vortex gravity - Fg, which is equivalent to determining the forces of interatomic attraction

[F]_g=V×□×(v_r^2)/r (1) where

V is the volume of nucleons to which the force of vortex gravity acts, that is, the nucleus of the neighboring atom, vr is the speed of the orbital revolution of the ether in the considered orbit, r is the radius of the orbit on which the force of the vortex gravitation is determined, and □ is the ether density.

The orbital velocity (vr) in the atomic vortex has an inversely quadratic dependence on the distance to the center of the vortex (r), in accordance with Kepler's law Vr~1/√r. On the surface of the nucleus of an atom, the force of the vortex gravitation reaches its maximum value, at which the ether compresses in the center into a super dense state. The density of the substance of nucleons is the same in all elementary particles. Thus, the nucleus of the atom is formed, which the ether can not permeate. When moving away from the nucleus, the force of the vortex gravity weakens to the interatomic attraction. A decrease in the orbital velocity of the ether causes an inversely proportional change in pressure P = □ v2r (3). The change in pressure in a gaseous medium, apart from the creation of gravitational forces, also generates energy in a given volume of ether. This regularity is represented by the Mendeleev-Klaiperon equation E = 3/2 Pvt (4), where E is the energy, P is the pressure, and Vt is the volume of the gas under consideration (the vortex). Substituting (3) into (4), we obtain the energy in one atomic vortex - E = 3/2 □ v12 Vt (5). Equation (5) is equivalent to the empirical formula E = m c2 but has a theoretical justification. When the atom (nucleus) is destroyed (split), the atomic vortex also collapses. At the same time, the pressure in the torsion increases sharply to the values of the free ether, which should be accompanied by the release of energy, in accordance with formula (5).

ion@sampo.ru

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Robust and optimal quantum control for some classes of linear quantum systems

Aline I Maalouf
The Australian National University, Australia

Statement of the Problem: As experimental quantum technology continues to improve, the idea of manipulating microscale quantum processes rather than just observing them is rapidly gaining ground. In particular, the manipulation of quantum systems using continuous measurement and feedback control has generated increasing interest in the last few years due to its potential applications in metrology, communications and other quantum technologies. Also, the area of quantum control is of theoretical interest, since it connects the well-developed field of classical optimal control theory to fundamental questions regarding the structure of information and disturbances in quantum mechanics. Therefore, significant interest has emerged in the area of quantum feedback control systems. Extending classical control theory to the quantum domain; i.e., to physical systems whose behavior is not governed by classical physics but dominated by quantum effects, has become an important area of research. It is also an essential prerequisite for the development of novel technologies such as quantum information processing, as well as new applications in quantum optics, quantum electronics and quantum chemistry. The most effective strategies in classical control applications involve feedback control. However, the implementation of classical feedback control for quantum systems poses severe challenges since quantum measurements tend to destroy the state of the system (wave-packet reduction). Nevertheless, the possibility of continuous monitoring and manipulation on a natural time-scale has recently become realistic for some quantum systems. This may be viewed as a first step in the direction of closing the gap between quantum feedback control and classical control theory. In this talk, I will define robust and optimal quantum control which are at the core of feedback control from an engineering perspective and go through my own contributions in that domain.

Findings: A finite horizon H∞ control problem is solved for a class of linear quantum systems using a dynamic game approach for the case of continuous, sampled-data and delay measurements. The methodology adopted involves an equivalence between the quantum problem and two auxiliary classical problems.

alinemaalouf@hotmail.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Joseph Shklovsky - The Best Russian Astrophysicist

Vladimir G Kurt
P N Lebedev Physical Insitute, Russia

Joseph Shklovsky was born on 1 July 1916 in a small Ukranian town Glukhov. He finished school in 1932 and in 1933 he entered Physical-Mathematical faculty of Vladivostok State University. After the 2-d year he was transferred to the Optic Department of the Physical Faculty of the Moscow State University which he graduated in 1938. The same year he took a Postgraduate at the Sternberg Astronomical Institute where he worked his whole life. He became a Professor and since 1969 he was the Head of the Astrophysical Department in the Space Research Institute. He made outstanding works almost in all the fields of modern astrophysics. He was the first to show the possibility of observing the neutral Hydrogen in the Galaxy in the line 21 cm. He made outstanding works in cosmology, planetary astronomy and cosmogony. Shklovsky was a brilliant lecturer. He lectured at Astronomical Department of the Physical Faculty of the Moscow State University various courses: "General Astronomy", "Radio Astronomy", "Quantum Mechanics", and many professors in different universities in Russia, the USA and Europe were his students. He solved the problem of genetic relationship of low-mass stars of the Sun type, red giants and planetary nebulae. He calculated wavelengths and the intensity of radio lines of OH and other molecules in the interstellar medium. He was the first to identify the spectrum of the Earth atmosphere glow. Three of his students were elected members of the Russian Academy of Sciences and more that 20 became doctors and proffesors. He was a good specialist in the history of discovering of South and Central America, as well as in Japanese history. Shklovsky was an erudite and a remarkable artist. He was a specialist in literature and poetry. Being a free man, he struggled against anti-semitism in the USSR and persecution of dissidents. Therefore for many years he couldn't travel abroad and take part in the international conferences. He was elected the member of Royal Astronomical Society of Great Britain, the member of the American Academy of Sciences and Art, an honorary member of the Royal Astronomical Society of Canada, an Honorary professor of Paris University. Pacific Astronomical Society of the USA awarded him with Bruce golden medal (1972). He is the author of more than 300 articles published in "Nature", Astrophysical Journal, Month. Noth., Astronomical Journal and other Russian and international journals. He died on 3 March 1968, a few months before his 70s anniversary.

vkurt@asc.rssi.ru

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Hydrogeological, hydrogeochemical and isotope geochemical features of thermal waters in Kuşadası, Turkey

Nevzat Özgür
Suleyman Demirel University, Turkey

Most of the research on geothermal resources in Turkey has been carried out in continental rift zones of the Menderes Massif, mainly in the rift zone of the Büyük Menderes area1. In this area, a 750 MWe potential of geothermal energy production is expected. In the study area, (i) a 1: 25.000 scale geological map was reconstructed, (ii) hydrogeological location and features of geothermal waters were identified comprehensively, (iii) the groundwaters and geothermal waters have been described hydrogeochemically, and (iv) the origin of groundwaters and geothermal waters was explained. Finally, the intrusion of sea water into groundwaters in Kuşadası and surroundings has been recognized due to the drop of groundwater table caused by the excessive use of groundwaters in the study area. In this study, the hydrogeological, hydrogeochemical and isotopic signatures of the thermal waters in Kuşadası and surroundings, will be presented. In the study area, the basement rocks are mpermeable Paleozoic mica schists of the Menderes Massif. The Mesozoic marbles are ascribed either to groundwater aquifers or to thermal waters reservoirs. These rocks are covered by the Kuşadası formation consisting of a sequence of claystones, conglomerates and carbonate rocks. This upper Kuşadası formation plays an important role as cap rocks. The existence of active faults and basic volcanic rocks of Pliocene age points to the existence of high heat flows and geothermal gradients. As a youngest geological formation, the alluvium is a very good aquifer. Nowadays, there is the risk of sea water intrusion into the local groundwaters due to the drop of groundwater table caused by groundwater overexploitation in the study area.

nevzatozgur@sdu.edu.tr

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

Sunyaev-Zeldovich effect as tool to probe fundamental physics and modified gravity

Ivan de Martino
University of the Basque Country, Spain

We used the data on the Cosmic Microwave Background (CMB) temperature anisotropies measured by the Planck satellite and a sample of X-ray selected clusters with spectroscopically measured redshifts to probe the standard cosmological model and the underlying theory of gravity. To avoid antenna beam effects, we brought all the maps to the same resolution. We used a CMB template to subtract the cosmological signal while preserving the Thermal Sunyaev-Zeldovich (TSZ) anisotropies; next, we removed galactic foreground emissions around each cluster and we masked out all known point sources. Once the cleaning procedure is completed, we measured the TSZ effect on discs of aperture θ500 and centered at the position of each galaxy cluster in our sample. Then, we extracted the value of the CMB temperature at galaxy cluster location. With these data we constrained the deviation of adiabatic evolution of the Universe and the spatial variation of the fine structure constant. Next, we measured the TSZ profile of COMA cluster and used it to constrain modified gravity models that, in their weak field limit, modify the Newtonian potential. (Up to 250 words)

ivan.demartino1983@gmail.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Topology of 4-dimensional universe for every 3-dimensional manifold

Akio Kawauchi
Osaka City University Advanced Mathematical Institute, Japan

A 4-dimensional universe is a 4-dimensional boundary-less connected oriented manifold with every 3-dimensional closed connected oriented manifold embedded. A 4-dimensional punctured universe is a 4-dimensional boundary-less connected oriented manifold with the punctured manifold of every 3-dimensional closed connected oriented manifold embedded. It is known that every 4-dimensional universe and every 4-dimensional punctured universe are 4-dimensional open manifolds. If a 3-dimensional closed connected orientable manifold is considered as a 3-dimensional universe, then every spacetime is embedded in every 4-dimensional universe since the trivial line bundle over every 3-dimensional universe is embedded in it. For any 4-dimensional oriented manifold Y, some topological invariants of Y with values taken in {0, 1, 2, …, +∞} are defined by using homological arguments and called the topological indexes of Y. The topological indexes are applied to a 4-dimensional punctured universe and refined notions of a 4-dimensional universe, namely 4-dimensional types 1, 2 and full universes to show certain infinity of these topological indexes. It is shown that this infinity comes from embeddings of the connected sums of 3-dimensional homology handles obtained from certain infinite family of knots by 0-surgery. Recently, it is also shown that the rational second homologies of every 4-dimensional universe and every 4-dimensional punctured universe are always infinitely generated over the rationals by using the embeddings of 3-dimensional closed connected oriented manifolds obtained from the 3-torus and certain infinite family of knots. In conclusion, it is confirmed that the topology of every 4-dimensional universe and every 4-dimensional punctured universe are related to knot theory.

kawauchi@sci.osaka-cu.ac.jp

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Numerical analysis of plasma flow vortices in the magneto-tail

Khatuna Chargazia and **Oleg Kharshiladze**
Tbilisi State University, Georgia

Ulf electromagnetic planetary waves can self-organize into vortex structures (monopole, dipole or into vortex chains). They are often detected in the plasma media, for instance in the magneto-sheath, in the magneto-tail and in the ionosphere. Large scale vortices may correspond to the injection scale of turbulence, so that understanding their origin is important for understanding the energy transfer processes in the geo-space environment. In a recent work, the THEMIS mission has detected vortices in the magneto-tail in association with the strong velocity shear of a sub-storm plasma flow which have conjugate vortices in the ionosphere. By analysing the THEMIS data for that event, we find that several vortices can be detected together with the main one, and that the vortices indeed constitute a vortex chain. The study was carried out by analysing both the velocity and the magnetic field measurements for spacecraft C and D, and by obtaining the corresponding hodograms. It is found that both monopolar and bipolar vortices may be present in the magneto-tail. The comparison of observations with numerical simulations of vortex formation in sheared flows is also discussed.

Khatuna.chargazia@gmail.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Evidence of cosmic strings by the observation of the alignment of quasar polarization axes on Mpc scale

Reinoud J Slagter
University of Amsterdam, Netherlands

The recently found alignment of the polarization axes of quasars in large quasar groups on Mpc scales can be explained by general relativistic cosmic string networks. By considering the cosmic string as remnant of a spontaneous symmetry breaking of the U (1) abelian Higgs model with topological charge n, many stability features of the n-vortex solutions of superconductivity can be taken over. Decay of the high multiplicity (n) super-conducting vortex into a lattice of n vortices of unit magnetic flux is energetically favorable. The temporarily broken axial symmetry will leave an imprint of a preferred azimuthal angle on the lattice. The stability of the lattice depends critically on the parameters of the model, especially when gravity comes into play. In order to handle the strong nonlinear behavior of the time-dependent coupled field equations of gravity and the scalar-gauge field, we will use a high-frequency approximation scheme to second order on a warped 5D axially symmetric spacetime with the scalar-gauge field residing on the brane. We considered different winding numbers for the subsequent orders of perturbations of the scalar field. A profound contribution to the energy momentum tensor comes from the bulk spacetime and can be understood as "dark"-energy. The cosmic string becomes super-massive by the contribution of the 5D Weyl tensor on the brane and the stored azimuthal preferences will not fade away. The recovery of the axial SO (2) symmetry will release gravitational and electro-magnetic radiation. The perturbative appearance of a non-zero energy-momentum component can be compared with the phenomenon of bifurcation along the Maclaurin-Jacobi sequence of equilibrium ellipsoids of self-gravitating compact objects accompanied by spontaneous symmetry breaking similar to the second order phase transition in type II superconductivity. The recovery of the SO (2) symmetry from the equatorial eccentricity takes place on a time-scale comparable with the emission of gravitational waves. The emergent azimuthal angle dependency in our model can be used to explain the aligned polarization axes in large quasar groups on Mpc scales. Spin axis direction perpendicular to the major axes of large quasar groups when the richness decreases, can be explained as a second order effect in our approximation scheme by the higher multiplicity terms. The preferred directions are modulo with i an integer dependent on the i-th order of approximation. When more data of quasars of high redshift will become available, then one could proof that the alignment emerged just after the symmetry breaking scale and must be of a cosmological origin. The effect of the warp factor on the second-order perturbations could also be an indication of the existence of large extra dimensions.

info@asfyon.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

Quantum cosmology of a conformal multiverse

Salvador J Robles-Perez
Instituto de Física Fundamental, Spain

In this talk the author will present the model of a conformal multiverse, for which exact solutions can be found. The universes are created in entangled pairs with spacetimes that are both expanding in terms of the time variables experienced by internal observers in their Particle Physics experiments. The time variables are related by an antipodal-like symmetry that might explain why there is no antimatter in our universe: at the origin, antimatter was created, by definition and for both observers, in the observer's partner universe. The Euclidean region of the spacetime that separates the two universes acts as a quantum barrier that prevents matter-antimatter from collapse. Moreover, the creation of universes in entangled pairs would leave observable imprints on the properties of the universes: i) it would induce a departure from the expected evolution of the spacetime of a single universe; and, ii) it would modify the lowest modes of the spectrum of fluctuations of the matter fields, allowing us to look for observational imprints of the multiverse in the properties of a universe like ours.

salvarp@imaff.cfmac.csic.es

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

A robust and efficient quantum private comparison of equality based on the entangled swapping of GHZ-like state and χ+ state

Zhiwen Zhao and **Ling Xu**
Beijing Normal University, China

A new quantum protocol with the assistance of a semi-honest third party (TP) is proposed, which allows the participants comparing the equality of their private information without disclosing them. Different from previous protocols, this protocol utilizes quantum key distribution against the collective-dephasing noise and the collective-rotation noise, which is more robust and abandons few samples, to transmit the classical information. In addition, this protocol utilizes the GHZ-like state and the χ+ state to produce the entanglement swapping. And the Bell basis and the dual basis are used to measure the particle pair so that 3 bits of each participant's private information can be compared in each comparison time, which is more efficient and consumes fewer comparison times. Meanwhile, there is no need of unitary operation and hash function in this protocol. At the end, various kinds of outside attack and participant attack are discussed and analyzed to be invalid, so it can complete the comparison in security.

secbnu@126.com

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Computational assignment of vibrational frequency bands facilitates the identification of Raman spectra

Pardis Tabaee Damavandi
Queen Mary University of London, UK

Spectroscopic parallax is the measure of the distance between two stars or celestial objects and relies on the stellar spectral type and luminosity class defined by the Morgan-Keenan classification system. UV, IR (infrared), Raman or optical spectrographic instruments are 'integrated' in many telescopes and are used to obtain information on brightness, temperature (surface), density and velocities. Stars are classified based on their type and on their brightness, which allow us to obtain distances to them, however, with previous classification systems, the star's size, i.e. dwarf, giant or supergiant and composition (heavy metal versus carbon stars) were also used. The Morgan-Keenan classification offers information on the star color, i.e. very blue and the type, however, the infrared wavelengths are approximately >9000 Å. We therefore tend to speak of near-infrared spectra. Spectra can be ulterior division into continuous, band and linear. Band spectra are usually descriptive of molecular compounds and are the ones that we investigated. We are going to concentrate on the interpretation of Raman band spectra of a small biological peptide, i.e. human glutathione (GSH), but we the same approach can be applied to gain stellar information. Our method consisted in using vibrational dynamics (VD), the study of atomic oscillations within a molecule. We previously obtained experimental vibrations for the peptide through Raman or IR spectroscopies available in the literature. These techniques have been widely used in the past, but the assignment of vibrational frequency bands is still challenging. In recent years, researchers have used ab initio and other computer simulation methods that facilitate band recognition. The goal of this work was to apply computational vibrational dynamics studies to the structure of human glutathione, and to then compare these values with its IR and Raman frequencies. By analyzing both simulation results and by comparing them with empirical data, we gained important information about the vibration modes of glutathione. This study showed that some bands that may not be visible in Raman or IR spectra can be 'detected' with this technique. Furthermore, our findings illustrate that most peaks obtained experimentally match those achieved in the computational simulation. Vibrational dynamics was therefore not just effective in understanding the structure of glutathione, but it can also be used to refine the quality of experimental Raman-IR data.

p.tabaee@qmul.ac.uk

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Mean motion resonances and gravitational captures within the context of planetary migration – the solar system small bodies' allocation mechanisms

Helton da Silva Gaspar
Universidade Federal de Santa Catarina, Brazil

The solar system current configuration is different than that of the final stage of planets formation. Many solar system features evinces that the planets past a period of migration which resulted the current orbits. Planetary migration is mainly due the angular momentum exchange. When two astronomical bodies undergo a close encounter, one of them experiences an orbital rising whilst the other suffers an orbital shrinkage. Close encounters between a planet and a planetesimal causes the planet a negligible variation of angular momentum in comparison to the small body. However, when a planet undergoes some billions of such encounters, the net result is remarkable. Lunar craters, for instance, are evidences of a late heavy bombardment (LHB) by small bodies thrown toward the terrestrial region during the planetary migration phase. Another strong evidence, are the existence of dozens of irregular satellites around the giant planets. They are satellites that did not form around their planets. Instead, they were gravitationally captured. Spectral analysis shows that the composition of many irregular satellites are similar both to the compositions of asteroids found within the main belt and the Kuiper belt. In special, there are two groups of small bodies with similar spectra: the resonant group of asteroids Hilda in the asteroid belt, and the Himalias, a dynamical family of Jovian irregular satellites. This work intends to assess whether the mean motion resonances are capable of connecting the origins of Hilda's and Himalia's and other small bodies that once orbited the region beyond Jupiter's orbit.

helton.s.gaspar@ufsc.br

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

On the need for systematic and interdisciplinary study solar- terrestrial relations

Smolkov Gennady Yakovlevich
Institute of Solar-Terrestrial Physics, Russia

The physics of solar-terrestrial relations is one of the urgent problems of modern natural science, since these links determine the state and variability of the environment and the activities of mankind. It is not systemic study of the solar-terrestrial connections, which is devoid of objective accounting of all initial (external) factors, without an interdisciplinary explanation of the mechanisms of their impact on the Earth and their characteristic manifestations, inevitably leads to the forced attribution of inexplicable processes and phenomena to "natural anomalies", the preservation of unanswered questions, do not allow to fully penetrate into the essence of solar-terrestrial connections, and hinders the forecast of changes in the natural environment. Still widely used statements, correlation and statistical analyzes of ground responses are not accompanied by a proper interpretation of the studied. Analysis of the state of the study of solar-terrestrial relationships has shown that it is still at the search stage, since mechanisms, energy, cyclicity, polar asymmetry, inversion, synchronism of events and processes, instability of the diurnal rotation of the Earth are not explained without taking into account all the initial (external) causes, spasmodic and other features of their manifestations. In the interest of developing a systematic and interdisciplinary study of solar-terrestrial relationships, taking into account all the initial global factors affecting the Earth, it is proposed: in addition to the effects of solar activity and GCR fluxes on the Earth, the role and contribution to the solar-terrestrial connections of the Earth's endogenous activity gravitational influence on our planet from the moon, the sun and other planets in the process of barycentric motion of the solar system in the gravitational field of the galaxy, as well as perturbations of the solar system as overall outside processes and events near and far cosmos. Synchronous events and processes 1997-1998 on the sun and earth testify to an external effect on the solar system, identified with a burst of neutrino radiation and a gravitational wave due to a supernova outburst. Autonomous responses of earth's shells can be the result of trigger effects during the transition of the solar system from the galactic orion arm on the way to the perseus branch.

smolkov@iszf.irk.ru

J Astrophys Aerospace Technol 2018, Volume 6
DOI: 10.4172/2329-6542-C2-021

International Conference on
Planetary Science and Particle Physics
August 27-28, 2018 | Boston, USA

Quantum-Wiggler electrodynamic identification of nuclear electromagnetic pulse as being free-electron two-quantum magnetic-Wiggler Bremsstrahlung

Shang H Kim
Colorado State University, USA

The electron thermal energy k*T, where k and T are Boltzmann's constant, and temperature, respectively, can be viewed as being the uncertainty in the electron energy, ΔE. When α >> ΔE/h=k*T/h >> f, where f and α are the radiation frequency and the rate of the transition accompanied with the radiation, respectively, the radiation power from an electron is given by P= ΔE*f=k*T*f [1,2,3]. We assume that a spatially non-uniform magnetic field is represented by its most dominant mode, and calculate the transition rate of free-electron two-quantum magnetic-wiggler bremsstrahlung (FETQMWB) driven by the field of this mode and the electron's intrinsic motivity to change its internal configuration through spontaneously emission. We find that α >> k*T/h >> f is satisfied in the plasma generated by nuclear explosion, and formulate the total radiation power in terms of plasma and magnetic field parameters. We envision a scheme to generate a super strong electromagnetic pulse (EMP) of FETQMWB by compressing a high-temperature high-density electron beam to become a beam of thermonuclear temperature and ultra-dense beam with a pulsed periodic axial magnetic field in a theta-pinch-like configuration.

kim_shang_hoo@hotmail.com