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Abstracts and the descriptions of works in Art and Science submitted to www.IntellectualArchive.com in February 2012

ID #: 108   **Natural Sciences / Computer Sciences / Analysis of algorithms**

Submitted on: Feb 20, 2012

Author: Andrei V. Serghienko

Title: Mathematical Modeling in Delphi

Abstract: The literature on Delphi numbers many manuals. However among them there are few books, oriented to the solution of scientific and technical problems. In order to fill this want, the author wrote the paper, containing the examples of programs in Delphi. Depending on the type of problems it is convenient to use or graphic (usual), or console applications of Delphi. Graphic applications are applicable for the plotting of functions. Console applications are applicable especially, when we needn't the visualization, and it is necessary to introduce by hand lots of data. One can tell the console applications from the graphic ones with the presence of the next line in the text of program.

Web link: *www.IntellectualArchive.com/getfile.php?file=Uf5F7JeJLlS&orig_file=Andrei V. Serghienko. Mathematical Modeling in Delphi.pdf*

ID #: 109   **Natural Sciences / Mathematics / Computation**

Submitted on: Feb 20, 2012

Author: Andrei V. Serghienko

Title: Mathematical Modeling in Delphi

Abstract: The literature on Delphi numbers many manuals. However among them there are few books, oriented to the solution of scientific and technical problems. In order to fill this want, the author wrote the paper, containing the examples of programs in Delphi. Depending on the type of problems it is convenient to use or graphic (usual), or console applications of Delphi. Graphic applications are applicable for the plotting of functions. Console applications are applicable especially, when we needn't the visualization, and it is necessary to introduce by hand lots of data. One can tell the console applications from the graphic ones with the presence of the next line in the text of program

Web link: *www.IntellectualArchive.com/getfile.php?file=PWKNWleihwK&orig_file=Andrei V. Serghienko. Mathematical Modeling in Delphi.pdf*

ID #: 110   **Natural Sciences / Physics / Relativity**

Submitted on: Feb 20, 2012

Author: Mark Zilberman

Title: Do The Observations of Superluminal Neutrinos Lead to The Model Where Light Speed Increases Over Time?

Abstract: In the recent research the OPERA collaboration has reported the observation of superluminal neutrinos. They did not state what exact value they used as the speed of light c, but we could safely assume that in accordance to the SI system it was 299,792,458 m/s. In the following research A.G. Cohen and S. L.Glashow showed that "superluminal neutrinos would lose energy rapidly via the bremsstrahlung of electronpositron pairs" and that "most of the neutrinos would have suffered several pair emissions en route". This obvious paradox between experiment and theory can easily be resolved if the speed of light is slowly increasing and is now (or at least was during the experiment) higher than in 1970-1980 when mentioned that 299,792,458 m/s was measured. In this case the speed of neutrinos in the OPERA experiment can be higher than 299,792,458 m/s, but at the same time be lower than current c. Without subscribing to the model where c increases over time, it can still be a good idea to measure the speed of light c during the replication of the experiment. In addition, if slow increase of c will be proven, it may also explain the red shift of distant galaxies without the big-bang theory, since the more distant and earlier periods of time we observe - the slower the light speed there, and less is the energy of photons emitted there; what for current observer appears as a red shift in the spectrum.

Web link: *www.IntellectualArchive.com/getfile.php?file=OG1pfSxsOWO&orig_file=M.Zilberman. Do The Observations.pdf*

ID #: 112   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 20, 2012

Author: Angel G. Doz

Title: OPERA experiment: superluminals muonic neutrinos and Cherenkov radiation

Abstract: In the paper recently published by the OPERA experiment team on the observation of a possible measurement of neutrinos nuonicos overlighting, seems to be a lack of radiation Cherenkov, which theoretically should show whether these neutrinos were moving at a speed higher than light.
But it is possible that the absence of Cherenkov radiation is explained with the same mathematical apparatus of the experimentally satisfactory formulation of the same radiation.

ID #: 117   **Natural Sciences / Physics / Quantum field theory**

Submitted on: Feb 21, 2012

Author: Alexander P. Yefremov

Title: The conic-gearing image of a complex number and a spinor-born surface geometry

Abstract: Quaternion (Q-) mathematics formally contains many fragments of physical laws; in particular, the Hamiltonian for the Pauli equation automatically emerges in a space with Q-metric. The eigenfunction method shows that any Q-unit has an interior structure consisting of spinor functions; this helps us to represent any complex number in an orthogonal form associated with a novel geometric image (the conic-gearing picture). Fundamental Q-unit-spinor relations are found, revealing the geometric meaning of spinors as Lame coefficients (dyads) locally coupling the base and tangent surfaces. (Work was posted on Arxiv.org on 3 Feb 2011 as arXiv:1102.0618v1 [physics.gen-ph]. Re-posted on IntellectualArchive.com with author`s permissions.)

ID #: 118   **Natural Sciences / Mathematics / Algebra**

Submitted on: Feb 21, 2012

Author: Aziz Sahraei

Title: An Analytical Approach to Polyominoes and a solution to the Goldbach conjecture

Abstract: Always, when viewing papers whose writers show polyominoes graphically, this question crossed my mind, are there any equations which may be given to avoid the need for drawings? Polyominoes are sometimes called by the number of faces (like triomeno or tetraomino). In this paper, I try to formulate polyomino shapes and establish a correspondence between them and polynominals. About the final part where I refer to the Goldbach conjecture, I must to say that my aim is to give a geometric representation of the proof of this conjecture so that if a special chain of subsets such as, I0 < I1 < ... < In exists in a set "Omega", where both ends of the chain include trivial subsets, and if the conjecture be true for at least one arbitrary member of this chain, then it will be true for all the other members of the chain.

ID #: 120   **Natural Sciences / Physics / Quantum field theory**

Submitted on: Feb 22, 2012

Author: Arkady L.Kholodenko

Title: Gravity assisted solution of the mass gap problem for pureYang-Mills fields

Abstract: In 1979 Louis Witten demonstrated that stationary axially symmetric Einstein field equations and those for static axially symmetric self-dual SU(2) gauge fields can both be reduced to the same (Ernst) equation. In this paper we use this result as point of departure to prove the existence of the mass gap for quantum source-free Yang-Mills (Y-M) fields. The proof is facilitated by results of our recently published paper, JGP 59 (2009) 600-619. Since both pure gravity, the Einstein-Maxwell and pure Y-M fields are described for axially symmetric configurations by the Ernst equation classically, their quantum descriptions are likely to be interrelated. Correctness of this conjecture is successfully checked by reproducing (by different methods) results of Korotkin and Nicolai, Nucl.Phys.B475 (1996) 397-439, on dimensionally reduced quantum gravity. Consequently, numerous new results supporting the Faddeev-Skyrme (F-S) -type models are obtained. We found that the F-S-like model is best suited for description of electroweak interactions while strong interactions require extension of Witten`s results to the SU(3) gauge group. Such an extension is nontrivial. It is linked with the symmetry group SU(3)×SU(2)×U(1) of the Standard Model. This result is quite rigid and should be taken into account in development of all grand unified theories. Also, the alternative (to the F-S-like) model emerges as by-product of such an extension. Both models are related to each other via known symmetry transformation. Both models possess gap in their excitation spectrum and are capable of producing knotted/linked configurations of gauge/gravity fields. In addition, the paper discusses relevance of the obtained results to heterotic strings and to scattering processes involving topology change. It ends with discussion about usefulness of this information for searches of Higgs boson.

ID #: 121   **Natural Sciences / Mathematics / Geometry**

Submitted on: Feb 22, 2012

Author: Nilgun Sonmez and Catalin Barbu

Title: The hyperbolic Smarandache theorem in the Poincare upper half-plane model of hyperbolic geometry

Abstract: In this study, we give a hyperbolic version of the Smarandache`s theorem in the Poincare upper half-plane model.

ID #: 122   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 22, 2012

Author: Christoph Caesar

Title: Correlation of Nucleon Mass with Lepton Mass

Abstract: One of the key questions of elementary particles physics is the mass relation between leptons and nucleons or quarks. Leptons in many hadron decays and interactions show a typical energy of 53 MeV. Explicit numbers of these electrons accommodated in a quark fit the observed mass and charges of quarks and nucleons. The model further is shown to have exactly and only three different variations for quarks, the colors.

ID #: 123   **Natural Sciences** / **Astronomy** / **Optical astronomy**

Submitted on: Feb 22, 2012

Author: Dhananjay P. Mehendale

Title: On Artificially Creating Solar Eclipses

Abstract: In this paper we inform about the partial solar eclipse we created artificially. It aims at inviting those who are interested in the study of solar eclipses to set up their own laboratory to artificially create and study solar eclipses at any time of the day and at any convenient spot on the earth. Anybody interested in the study of solar eclipses can setup his laboratory without much expenditure. What essentially required is a small piece of land exposed to sunlight to arrange the equipment and equipment consists of a telescope, some spherical objects of appropriate size, a mechanical arrangement to hold and move a chosen spherical object at hand, appropriate filters to protect eyes, and a good camera to take photographs of artificially eclipsed sun We report here about our initial efforts done regarding artificially creating solar eclipse of any kind. We provide towards the end of the paper two sample photographs of artificially created partial solar eclipse taken using orange fruit in the role of moon and a photograph of naturally occurred partial solar eclipse for the sake of demonstrating their similarity. We propose here a way to artificially create eclipses of all types, namely, total, partial, or annular in the laboratory at our will. We discuss how to create solar eclipses at any location on earth at any daytime and at any location of the sun on its daytime trajectory. These eclipses formed artificially will be same in every respect to naturally occurring eclipses due to perfect alignment of earth, moon, and sun along a straight line. The only difference in naturally occurring solar eclipses and artificially created solar eclipses lies in replacing the moon by any spherical body of appropriate size to work as artificial moon to obstruct sunrays to form solar eclipses artificially. We may use any spherical body in place of moon, which has diameter matching with the diameter of parallel sun beam entering the telescope, to hide the real image of the sun by this artificial moon.

ID #: 124   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 24, 2012

Author: Ervin Goldfain

Title: Photon-Neutrino Symmetry and the OPERA Anomaly

Abstract: The OPERA collaboration has recently claimed discovery of superluminal propagation of neutrino beams. Excluding the possibility of unaccounted measurement errors, the most natural interpretation of OPERA anomaly is that, sufficiently far from the source of electroweak interactions, single-flavor ultra-relativistic neutrinos and photons may be regarded as components of the same field. In particular, we suggest that it is possible to construct a neutrinophoton doublet where the two components behave as dual entities. We examine conditions that enable the symmetry between neutrinos and photons to be unbroken. The benefit of this interpretation is that Lorentz invariance stays valid regardless of the relative velocity of
neutrinos and their mean energy.

ID #: 126   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Fractional Field Theory and Deep Terascale Physics

Abstract: During the last decade, a number of important developments have surfaced concerning fractional calculus and its

applications in various branches of fundamental and applied science. In particular, fractional field theory (FFT) represents an active area of research in mathematical physics whose motivation stems, in part, from its ability to shed light into many of the open questions surrounding quantum field theory (QFT), Standard Model for particle physics (SM) and quantum gravity theories (QG). We review here some recent developments of FFT that promise to recover the physics of SM in the low-energy limit and solve some of its seemingly intractable puzzles.

Web link: *www.IntellectualArchive.com/getfile.php?file=8BCWTXTgjc6&orig_file=Fractional Field Theory and Deep Terascale Physics.pdf*

ID #: 127   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Higgsless Symmetry Breaking from Renormalization Group Theory

Abstract: We develop a Higgsless model of electroweak symmetry breaking using critical behavior of infrared Yang-Mills theory. Gauge bosons and fermions acquire mass near the Wilson-Fisher point of Renormalization Group flow. The entire family structure of Standard Model is recovered using the technique of "epsilon expansion". A brief discussion on how our Higgsless model could preserve unitarity of high-energy di-boson scattering is also included.

Web link: *www.IntellectualArchive.com/getfile.php?file=0OsOJXj2ell&orig_file=Higgsless Symmetry Breaking from Renormalization Group Theory.pdf*

ID #: 128   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Higgs-Free Symmetry Breaking from Critical Behavior Near Dimension Four

Abstract: Starting from the infrared limit of Yang-Mills theory, we introduce here a Higgs-free model in which symmetry breaking arises from critical behavior near dimension four. Electroweak bosons develop mass near the Wilson-Fisher point of Renormalization Group flow. The family structure of Standard Model is recovered using the technique of "epsilon expansion". We also find that dimensional regularization offers a straightforward solution to the cosmological constant problem.

Web link: *www.IntellectualArchive.com/getfile.php?file=8iBMEajCpvk&orig_file=Higgs-Free Symmetry Breaking from Critical Behavior Near Dimension Four.pdf*

ID #: 129   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: On a Natural Solution for the Hierarchy Problem Using Dimensional Regularization

Abstract: This brief report suggests a straightforward solution for the hierarchy problem of the Standard Model using dimensional regularization of quantum field theory (QFT). Our viewpoint breaks away from traditional approaches to the hierarchy problem based on supersymmetry (SUSY), technicolor, extra-dimensions, anthropic arguments, fine-tuning or gauge unification near the Planck scale.

Web link: *www.IntellectualArchive.com/getfile.php?file=JhU8sEFAi8N&orig_file=Solution for the Hierarchy Problem Using Dimensional Regularization.pdf*

ID #: 130   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Reflections on the Future of Particle Theory

Abstract: As it is known, QFT describes interaction of stable or quasi-stable fields whose evolution is deterministic and time-reversible. By contrast, behavior of strongly coupled fields or dynamics in the Terascale sector is prone to become unstable and chaotic. Non-renormalizable interactions are likely to proliferate and prevent full cancellation of ultraviolet divergences. A specific signature of this transient regime is the onset of long-range dynamic correlations in space-time, the emergence of strange attractors in phase space and transition from smooth to fractal topology. Our focus here is the impact of fractal topology on physics unfolding above the electroweak scale. Arguments are given for perturbative renormalization of field theory on fractal space-time, breaking of discrete symmetries, hierarchical generation of particle masses and couplings as well as the potential for highly unusual phases of matter which are ultra-weakly coupled to SM.

Web link: *www.IntellectualArchive.com/getfile.php?file=gA4RNM5AJNx&orig_file=Reflections on the Future of Particle Theory.pdf*

ID #: 131   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Koide`s Formula Follows from Nonlinear Dynamics of Quantum Fields

Abstract: In this brief report we argue that Koide`s formula arises from universal attributes of nonlinear dynamics in field theory. Feigenbaum scaling not only provides a natural paradigm for generating particle masses and coupling charges, but also a basis for understanding the family structure of fermions.

Web link: *www.IntellectualArchive.com/getfile.php?file=fl5Nmik1JLJ&orig_file=Koides Formula Follows from Nonlinear Dynamics of Quantum Fields.pdf*

ID #: 132   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Fractal Operators in Non-Equilibrium Field Theory

Abstract: Relativistic quantum field theory (QFT) describes fundamental interactions between elementary particles occurring in an energy range up to several hundreds GeV. Extending QFT beyond this range needs to account for the imbalance produced by unsuppressed quantum fluctuations and for the emergence of non-equilibrium phase transitions. Our underlying premise is that fractal operators become mandatory tools when exploring evolution from low-energy physics to the non-equilibrium regime of QFT. Canonical quantization using fractal operators leads to the concept of "complexon", a fractional extension of quantum excitations and a likely candidate for non-baryonic Dark Matter. A discussion on the duality between this new field-theoretic framework and General Relativity is included.

Web link: *www.IntellectualArchive.com/getfile.php?file=JGNMhn3WSc5&orig_file=Fractal Operators in Non-Equilibrium Field Theory.pdf*

ID #: 133   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Bifurcations and Pattern Formation in Particle Physics: a Model Study

Abstract: Quantum field theories, regardless of their content, lead to a finite or infinite number of coupled nonlinear field equations. In general, solving these equations in analytic form or managing them through lattice-based computations has been met with limited success. We argue that the theory of nonlinear dynamical systems offers a fresh approach to this challenge. Working from the universal route to chaos in coupled systems of differential equations, we find that: a) particles acquire mass as plane wave solutions of the complex Ginzburg-Landau equation (CGLE), without any reference to the hypothetical Higgs scalar; b) the U x SU and SU gauge groups, as well as leptons and quarks, are sequentially generated through period-doubling bifurcations of CGLE.

Web link: *www.IntellectualArchive.com/getfile.php?file=MV2UxNfh0jt&orig_file=Bifurcations and Pattern Formation in Particle Physics.pdf*

ID #: 134   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: Non-Equilibrium Dynamics as Root Cause of Some Anomalies in Particle Physics

Abstract: Despite its remarkable predictive power, the Standard Model for particle physics (SM) leaves out many open questions. Two representative examples are the issue of CP violation and the anomalous magnetic moment of leptons (AMM). Our work develops from the premise that the postulate of unitary evolution no longer holds near or above the scale of electroweak interaction or near the "new physics" sector of SM. Results suggest that CP violation in kaon physics and the AMM problem are manifestations of non-equilibrium dynamics. Numerical predictions are found to be in close agreement with experimental data.

Web link: *www.IntellectualArchive.com/getfile.php?file=wJXi7kSJmM3&orig_file=Non-Equilibrium Dynamics as Root Cause of Some Anomalies in Particle Physics.pdf*

ID #: 135   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 25, 2012

Author: Ervin Goldfain

Title: A Brief Note on "Un-Particle" Physics

Abstract: The possibility of a hidden sector of particle physics that lies beyond the energy range of the Standard Model has been recently advocated by many authors. A bizarre implication of this conjecture is the emergence of a continuous spectrum of massless fields with non-integral scaling dimensions called "un-particles". The purpose of this Letter is to show that the

idea of "un-particles" was considered in at least two previous independent publications, prior to its ﬁ rst claimed disclosure.

Web link: *www.IntellectualArchive.com/getfile.php?file=pac1h44hMME&orig_file=A Brief Note on Un-Particle Physics.pdf*

ID #: 136   **Natural Sciences** / **Physics** / **Quantum field theory**

Submitted on: Feb 26, 2012

Author: Angel Garces Doz

Title: God and His Creation: the Universe

Abstract: In this paper we demonstrate how the universe has to be caused or created by an intelligent being: God. And as the multiverse theory, mainly based on the random generation of states infinite universe is very poorly posed from the mathematical point of view, and how this failure leads to the demonstration of its impossibility. The anthropic principle called not taken into account, it is a mere philosophical statement without any physical-mathematical foundation, and therefore lacking the minimum necessary scientific validity. The main parameters are obtained: density of baryons, vacuum energy density, mass of the lightest Higgs boson, neutrino mass, mass of the graviton, among others. Deducting finally naturally within the theory, the inflation factor of the universe. Similarly, the theory implies necessarily the "creation" of matter

Web link: *www.IntellectualArchive.com/getfile.php?file=1HMw3KpYMK9&orig_file=God and His Creation_ the Universe.pdf*

ID #: 137   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Non-Equilibrium Dynamics as Source of Asymmetries in High Energy Physics

Abstract: Understanding the origin of certain symmetry breaking scenarios in high-energy physics remains an open challenge. Here we argue that, at least in some cases, symmetry violation is an effect of non-equilibrium dynamics that is likely to develop somewhere above the energy scale of electroweak interaction. We also find that, imposing Poincare symmetry in non-equilibrium ?eld theory, leads to fractalization of space-time continuum via period-doubling transition to chaos.

Web link: *www.IntellectualArchive.com/getfile.php?file=ntXQIUvIVdD&orig_file=Non-Equilibrium Dynamics as Source of Asymmetries in High Energy Physics.pdf*

ID #: 138   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Nonlinear Dynamics, Field Theory and Collider Phenomenology

Abstract: Both theory and experiment strongly suggest that new phenomena await discovery above the energy range of the standard model for particle physics (SM). We argue that a correct description of physics in the Terascale sector needs to account for the unquenched randomness induced by short-distance fluctuations. The existence of unparticles, alleged to emerge at the next-generation colliders, is motivated by a dynamic setting that is far-of-equilibrium and able to sustain a rich spectrum of complex phenomena.

Web link: *www.IntellectualArchive.com/getfile.php?file=SjrMbbLbJNA&orig_file=Nonlinear Dynamics Field Theory and Collider Phenomenology.pdf*

ID #: 139   **Natural Sciences** / **Physics** / **Quantum field theory**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Objections to Quantum Gravity Theories Based on Causal Dynamical Triangulation

Abstract: This memo is in regards to the recently published contribution by Ambjorn J. et al. "Planckian Birth of Quantum de Sitter Universe" PRL 100, 091304 (2008). The article claims that "causal dynamical triangulation" enables a consistent regularization of quantum gravity. A "quantum universe" emerging from a nonperturbative sum over geometries is alleged to recover "with high accuracy a fourdimensional de Sitter space-time". On closer examination, the approach is built on many objectionable premises

Web link: *www.IntellectualArchive.com/getfile.php?file=fJ61usnrTl2&orig_file=Objections to Quantum Gravity Theories Based on Causal Dynamical Triangulation.pdf*

ID #: 140   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Complex Dynamics and the High-Energy Regime of Quantum Field Theory

Abstract: The standard model embodies our current knowledge of elementary particle physics and represents a well-tested framework for the study of non-gravitational phenomena at low energies. It is built on the foundations of relativistic quantum field theory (QFT), which provides the correct description of electroweak and strong interactions involving leptons and quarks. It is generally believed that, extending the validity of QFT to energies on or beyond the TeV range must include the unavoidable signature of vacuum fluctuations and strong-field gravity. We argue that an effective approach to the high-energy regime of QFT demands the tools of complex dynamics and fractal operators. The unexpected consequences of using fractal operators to model complexity beyond the current range of QFT are outlined and discussed.

Web link: *www.IntellectualArchive.com/getfile.php?file=CXpxENTNN6k&orig_file=Complex Dynamics and the High-Energy Regime of Quantum Field Theory.pdf*

ID #: 141　　**Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: On Emergent Physics, "Unparticles" and Exotic "Unmatter" States

Abstract: Emergent physics refers to the formation and evolution of collective patterns in systems that are nonlinear and out-of-equilibrium. This type of large-scale behavior often develops as a result of simple interactions at the component level and involves a dynamic interplay between order and randomness. On account of its universality, there are credible hints that emergence may play a leading role in the Tera-ElectronVolt (TeV) sector of particle physics. Following this path, we examine the possibility of hypothetical highenergy states that have fractional number of quanta per state and consist of arbitrary mixtures of particles and antiparticles. These states are similar to "un-particles", massless fields of non-integral scaling dimensions that were recently conjectured to emerge in the TeV sector of particle physics. They are also linked to "unmatter", exotic clusters of matter and antimatter introduced few years ago in the context of Neutrosophy. The connection between `unmatter` and `unparticle` is explained in details in this paper. Unparticles have very odd properties which result from the fact that they represent fractional field quanta. Unparticles are manifested as mixed states that contain arbitrary mixtures of particles and antiparticles (therefore they simultaneously evolve "forward" and "backward" in time). From this, the connection with unmatter. Using the fractal operators of differentiation and integration we get the connection between unparticle and unmatter. `Unmatter` was coined by F. Smarandache in 2004 who published three papers on the subject.

Web link: *www.IntellectualArchive.com/getfile.php?file=kmjoJCQk9g9&orig_file=On Emergent Physics Unparticles and Exotic Unmatter States.pdf*

ID #: 142　　**Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Solving the Fermion Flavor Problem Using Renormalization Group Flow

Abstract: A long-standing puzzle of the current Standard Model for particle physics is that both leptons and quarks arise in replicated patterns. Our work suggests that the number of fermion flavors may be directly derived from the dynamics of Renormalization Group (RG) equations. Specifically, we argue that the number of flavors results from demanding stability of the RG flow about its fixed-point solution.

Web link: *www.IntellectualArchive.com/getfile.php?file=hCFiBYIiN0N&orig_file=Solving the Fermion Flavor Problem Using Renormalization Group Flow.pdf*

ID #: 143　　**Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Universal Transition to Chaos and the Family Structure of Particle Physics

Abstract: The standard model for high-energy physics (SM) describes fundamental interactions between subatomic particles down to a distance scale on the order of 10-18 m. Despite its widespread acceptance, SM operates with a large number of arbitrary parameters whose physical origin is presently unknown. Our work suggests that the generation structure of at least some SM parameters stems from the chaotic regime of renormalization group flow. Invoking the universal route to chaos in systems of nonlinear differential equations, we argue that the hierarchical pattern of parameters amounts to a series of scaling ratios depending on the Feigenbaum constant. Leading order predictions are shown to agree reasonably well with experimental data.

Web link: *www.IntellectualArchive.com/getfile.php?file=2s9giqLqRsR&orig_file=Universal Transition to Chaos and the Family Structure of Particle Physics.pdf*

ID #: 144　　**Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Fractional Dynamics and the Standard Model for Particle Physics

Abstract: Fractional dynamics is an attractive framework for understanding the complex phenomena that are likely to emerge beyond the energy range of the Standard Model for particle physics (SM). using fractional dynamics and complex-scalar field theory as a baseline, our work explores how physics on the high-energy scale may help solve some of the open questions surrounding SM. Predictions are shown to be consistent with experimental results.

Web link: *www.IntellectualArchive.com/getfile.php?file=K4NS9toN4IK&orig_file=Fractional Dynamics and the Standard Model for Particle Physics.pdf*

ID #: 145   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Non-Equilibrium Dynamics and Physics of the Terascale Sector

Abstract: Unitarity and locality are fundamental postulates of Quantum Field Theory (QFT). By construction, QFT is a replica of equilibrium thermodynamics, where evolution settles down to a steady state after all transients have vanished. Events unfolding in the TeV sector of particle physics are prone to slide outside equilibrium under the combined action of new fields and unsuppressed quantum corrections. In this region, the likely occurrence of critical behavior and the approach to scale invariance blur the distinction between "locality" and "non-locality". We argue that a correct description of this far from equilibrium setting cannot be done outside nonlinear dynamics and complexity theory.

Web link: *www.IntellectualArchive.com/getfile.php?file=I7DimIIS4jJ&orig_file=Non-Equilibrium Dynamics and Physics of the Terascale Sector.pdf*

ID #: 146   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Derivation of Gauge Boson Masses from the Dynamics of Levy Flows

Abstract: Gauge bosons are fundamental fields that mediate the electroweak interaction of leptons and quarks. The underlying mechanism explaining how gauge bosons acquire mass is neither definitively settled nor universally accepted and several competing theories coexist. The prevailing paradigm is that boson masses arise as a result of coupling to a hypothetical scalar field called the Higgs boson. Within the current range of accelerator technology, compelling evidence for the Higgs boson is missing. We discuss in this paper a derivation of boson masses that bypasses the Higgs mechanism and is formulated on the basis of complexity theory. The key premise of our work is that the dynamics of the gauge field may be described as a stochastic process caused by the short range of electroweak interaction. It is found that, if this process is driven by Levy statistics, mass generation in the electroweak sector can be naturally accounted for. Theoretical predictions are shown to agree well with experimental data.

Web link: *www.IntellectualArchive.com/getfile.php?file=0LpjeCdK2h6&orig_file=Derivation of Gauge Boson Masses from the Dynamics of Levy Flows.pdf*

ID #: 147   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Dynamics of Neutrino Oscillations and the Cosmological Constant

Abstract: The cosmological constant problem continues to represent a major challenge for the theoretical physics and cosmology. The main difficulty arises from the large numerical discrepancy between observational limits of the cosmological constant and quantum predictions based on gravitational effects of the vacuum energy. In this work we argue that the experimental value of this constant may be recovered from the dynamics of neutrino oscillations.

Web link: *www.IntellectualArchive.com/getfile.php?file=x0ebKanJmmi&orig_file=Dynamics of Neutrino Oscillations and the Cosmological Constant.pdf*

ID #: 148   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Chaotic Dynamics of the Renormalization Group Flow and Standard Model Parameters

Abstract: Bringing closure to the host of open questions posed by the current Standard Model for particle physics (SM) continues to be a major challenge for theoretical physics community. Motivated by recent advances in the study of complex systems, our work suggests that the pattern of particle masses and gauge couplings emerges from the critical dynamics of renormalization group equations. Using the $\hat{I}\mu$-expansion method along with the universal path to chaos in unimodal maps, we find that the observed hierarchies of SM parameters amount to a series of scaling ratios depending on the

Feigenbaum constant.

ID #: 149   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Chaos in Quantum Chromodynamics and the Hadron Spectrum

Abstract: We present analytic evidence that the distribution of hadron masses follows from the universal transition to chaos in non-equilibrium field theory. It is shown that meson and baryon spectra obey a scaling hierarchy with critical exponents ordered in natural progression. Numerical predictions are found to be in close agreement with experimental data.

ID #: 150   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Complex Dynamics and the Future of Particle Physics

Abstract: In this report we argue that complex dynamics has the potential of becoming a key tool for the "new physics" sector of particle theory. The report includes a list of candidate signals for "new physics" that were recently recorded above the scale of electroweak interaction. Some of the pioneering efforts directed towards application of complex dynamics in high-energy physics are briefly surveyed.

ID #: 151   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Non-Unitary Evolution in High Energy Physics: a Brief Overview

Abstract: Unitarity and locality are fundamental postulates of Quantum Field Theory (QFT). By construction, QFT is a replica of equilibrium thermodynamics, where evolution settles down to a steady state after all transients have vanished. Events unfolding in the TeV sector of particle physics are prone to slide outside equilibrium under the combined action of new fields and un-suppressed quantum corrections. In this region, the likely occurrence of critical behavior and the approach to scale invariance blur the distinction between "locality" and 2non-locality". We argue that a correct description of this far-from-equilibrium setting cannot be done outside nonlinear dynamics and complexity theory.

ID #: 152   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Stochastic Field Theory and Terascale Physics

Abstract: Both theory and experiment strongly suggest that new phenomena await discovery above the energy range of the standard model for particle physics (SM). In this brief study we argue that a correct description of physics in the Terascale sector needs to account for the inherent randomness induced by short-distance fluctuations. The alleged existence of "un-particles" beyond SM is motivated by a dynamic setting that is far-of-equilibrium and able to sustain a rich spectrum of complex phenomena.

ID #: 153   **Natural Sciences** / **Physics** / **Particle physics**

Submitted on: Feb 26, 2012

Author: Ervin Goldfain

Title: Complex Dynamics as Source of Anomalous Behavior in Particle Physics

Abstract: Despite its remarkable predictive power, the Standard Model for particle physics (SM) leaves out many open questions. Two representative examples are the issue of CP violation and the anomalous magnetic moment of leptons (AMM). Our

work develops from the premise that the postulate of unitary evolution no longer holds near the scale of electroweak interaction or near the "new physics" sector of SM. Results suggest that CP violation in kaon physics and the AMM problem are direct manifestations of fractional dynamics. Numerical predictions are found to be in close agreement with experimental data.

Web link: *www.IntellectualArchive.com/getfile.php?file=EjeGfNSfavO&orig_file=Complex Dynamics as Source of Anomalous Behavior in Particle Physics.pdf*

ID #: 154   **Natural Sciences** / **Physics** / **Nuclear physics**

Submitted on: Feb 27, 2012

Author: E.R. Prakasan

Title: Content Analysis of Thorium Research Publications

Abstract: Research and Development on thorium utilization for the power production is in its peak for the last one decade. The established researchers and new researchers are trying to explore the area of thorium where less work is done. The present paper make an endeavor to show which are the areas where intensive research on thorium is already and automatically less researched will be highlighted.

Web link: *www.IntellectualArchive.com/getfile.php?file=Wecnfflh9wW&orig_file=Content Analysis of Thorium Research Publications.pdf*

ID #: 155   **Natural Sciences** / **Physics** / **Nuclear physics**

Submitted on: Feb 27, 2012

Author: A.A. Bolonkin

Title: Femtotechnology: Stability of AB-Needles. Fantastic Properties and Application

Abstract: In article "Femtotechnology: Nuclear AB-Matter with Fantastic Properties" *1+ American Journal of Engineering and Applied Sciences. 2 (2), 2009, p.501-514. (http://www.scribd.com/doc/24045154) author offered and consider possible super strong nuclear matter. But many readers asked about stability of the nuclear matter. It is well known, the conventional nuclear matter having more 92 protons or more 238 nucleons became instability. In given work the author shows the special artificial forms of nuclear AB-matter make its stability and give the fantastic properties. For example, by the offered AB-needle you can pierce any body without any damage, support motionless satellite, reach the other planet, researched Earth`s interior. These forms of nuclear matter are not in Nature now, but nanotubes also is not in Nature. That is artificial matter is made men. The AB-matter also is not now, but research and investigation their possibility, stability and properties are necessary for creating them.

Web link: *www.IntellectualArchive.com/getfile.php?file=ZxQ0ZNd6Z98&orig_file=Femtotechnology Stability of AB-Needles.pdf*

ID #: 156   **Social Sciences** / **Economics** / **Industrial organization**

Submitted on: Feb 27, 2012

Author: A.A. Bolonkin

Title: Problems of Science Research and Technical Progress

Abstract: At the present time the USA`s Federal Government spends enormous sums of taxpayer money for Scientific Research and Development (R&D). How to best organize this vast governmental activity, how to best estimate its ultimate utility and profitability (real and potential), how to best increase efficiency of innovation and production, how to best estimate the worth of new discoveries and innovations, how to properly fund R&D of new concepts and innovations, and how to correctly estimate their results are all complex and pressing questions that require answers for further industrial progress and scientific improvements. These are critical macro-problems which because of its scope have evolved into new macro-systems that require a new approach for successful planning of scientific research. The authors consider these major-system problems and offer many remarkable innovations in organization, estimation, suggestions for entirely new research efficiency criteria, development, new methods for assessments of new ideas, innovations in science and industry, and new methods in patenting technology. These suggestions are based largely on the personal experiences of one of the authors, A.A. Bolonkin who worked for many years within the USA`s Federal Government entities (scientific laboratories of NASA, Air Force), and USSR and USA universities and industry.

Web link: *www.IntellectualArchive.com/getfile.php?file=NXiPd6MthJg&orig_file=Problems of Science Research and Technical Progress.pdf*

ID #: 157   **Natural Sciences** / **Physics** / **Biophysics**

Submitted on: Feb 27, 2012

Author: Diego Lucio Rapoport

Title: Surmounting the Cartesian Cut: Klein Bottle Logophysics, the Dirac Algebra and the Genetic Code

Abstract: We reintroduce the Klein Bottle (KB) logophysics at the foundations of the unification of quantum geometry, cell biology, embryology and evolution, to extend it to the genetic code and allosteric recognition. We find that the genetic code has three possible fractal topologies: two different families of KBs embedded in HyperKBs, or still a 2-torus, depending which

pair of three subalphabets for the genetic "letters" is chosen; this does not require the double helix. We complete the genetic codification of embryological differentiation introduced in an accompanying article. We discuss the Hadamard-KB representation of this codification and discuss its robustness and that of embryological development with respect to environmental noise. We discuss this KB codification of the 64 codons with its isomorphic representation in terms of the Dirac Algebra (DA) of Quantum Mechanics, in the Nilpotent Universal Computational Rewrite System (NUCRS), a self-referential syntax that generates much of mathematics and the fundamental symmetries of physics. We show that the double helix can be obtained from the duplication of the KB associated with the bistable perception of the tetrahedron representation of the four genetic letters. The DA and its double tetrahedron codification in NUCRS is found to be associated with a pair of superposed KBs, yielding the double 3D (space and momentum) space of physics, and the double helix of DNA, which thus appears related to a pair of KBs, being the case that only one is necessary to construct the genome. We show that the depth-time variable of visual perception materializes as space Thus, the DA is derivable from two KBs, and the purported dualism of physics as presented in NUCRS, is rendered to be based in the non-dualistic KBL. We discuss the relations with a theory of evolutions, and between biological periodicities and the KB of the Mendeleev table (Boeyens). We present relations between metacognition and the HyperKlein Bottle, and evolution in terms of time waves defining in toto the different structures. We present rudiments of the ontoepistemology of the Hyper KB Logic, its relations with the anthropic principles and the universal physical constants, which are found to be contextual.

Web link: *www.IntellectualArchive.com/getfile.php?file=NjsGELJhMLk&orig_file=Surmounting the Cartesian Cut.pdf*

ID #: 158   **Natural Sciences** / **Physics** / **Biophysics**

Submitted on: Feb 27, 2012

Author: Diego Lucio Rapoport

Title: On the Fusion of Physics and Klein Bottle Logic in Biology, Embryogenesis and Evolution

Abstract: We introduce a new paradigm for embryological differentiation with its relations to the genome and evolution, in terms of the fusion of logic and physics: logophysics (LGP), associated to the ontology and epistemology of the Klein Bottle (KB). We introduce LGP through the subversion of the fixed dualistic categories of exterior and interior, basis for much of science, in terms of the eversion: turning inside-out of the two dimensional elastic sphere (ovum), which is the actual case. We propose bauplans unfolding from a 6d space in which time waves manifest through torsion fields in real space and in which the eversion is mediated by KBs. We present the torsion geometry, quantum and elastodynamical, of self-referential biology. We apply this to the problem of the physics of embryological differentiation in terms of quantum torsion-elastodynamics waves and the light tensegrity of the cell. We associate it with a topological transformation which extends the proposal by Maxwell and Poynting, founders of electromagnetics, for the interaction of the inanimate and animate worlds. We present a new conception of the world in terms of time waves and the KB, that appears in the natural number system, in cosmology, in vision recognition, in the topographic map of the sensorium, in the periodic table of elements, the genome, etc. We surmount the ancient problem of what life is, providing a LGP basis for both the inanimate and animate realms.

Web link: *www.IntellectualArchive.com/getfile.php?file=JBmiNWqUghL&orig_file=On the Fusion of Physics and Klein Bottle Logic.pdf*

ID #: 159   **Natural Sciences** / **Physics** / **Biophysics**

Submitted on: Feb 27, 2012

Author: Diego Lucio Rapoport

Title: Surmounting the Cartesian Cut Further: Torsion Fields, the Extended Photon, Quantum Jumps, The Klein-Bottle, Multivalued Logic, the Time Operator Chronomes, Perception, Semiosis, Neurology and Cognition

Abstract: We present a conception that surmounts the Cartesian Cut -prevailing in science- based on a representation of the fusion of the physical `objective` and the `subjective` realms. We introduce a mathematical-physics and philosophical theory for the physical realm and its mapping to the cognitive and perceptual realms and a philosophical reï¬‚ection on the bearings of this fusion in cosmology, cognitive sciences, human and natural systems and its relations with a time operator and the existence of time cycles in Nature`s and human systems. This conception stems from the self-referential construction of spacetime through torsion ï¬  elds and its singularities; in particular the photon`s self-referential character, basic to the embodiment of cognition; we shall elaborate this in detail in perception and neurology. We discuss the relations between this embodiment, bio-photons and wave genetics, and the relation with the enactive approach in cognitive sciences due to Varela.

Web link: *www.IntellectualArchive.com/getfile.php?file=5GJcMLIefIC&orig_file=surmounting the cartesian cut further.pdf*

ID #: 160   **Natural Sciences** / **Mathematics** / **Calculus** / **Analysis**

Submitted on: Feb 28, 2012

Author: Evgeniy Grechnikov

Title: On the Connectivity in One-Dimensional ad Hoc Wireless Networks with a Forbidden Zone

Abstract: This paper investigates the connectivity in one-dimensional ad hoc wireless networks with a forbidden zone. We derive the probability of the wireless networks which are composed of exactly m clusters by means of the methods of combinatorics and probability. The probability of connectivity, i.e. $m = 1$, can be obtained as a special case. Further,

Web link: *www.IntellectualArchive.com/getfile.php?file=KYuW7tMALI2&orig_file=On the Connectivity in One-Dimensional ad Hoc Wireless Networks with a Forbidden Zone.pdf*

ID #: 161   **Natural Sciences / Physics / Relativity**

Submitted on: Feb 28, 2012

Author: Davide Fiscaletti

Title: New Insights Into the Special Theory of Relativity

Abstract: In the 20th century, physics has understood space and time as being coupled into a "spacetime" manifold, a fundamental arena in which everything takes place. Space-time was considered to have three spatial dimensions and one temporal dimension. Out of the mathematical formalism for the fourth space-time component $X4 = ict$ one can conclude that time t is only a numerical order of material change, i.e., the motion that we obtain with clocks. Time is not a 4th dimension of space. For the description of the Special Theory of Relativity it is here proposed an Minkowski 4D space whilst time t is merely a numerical order of a photon motion in a 4D space. This view opens new perspectives on the understanding of the quantum entanglement, where the 4D space becomes an immediate medium for quantum communication.

Web link: *www.IntellectualArchive.com/getfile.php?file=Wi1NhinKej0&orig_file=New Insights Into the Special Theory of Relativity.pdf*

ID #: 162   **Natural Sciences / Physics / Nuclear physics**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Dome Shield: A Method to Contain Radioactive Dust from Damaged Nuclear Stations and to Protect Cities by Envelopment in a Transparent Inflatable Blanket (Protection from radioactive dust as wells as chemical, biological weapons)

Abstract: The author, in a series of previous articles, designed the AB Dome made of transparent thin film supported by a small additional air overpressure to cover a city or other important large installations or sub-regions. The AB Dome not only keeps the outside atmospheric conditions, such as inclement weather, away from the interior of the inflatable Dome, but can shield a city from radioactive dust, chemical, bacterial weapons and even partially from aviation and nuclear bombs. In present article the author offers a variation in which a damaged nuclear station can be quickly covered by the cheap inflatable dome. By containing the radioactive dust from the damaged nuclear station, the danger zone is reduced to about 2 km rather than large regions which requires the resettlement of huge masses of people and which stops industry in large areas.

Web link: *www.IntellectualArchive.com/getfile.php?file=xbUuEvtRFlH&orig_file=Dome Shield.docx*

ID #: 163   **Natural Sciences / Physics / Biophysics**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Live of Humanity in Outer Space without Space Suite

Abstract: The author proposes and investigates his old idea - a living human in space without the encumbrance of a complex space suit. Only in this condition can biological humanity seriously attempt to colonize space because all planets of Solar system (except the Earth) do not have suitable atmospheres. Aside from the issue of temperature, a suitable partial pressure of oxygen is lacking. In this case the main problem is how to satiate human blood with oxygen and delete carbonic acid gas (carbon dioxide). The proposed system would enable a person to function in outer space without a space suit and, for a long time, without food. That is useful also in the Earth for sustaining working men in an otherwise deadly atmosphere laden with lethal particulates (in case of nuclear, chemical or biological war), in underground confined spaces without fresh air, under water or a top high mountains above a height that can sustain respiration.

Web link: *www.IntellectualArchive.com/getfile.php?file=SRuMLvQwXNW&orig_file=Live of Humanity in Outer Space without Space Suite.docx*

ID #: 164   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Space Wing Electro Relativistic AB-Ship

Abstract: Author offers and develops the theory of a new class of space wing electro ship. A biplane wing and an electric field between the wings characterize this space ship. The interstellar and interplanetary mediums contain charged protons and other charged particles. The winged space ship can produce the lift, thrust and drag forces. The density of the space medium is small (100 - 105 charged particles/cm3) but the high ship speed allows creating enough force for maneuvers, turning, acceleration and braking of ship especially at near relativistic speeds. Author shows the ratio of lift force/drag of the space wing electro ship may reach 100 and maneuver of wing space is big advantageous compared to maneuver using conventional rocket methods. In addition the biplane wing easily may be converted into a very efficient engine

(brake) using external space matter and achieve something close to simple photon propulsion. That means the proposed wing-brake-engine is the most efficient and technologically realistic space drive available at the present time. The offered wing design allows collecting of particles from a very large space area. The method also allows decreasing the drag of a ship body.

Web link: *www.IntellectualArchive.com/getfile.php?file=rRMQlr2huCO&orig_file=Space Wing Electro Relativistic AB-Ship.doc*

ID #: 165　　**Natural Sciences / Earth Sciences / Environmental science**

Submitted on: Feb 29, 2012

Author:　A.A. Bolonkin

Title:　Suppression of Forest Fire by Helicopter without Water

Abstract:　The natural occurrences of wildfires damage nature areas, produce the hundreds of millions of dollars in losses, and considerable pollution of environment. The author suggests a very efficient method of suppression of a forest fire without water. He offers a system of simple light plates or anchor suspended from any helicopter which directs the helicopter propeller airflow against the direction of a wildfire. After some minutes the natural fuel burns away in the front of fire and the fire cannot advance.

Web link: *www.IntellectualArchive.com/getfile.php?file=4pmKCuFS2fe&orig_file=Suppression of Forest Fire by Helicopter without Water.doc*

ID #: 166　　**Natural Sciences / Physics / Electromagnetism**

Submitted on: Feb 29, 2012

Author:　A.A. Bolonkin

Title:　AB ELECTRONIC TUBES AND QUASI-SUPERCONDUCTIVITY AT ROOM TEMPERATURE

Abstract:　Authors offer and research a new macro-engineering idea - filling tubes by electronic gases. Shown: If the insulating envelope (cover) of the tube is charged positively, the electrons within the tube are not attracted to covering. Tube (as a whole) remains a neutral (uncharged) body. The electron gas in the tube has very low density and very high conductivity, close to superconductivity. If we take the density (pressure) of electron gas as equal to atmospheric pressure, the thickness of insulator film may be very small and the resulting tube is very light.

Web link: *www.IntellectualArchive.com/getfile.php?file=xD3nBnvWlmV&orig_file=AB ELECTRONIC TUBES AND QUASI-SUPERCONDUCTIVITY AT ROOM TEMPERATURE.doc*

ID #: 167　　**Natural Sciences / Physics / Mechanics**

Submitted on: Feb 29, 2012

Author:　A.A. Bolonkin

Title:　Aerial Altitude Gas Pipeline

Abstract:　Design of new cheap aerial pipelines, a large flexible tube deployed at high altitude, for delivery of natural (fuel) gas over a long distance is delineated. The main component of the natural gas is methane, which has a specific weight less than air. The lift force of one cubic meter of methane equals approximately 0.5 kg. The lightweight film flexible pipeline can be located in air at high altitude and, as such, does not damage the environment. This aerial pipeline dramatically decreases the cost and the time of construction relative to conventional pipelines of steel, which saves energy and greatly lowers the capital cost of construction.

Web link: *www.IntellectualArchive.com/getfile.php?file=liVRXjLWtSd&orig_file=Aerial Altitude Gas Pipeline.doc*

ID #: 168　　**Natural Sciences / Physics / Mechanics**

Submitted on: Feb 29, 2012

Author:　A.A. Bolonkin

Title:　Air Catapult Transport

Abstract:　The current flight passenger-transport and cargo systems have reached the peak of their development. In the last 30 years there has been no increase in speed or reductions in trip costs. The transportation industry needs a revolutionary idea, which allows jumps in speed and delivery capability, and dramatic drops in trip price. The author offers a new idea in transportation in which trip (flight) time practically does not depend on distance, and vehicle load capability doubles and which has a driving engine that is located on the ground and can use any cheap source of energy.

Web link: *www.IntellectualArchive.com/getfile.php?file=lhLjBlFbVTw&orig_file=Air Catapult Transport.doc*

ID #: 169　　**Natural Sciences / Physics / Nuclear physics**

Submitted on: Feb 29, 2012

Author:　A.A. Bolonkin

Title:	Converting of any Matter to Nuclear Energy by AB-Generator and Aerospace

Abstract: Author offers a new nuclear generator which allows to convert any matter to nuclear energy in accordance with the Einstein equation E=mc2. The method is based upon tapping the energy potential of a Micro Black Hole (MBH) and the Hawking radiation created by this MBH. As is well-known, the vacuum continuously produces virtual pairs of particles and antiparticles, in particular, the photons and anti-photons. The MBH event horizon allows separating them. Anti-photons can be moved to the MBH and be annihilated; decreasing the mass of the MBH, the resulting photons leave the MBH neighborhood as Hawking radiation. The offered nuclear generator (named by author as AB-Generator) utilizes the Hawking radiation and injects the matter into MBH and keeps MBH in a stable state with near-constant mass.

Web link: *www.IntellectualArchive.com/getfile.php?file=XfvqXLeHUub&orig_file=Converting of any Matter to Nuclear Energy by AB-Generator and Aerospace.doc*

ID #: 170   **Natural Sciences / Physics / Particle physics**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Femtotechnology: Design of the Strongest AB-Matter for Aerospace

Abstract: Aerospace, aviation particularly need, in any era, the strongest and most thermostable materials available, often at nearly any price. The Space Elevator, space ships (especially during atmospheric reentry), rocket combustion chambers, thermally challenged engine surfaces, hypersonic aircraft materials better than any now available, with undreamed of performance as the reward if obtained. As it is shown in this research, the offered new material allows greatly to improve the all characteristics of space ships, rockets, engines and aircraft and design new types space, propulsion, aviation systems.

Web link: *www.IntellectualArchive.com/getfile.php?file=hfOajQc4WL5&orig_file=Femtotechnology Design of the Strongest AB-Matter for Aerospace.doc*

ID #: 173   **Natural Sciences / Physics / Electromagnetism**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Using of High Altitude Wind Energy

Abstract: Ground based, wind energy extraction systems have reached their maximum capability. The limitations of current designs are: wind instability, high cost of installations, and small power output of a single unit. The wind energy industry needs of revolutionary ideas to increase the capabilities of wind installations. This article suggests a revolutionary innovation which produces a dramatic increase in power per unit and is independent of prevailing weather and at a lower cost per unit of energy extracted. The main innovation consists of large free-flying air rotors positioned at high altitude for power and air stream stability, and an energy cable transmission system between the air rotor and a ground based electric generator. The air rotor system flies at high altitude up to 14 km. A stability and control is provided and systems enable the changing of altitude. This article includes six examples having a high unit power output (up to 100 MW). The proposed examples provide the following main advantages: 1. Large power production capacity per unit - up to 5,000-10,000 times more than conventional ground-based rotor designs; 2. The rotor operates at high altitude of 1-14 km, where the wind flow is strong and steady; 3. Installation cost per unit energy is low. 4. The installation is environmentally friendly (no propeller noise).

Web link: *www.IntellectualArchive.com/getfile.php?file=o9IvxIgIjeJ&orig_file=Using of High Altitude Wind Energy.doc*

ID #: 174   **Natural Sciences / Physics / Electromagnetism**

Submitted on: Feb 29, 2012

Author: A.A. Bolonkin

Title: Wireless Transfer of Electricity from Continent to Continent

Abstract: Author offers collections from his previous research of the revolutionary new ideas: wireless transferring electric energy in long distance Ã¢ from one continent to other continent through Earth ionosphere and storage the electric energy into ionosphere. Early he also offered the electronic tubes as the method of transportation of electricity into outer space and the electrostatic space 100 km towers for connection to Earth ionosphere. Early it is offered connection to Earth ionosphere by 100 km solid or inflatable towers. There are difficult for current technology. In given work the research this connection by thin plastic tubes supported in atmosphere by electron gas and electrostatic force. Building this system is cheap and easy for current technology. The computed project allows estimating the possibility of the suggested method.

Web link: *www.IntellectualArchive.com/getfile.php?file=pcOcic1RDk6&orig_file=Wireless Transfer of Electricity from Continent to Continent.doc*

End of February 2012 bulletin