ABSTRACTS of
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Bauman Moscow State Technical University, Moscow, Russia
D. G. Pavlov, The principle of general symmetry
geom2004@mail.ru
In the work we suggest to use a principle of general symmetry, when tasks for geometrization of physical fields and a basis for its possible solution, in a special case, are considered. The principle means that time and space, gravity and electromagnetism, strong and week interactions are similar.
Efforts to take into account gravity in the isometric 4D Finsler space with the metric function of Berwald-Moore make appearance of connection this geometry with metric fields of spaces of Galileo, Minkowski and Einstein. It allows hoping that for other fundamental interactions the principle of general symmetry can overcome many difficulties which appear when someone chooses the concrete geometry from manifold of geometries.

Russian Institute for Electrotechnics, Moscow, Russia
Bauman Moscow State Technical University, Moscow, Russia
G. I. Garas'ko, D.G. Pavlov, Construction of the pseudo Riemannian geometry on the base of the Berwald-Moor geometry
gri9z@mail.ru
geom2004@mail.ru
The space of the associative commutative hyper complex numbers, H4, is a 4-dimensional metric Finsler space with the Berwald-Moor metric. It provides the possibility to construct the tensor fields on the base of the analytical functions of the H4 variable and also in case when this analyticity is broken. Here we suggest a way to construct the metric tensor of a 4-dimensional pseudo Riemannian space (space-time) using as a base the 4-contravariant tensor of the tangent indicatrix equation of the Berwald-Moor space and the World function. The Berwald-Moor space appears to be closely related to the Minkowski space. The break of the analyticity of the World function leads to the non-trivial curving of the 4-dimensional space-time and, particularly, to the Newtonian potential in the non-relativistic limit.

Samara Aerospace University, Image Processing Systems Institute of RAS, Samara, Russia
Vladimir M. Chernov, Four-dimensional algebras with polylinear Zassenhaus multiplication
vche@smr.ru
Re-defined binary, as well as ternary and quaternary polylinear operations in the four-dimensional algebra H(4) are introduced and investigated in this paper. The proofs are provided for the following property of well-known Minkowski and Berwald-Moore metric functions: these functions can be interpreted as restriction of the mentioned operations to the 'diagonal' of their domain of definition. The operation properties similar to the multiplicative property for the norm in composition algebras are considered.

State University of Civil Aviation, Department of Physics, St-Petersburg, Russia
S. V. Siparov, Theory of the zero order effect to study the space-time geometrical structure
sergey@siparov.spb.su
The applicability of Einstein's Relativity Theory on the galactic scale and the role of geometry in the problems of astrophysical observations are discussed. The theory of the zero order effect to study experimentally the geometrical properties of space-time is suggested.

Research Institute of Strategy Stability, Moscow, Russia
Pavel D. Suhkarevskii, To the question on quartic geometry

University of Illinois at Chicago, USA
Louis H. Kauffman, Quantum Topology and Quantum Computing
In this talk we will show how knot theory emanating from the bracket state sum model of the Jones polynomial can be used to create unitary representations of the Artin Braid Group (via recoupling models for Topological Quantum Field Theory). These representations are sufficiently rich to allow the embedding of quantum computing into a topological context. This provides an alternate route to the results of Freedman and collaborators. We use these same representations to give quatnum algorithms for the colored Jones polynomnials and for the Witten-Reshetikhin Turaev invariant. If there is time, we will discuss the possible relationships between quantum computing and (Khovanov) categorifications of knot invariants.

Department of Mathematical Sciences, Indiana University - Purdue University Indianapolis, Indianapolis, IN, USA
Zhongmin Shen, Geometry of (alpha,beta)-Metrics
zshen@math.iupui.edu
In this talk, I will discuss a class of Finsler metrics defined by a Riemannian metric alpha and a 1-form beta on a manifold M. Such metrics are called (alpha,beta)-metrics. They are relatively simple Finsler metrics, yet they have many interesting geometric properties. They are computable so that one can find examples among them with desired curvature properties. I will talk about the most recent developments in the study of (alpha,beta)metrics in including the characterization of projectively flat (alpha,beta)-metrics, Douglas (alpha,beta)-metrics, Landsberg (alpha,beta)-metrics and etc.

C.N.R.S. and Centre de Physique Theorique, Marseille, France
Mark Lachieze-Rey, Cosmic Topology
marclr@cea.fr
General Relativity does not predict the global topology of space-time. This leaves the possibility that space is multiconnected. I will present the main properties of such models. A multiconneced space is characterized by its group of holonomies, which is the symmetry group of a fundamental polyhedron. I will show that, for such a model, some properties of this group may have observable effects on the cosmic microwave background. I will present specific results in the case of the Poincar\'e dodecahedric (PDS) space, which has recently shown a nice fit to the recent WMAP data.
In particular, I will introduce a method which allows to calculate the normal modes of [the Laplacian of] the PDS.
Eigenmodes in spherical spaces, M. Lachieze-Rey and S. Caillerie 2005, Class. Quantum Grav. 22 (2005) 695-708. (astro-ph/0501419)

Mathematical Institute of RAS, Novosibirsk, Russia
Alexander Pozhidaev, N-ary algebras
app@math.nsc.ru
In this talk we present some classes of n-ary algebras and show how they are connected with the geometry and the mechanics. In particular, we consider a classification of n-ary vector cross product algebras and show that the obtained n-ary algebras are some generalizations of the 3-dimensional Lie algebra sl(2) and the 7-dimensional Malcev algebra M(7), adjoining to which time-subspace we obtain Minkovsky's four-dimensional space-time world and 8-dimensional superspace-time.

Department of Mathematics, University of Notre Dame, Notre Dame, Indiana USA
Pit-Mann Wong, Curvatures in complex Finsler geometry
wong.2@nd.edu
The basic theory of curvatures on holomorphic Finsler vector bundles over complex manifolds will be presented. The theory covers the three notions of curvatures: holomorphic bisectional curvature, holomorphic sectional curvature and the Ricci curvature.
We shall also discuss constructions of Finsler metrics with special properties. The technique is useful when the complex manifold admits many global holomorphic symmetric jet-forms (in the compact case) or global holomorphic symmetric jet-forms with logarithmic singularity in the non-compact case. We also introduce a natural extension of complex Finsler spaces to a more general class for which the analogue of Chern connection and curvature can be defined. We also show that the Finsler ones are characterized by a condition on the Finsler-Ricci curvature tensor. This characterization is motiviated by the geometry associated to the complex homogeneous Monge-Ampere equation.

Institute of Mathematics, University of Debrecen, Debrecen, Hungary
Lajos Tamassy, Connections in spaces with polynomial metric or in Randers spaces; isometric mappings
tamassy@math.klte.hu
We determine metrical and almost linear connections for Randers spaces and for spaces with polynomial metric. Also we want to prove that a diffeomorphism between two Finsler spaces is an isometry if it keeps two dimensional area and angle. This angle is a natural and simple generalization to Minkowski and to Finsler spaces of the Euclidean angle

School of Mathematics and Physics, Chongqing Institute of Technology, Yangjiaping, Chongqing, China
Xinyue Cheng, S-Curvature and Its Applications in Finsler Geometry
chengxy@cqit.edu.cn
The S-curvature is one of most important non-Riemannian quantities in Finsler geometry which was first introduced by Z. Shen [Advances in Math. **128**(1997), no.2, 306–328; MR 98j: 53081]. S-curvature **S**(x, y) is the rate of change of the distortion along geodesics and measures the averages rate of change of (T_xM, F_x) in the direction y 2 T_xM. The author and Z. Shen have classified the locally projectively flat Randers metrics with isotropic S-curvature [J. of London Math. Soc. **68**(2)(2003), 762–780] and have characterized the locally projectively flat Finsler metrics with isotropic S-curvature [Acta Math. Scientia, **26B**(2)(2006), 307–313]. In this paper, we emphasize the importance of S-curvature in characterizing the geometric structure of Finsler metrics. Particularly, we reveal the influence of S-curvature on the structure of (1 ,)-metrics.

Department of Astronomy, Beijing Normal University, Beijing, China
Shenglin Cao, The theory of relativity on the Finsler spacetime
Caosl20@yahoo.com.cn
This paper shows that if ones think of the possibility of the existence of the superluminal-speeds (the speeds faster than that of light) and redescribe the special theory of relativity following Einstein's way, it could be supposed that the physical spacetime is a Finsler spacetime, characterized by the metric

$$ds^4 = g_{ijkl}dx^i dx^j dx^k dx^l .$$

If so, a new spacetime transformation could be found by invariant ds^4 and the theory of relativity is discussed on this transformation. It is possible that the Finsler spacetime $F(x,y)$ may be endowed with a catastrophic nature. Based on the different properties between the ds^2

and ds^4, it is discussed that the flat spacetime will also have the catastrophe nature on the Finsler metric ds^4. The catastrophe of spacetime has some deep cosmological means. According to the some interested subjects in the process of evolution of the universe the catastrophe nature of the Finsler spacetime and its cosmological implications are discussed. It is shown that the nature of the universal evolution could be attributed to the geometric features of the Finsler spacetime.

Faculty of Mathematics and Informatics, Dept of Algebra and Geometry, Transylvania University, Brasov, Romania
M. Paun, Fundamental equations for generalized Lagrange spaces of order 2 in invariant frames with Berwald-Moor type metric
m.paun@unitbv.ro
The purpose of this paper is to study in invariant frames the Einstein and Maxwell equations for a generalized Lagrange space of second order endowed with a Berwald Moor type metric. The type of frames we introduce in this paper are Vranceanu type frames. We introduce the Vranceanu coefficients for this type of frames with this type of metric and with respect to them we write the fundamental equations of the space.

University Politechnica of Bucharest, Department Mathematics I, Bucharest, Romania
V. Balan, CMC and minimal surfaces in Berwald-Moor spaces
vbalan@mathem.pub.ro
For several Finsler spaces endowed with Berwald-Moor metric are described the equations of minimal and CMC space-like hypersurfaces. Different types of symmetric polynomials generating the fundamental function are examined, and corresponding classes of solutions for the CMC and minimality PDEs are pointed out. As well, Maple 9.5 representations of such surfaces illustrate the theoretical background**.**

University Politechnica of Bucharest, Department Mathematics I, Bucharest, Romania
Transylvania University, Brasov, Romania
Research Institute of Applied Mathematics and Mechanics, Bauman Moscow State Technical University, Moscow, Russia
V. Balan, N. Brinzei, S. V. Lebedev, Geodesics, connections and Jacobi fields for Berwald-Moor quartic metrics
vbalan@mathem.pub.ro
nico.brinzei@rdslink.ro
serleb@rambler.ru
For Finsler spaces (M;L) with quartic metrics $L = \sqrt[4]{\alpha_{ijkl}(x,\, y) y^i y^j y^k y^l}$, we determine the equations of geodesics and the corresponding arising geometrical objects -canonical spray, nonlinear Cartan connection, Berwald and canonical metrical linear connections -in terms of the non-homogenized flag Lagrange metric $h_{ij} = \alpha_{ij00}$. Further, we study the geodesics and Jacobi fields of the tangent space TM for several hv-metric models with quartic components.

University of Illinois at Chicago, USA
Louis H. Kauffman, Non-Commutatvity in Physics and Differential Geometry
We show that discrete calculus embeds in non-commutative algebra in such a way that all derivatives are represented by commutators. Taking such a representation of calculus seriously leads to new points of view about the relationships among mathematics, physics and differential geometry. This talk will describe these relationships which include new viewpoints about gauge theory, and the notion of curvature and connection in relation to the Jacobi identity.

Moscow, Russia
Tatiana A. Sherkova, The set of four in cosmologies of Ancient Egypt

Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Russia
G. Yu. Bogoslovsky, Relative particle velocity in the entirely anisotropic space
bogoslov@theory.sinp.msu.ru
The magnitude of the relative velocity of a particle in the space with entirely broken 3D isotropy is determined as an invariant of the group of motions of the corresponding 3-velocity space. This group consists of the transformations of 3-velocities induced by the relativistic symmetry transformations of the entirely anisotropic event space.

Department of Physics, Lomonosov Moscow State University, Moscow, Russia
Yu. S. Vladimirov, Relational foundations of physics and Finslerian geometry
yusvlad@rambler.ru
The principles of new conception of physics and geometry are discussed. These principles are based on the idea of relations between particles (events). In the classical area, this approach corresponds to the Fokker–Feynmann action-at-the-distance theory that is alternative to a field theory. The relations are characterized by spinors: standart (2-component) spinors and multi-component (Finslerian) spinors. When the reduction to a standart theory is made, the special geometries with quadratic, cubic and higher-degree's metric arise which correspond to the Finslerian geometry.

Institute of Gravitation and Cosmology, Peoples Friendship University of Russia, Moscow, Russia
Bauman Moscow State Technical University, Physics Department, Moscow, Russia
Vladimir V. Kassandrov, Yuri P Laptev, Finsler Structure in the Algebrodynamics and the Complex-Quaternionic Origin of Minkowski Geometry
vkassan@sci.pfu.edu.ru
yplaptev@rambler.ru
At present, no exceptional ("natural") algebra is known which would relate to the Minkowski geometry of space-time. We demonstrate that the complex quaternion algebra with its 6-parameter automorphism group SO(3,C) gives rizeto a complex-valued invariant with its noncompact part possessing just the structure of Minkowski interval and, with respect to the basic complex coordinates, – Finsler-like structure. Compactified part corresponds to the new invariant of Lorentz transformations – the geometric phase – which could be responsible for quantum interference phenomena. Thus, one can treat now the algebra of biquaternions as the "space-time algebra" and on its base the algebraic unified field theory, the "algebrodynamics", previously constructed in the author's (V.K.) works, could be now consistentlty developed in the complex-quaternionic physical space-time.
1. V.V. Kassandrov // Gravitation & Cosmology (Moscow), v.11 (2005), 354-358.

Research Institute of Applied Mathematics and Mechanics, Bauman Moscow State Technical University, Moscow, Russia
S. V. Lebedev, The generalized finslerian metric tensor in Berwald–Moor space revised
serleb@rambler.ru
Owing to the property of the ambiguity of the generalized finslerian metric tensor and the Young's scheme we have possibility to develop the generalized forms both of the own metric tensor and of the equations of geodesics. The connection of the generalized metric tensor in the Berwald-Moor space and pseudo-riemannian metric tensor is discussed.

Department of Physics, Lomonosov Moscow State University, Moscow, Russia
A.V. Solov'yov, Finslerian 4-spinors as a generalization of twistors
anton@spin.phys.msu.ru
The main facts of the geometry of Finslerian 4-spinors are formulated. It is shown that twistors are a special case of Finslerian 4-spinors. The close connection between Finslerian 4-spinors and the geometry of a 16-dimensional vector Finslerian space is established. The isometry group of this space is described. The procedure of dimensional reduction to 4-dimensional quantities is formulated.

Department of Theoretical Physics of Samarqand State University, Samarqand, Uzbekistan
Rustam Ibadov**,** The geometrical decision in construction of the quantum field theory with new Universal parameter
ibrustam@mail.ru
This report is a continuation of our researches along the lines of constructing a consistent Quantum Field Theory with fundamental mass M - a hypothetical universal scale in the ultrahigh energy region. In the advanced approach the key role plays pulse space di Sitter from a constant in radius of curvature M. From theoretical point of view the fundamental mass M and corresponding to it the fundamental length $\ell = \hbar/Mc$, respectively, are supposed to play major roles such as Planck's constant $\hbar$, the speed of light c or Newton's gravitational constant κ and serve as a characteristic scale in the region of ultrahigh energies.
On the basis of this theory various cross sections of fundamental processes have been calculated.
The results showed that new interaction induced via the geometric structure of the momentum space does not keep helicity. As a characteristic feature this interaction inherently leads to violations of fundamental symmetries, such as P and CP - symmetry violation.
Recently theorists very frequently address to various kinds of geometry including Finsler geometry.
We count enticing the construction of the Quantum Field Theory in Finsler spaces and as an aim of our further research.

Department of Mathematics, University of Notre Dame, Notre Dame, Indiana, USA
Qin Han**,** Isometric embedding of positive discs in R^3
qhan@nd.edu
In 1938, Alexandroff introduced a class of smooth metrics g in the unit disc $D \subset R^2$ such that the Gauss curvature K satisfies $K>0$ in D, $K=0$ and \$dK\neq 0\$ on \$\partial D\$ and the total curvature of g in D is \$4\pi\$. Alexandroff proved that such metrics are rigid, in the sense that the isometric embedding of (D, g) in R^3 is unique up to rigid body motions if it exists. It is easy to derive necessary conditions for such metrics to be isometrically embedded in R^3, among which the geodesic curvature of the boundary is negative. We will prove that those necessary conditions are also sufficient. The proof is based on a discussion of elliptic Monge-Ampere equations which are degenerate on the boundary. Because of the rigidity, boundary conditions cannot be prescribed. In fact, there is only one boundary condition which makes this Monge-Ampere equation solvable.

International School for Advanced Studies in Mathematics and Physics, Trieste, Italy
Lorenzo Sindoni**,** Finsler Geometry and Quantum Gravity Phenomenology
sindoni@sissa.it
Many theoretical models for the semiclassical limit of Quantum Gravity suggest that we should expect a modification of the laws of propagation of free particles in vacuum spacetime. In particular, the dispersion relation should be different from the special relativistic one,

including corrections coming from new quantum gravitational physics. These effects can be tested and constrained using observations on ultra high energy cosmic rays, which is an experimental window which is and will be explored in detail in the next years. In this short report we will show how we can use Finsler geometry to understand these effects in terms of a new phase of spacetime geometry, changing the perspective from an Effective Field Theory approach to an Effective Geometrical Theory point of view.

Romanian Academy of Sciences, Transylvania University, Brasov, Romania
***Gheorghe Muteanu*,** Gauge Field Theory in Terms of Complex Finsler Geometry
gh.munteanu@info.unitbv.ro
On the total space of a G-complex vector bundle E is defined the gauge transformations. A gauge complex invariant Lagrangian determines a special complex nonlinear connection for which the associated Chern-Lagrange and Bott complex connections are gauge invariant.
The complex field equations are determined with respect to these associated gauge complex connections. By complex Legendre transformation ***L*-**dual process we investigate the similar problems on the dual vector bundle E^*. The ***L*-**dual Chern-Hamilton and Bott complex connections are also gauge invariant. The complex Hamilton equations are write for the general ***L*-**dual Hamiltonian obtained as a sum of particle Hamiltonian, Yang-Mills and Hilbert-Einstein Hamiltonians.

Imam Hossein University, Tehran, IRAN
Vahid Alli, TMD connection of Finsler space
valli@ihu.ac.ir
vahidalli@yahoo.com
The theories of connection on Finsler space have been studied by many authors from their own standpoints. Various connections are possible on a Finsler space M, and in this paper a special TMD-connection, which is assumed to be a skew-symmetric h connection, is introduced and a case in which M becomes a Minkowski space is also studied and some results of the studies are also reported.

Department of Physics, Lomonosov Moscow State University, Moscow, Russia
S.V. Bolokhov, Finslerian spinors and the classification of interactions in the relational theory
boloh@rambler.ru
The algebraic classification of the neutral and charged channels of strong and electroweak interactions is proposed within the scope of the relational approach. In this approach, the Finslerian N-spinor's formalism is used for describing interactions and internal states of particles. Finslerian N-spinors are geometric objects that generalize Cartan's spinors to the case of spaces with non-quadratic metric which naturally arise in binary geometries of higher ranks. It is shown that various channels of interactions can be interpreted in terms of algebraic Petrov's subtypes that characterize matrix representation for elements of the Finslerian space of particle's states.

Department of Mathematics, Faculty of Sciences, University of Annaba, Algeria
A. Laouar, The passage of long waves above a vertical barrier: method of complex variable for calculation of local disturbances
laouarhamid@yahoo.com
The generalized theory of the shallow-water is applied to a first order approximation for the calculus of the local disturbances caused by the presence of a vertical barrier. By using the appropriate complex variable theory, the flow is determined and this method gives a new physical interpretation.

Institute of Mathematics, University of Debrecen, Debrecen,
Technical University of Cluj-Napoca, Hungary
Laszlo Kozma, ***Ioan Radu Peter***, Isometries of Finsler manifolds
kozma@math.klte.hu
Here we prove the generalization of Weinstein's theorem for Finsler manifolds: an isometry of a compact oriented Finsler manifold of positive sectional curvature has a fixed point supposed that it preserves the orientation of the manifold if its dimension is even, or reverses it if odd. Some consequences will be also analyzed.

Department of Mathematics, University of Notre Dame, Notre Dame, Indiana, USA
Mei-Chi Shaw, Jianguo Cao, The Cauchy-Riemann equation in complex projective spaces
meichi@nd.edu
In this talk we will discuss the Cauchy-Riemann equation in complex projective spaces. We will use both the weight functions method and bounded plurisubharmonic exhaustion functions on pseudoconvex domains to study the equation in complex projective spaces.
The solutions are used to obtain results on the function theory on pseudoconvex domains. We also discuss the application on the nonexistence of Lipschitz Levi-flat hypersurfaces in the complex projective space of dimension greater or equal to 3.

Institute of Mathematics, University of Debrecen, Debrecen, Hungary
Csaba Vincze, On the Wagner spaces
csvincze@math.klte.hu
This special class of Finsler spaces is characterized by their conformal equivalence to a Berwald space. They are closed under the conformal change of the metric. Hashiguchi and Ychijio proved that the conformal equivalence to a Berwald space is equivalent to the existence of a metrical linear connection on the base manifold with semisymmetric torsion tensor. After summarizing the basic facts we present a method how we can check the conformal equivalence to a Berwald manifold intrinsically. As a special case we discuss the theorem due to Bácsó, Hashiguchi and Matsumoto. It gives a necessary and sufficient condition for a Finsler space with (□,□)-metric to be Wagnerian. The condition is a system of partial differential equations in terms of the Lévi-Civita connection of the metric □. We give a family of Riemannian spaces admitting non-trivial solutions; in particular we consider the case of the classical hyperbolic space

Institute of Theoretical and Experimental Biophysics of Russian Academy of Science, Pushchino, Moscow region, Russia
V.A. Panchelyuga, S.E. Shnoll, V.A. Kolombet, M.S. Panchelyuga, The local time effect as evidence of space-time anisotropy
panvic333@yahoo.com
shnoll@iteb.ru
The work presents results of investigations of one of the manifestations of macroscopic fluctuations phenomenon – local time effect. The effect consists in synchronous changes of histograms' shape similarity for different geographical locations at the same local time.
As a result of the investigations was shown existence of named effect for distances between locations of measurements from as much as possible for the Earth (~ 15000 km) to the laboratory scale (~ 1 m).
Development of experimental methods allows not only investigations of local time effect at the small scales but also detailed studies of structure of local time peak. It was found that the peak consists of sub-peaks, existence of which can be caused by space-time anisotropy.

Romanian Academy of Sciences, Transylvania University, Brasov, Romania
G. Atanasiu, Pairs of Finsler structures and connections compatible to them
gh_atanasiu@yahoo.com
We consider a pair of metrical Finsler structures $g_{ij}(x,y)$, $s_{ij}(x,y)$, $(x,y) \in TM$, $(i,j=1,2,...,n)$, $n = dim\ M$, and we investigate the cases in which is possible to find Finsler connections compatible to them:

$$\text{rank} \parallel g_{ij}(x,y) \parallel = n, \text{rank} \parallel s_{ij}(x,y), (x,y) \parallel = n - k,$$
$$k \in \{0,1,...,n-1\}, \forall (x,y) \in TM \setminus \{0\}.$$

Department of Physics, University of Athens, Athens, Greece
Alexander-Panayiotis Kouretsis, FRW model in generalized metric space with weak anisotropy
a.kouretsis@yahoo.gr

Bauman Moscow State Technical University, Moscow, Russia
V. O. Gladyshev, T.M. Gladysheva, M. Dashko, A.N. Morozov, B.P. Nazarenko, E.A. Sharandin N. Trofimov Anizotropy of space for velocities of electromagnetic radiation propagation in moving media
vgladyshev@mail.ru
In the work optical anisotropy in moving media is considered. When geometry of space-time differs from Minkowski geometry, Interaction of electromagnetic radiation and a moving medium with complicate velocity field leads to appearance of additional optical anisotropy, which can be measured with interferometric methods. In the report results of the first experiments on observing optical anisotropy in a rotary transparent optical medium are discussed.

Astronomy Department, Faculty of Science, Cairo University, Giza, Egypt
Mathematics Department, Faculty of Science, Cairo University, Giza, Egypt
M.I. Wanas, Nabil L. Youssef and Amr M. Sidahmed, A Study of Absolute Parallelism Geometry in The Context of Generalized Lagrange Spaces
wanas@frcu.eun.eg
nlyoussef2003@yahoo.fr
In this study we deal with a generalization of an Absolute Parallelism (AP) space. All geometric objects considered are functions of x (position) and y (velocity vector). In analogy to AP-geometry, we define a distinguished d- connection on M, which we refer to as the canonical connection, so that both the horizontal (h-) and the vertical (v-) covariant derivatives of the building blocks with respect to this connection vanish. In addition to the metrical and the canonical d-connection, two more connections are defined, the dual and the symmetric connections. Curvature tensors corresponding to the above mentioned connections are expressed in terms of the torsion tensor of the space. Tensors of different orders are introduced in this more general context. Some of these tensors have no counterpart of the conventional AP-geometry. The above study has been specialized in case of Finsler space.

Department of Mathematics, Minjiang University, Fuzhou, Fujian, China.
Institution of Mathematics, Fudan University, Shanghai, China
Bing Ye Wu, Yuan Long Xin, Comparison theorems in Finsler geometry and their applications
bingyewu@yahoo.com.cn
ylxin@fudan.edu.cn
We prove Hessian comparison theorems, Laplacian comparison theorems and volume comparison theorems for Finsler manifolds under various curvature conditions. As applications, we derive McKean type theorems for the first eigenvalue of Finsler manifolds, as well as generalize to Finsler manifolds a result on fundamental groups due to Milnor.

Astronomy Department, Faculty of Science, Cairo University, Giza, Egypt.
Mathematics Department, The American University in Cairo, Cairo, Egypt.
M.I. Wanas, M.E. Kahil, Path Equations in Generalized Absolute Parallelism Spaces
wanas@frcu.eun.eg
kahil@aucegypt.edu
A class of Generalized Absolute Parallelism Spaces (GAPS) is considered. The building blocks of this class are assumed to be functions of position and direction and are derivable from a Lagrangian. We derive path equations for this class of GAPS using the Bazanski approach. These equations are analyzed and studied for the aim of physical applications. Special forms of the derived equations in some geometric structures (e.g. Absolute Parallelism, Riemannian and Finslerian spaces) are obtained and compared. The possibility of using such equations as trajectories of test particles is discussed.

Romanian Academy of Sciences, Transylvania University, Brasov, Romania
G. Atanasiu, E. Stoica, The horizontal and vertical semisymmetric metrical d-connections in the relativity theory
gh_atanasiu@yahoo.com
e.stoica@unitbv.ro
Let E be the $(m+n)$ - dimensional total space of a vector bundle (E,p,M), dim $M = n$, a given fixed nonlinear connection N on E and a given (h,v) – metrical structure $G \in \Im_2^0(E)$.
In the paper, we determine the Einstein equations of an h - and v - semisymmetric metrical distinguished connection on $E = TM$, if $n = 4$, for a Riemann – local Minkowski model.

Department of Mathematics, Faculty of Science, Cairo University, Giza, Egypt
Nabil L. Youssef, Characterization of closed vector fields in Finsler geometry
nyoussef@frcu.eun.eg
nlyoussef2003@yahoo.fr
One of the most well-known and widely used approaches to GLOBAL Finsler geometry is pull-back PB approach. The universe of this approach is the vector bundle P: $\pi^{-1}(TM) \to TM$ ($M -$ being a finite dimensional manifold, TM its tangent bundle and $\pi^{-1}(TM)$ is the pullback of TM by $\pi : TM \to M$). Sections of the PB -bundle are called π -vector fields and tensors fields on $\pi^{-1}(TM)$ are called π -tensor fields.

We introduce the notion of a closed π -vector field. A π -vector field $\overline{X}$ is said to be $\overline{d}$ -closed (or, simply, closed) if its associated π -form under the duality of the Finsler metric g is $\overline{d}$ -closed, where $\overline{d}$ is the Finsler exterior derivative $(\overline{d}^2 \neq 0)$. Some characterizations of closed π -vector fields are obtained. This problem is strongly related to the internal properties of the Finsler space (M, L), in which the curvature tensors, the Ricci tensors and the scalar curvatures play a dominant role.
Among various results obtained, we state the following:

- A π -vector field is closed if and only if a certain differential operator is self-adjoint.
- The gradiant π -vector fields are closed if and only if the horizontal distribution is completely integrable.
- In a Finsler manifold with zero scalar curvature, gradiant π -vector fields are closed.
- In a Finsler manifold with nonzero scalar curvature, the gradiant of a positevly homogeneous function $f \in F(TM)$ of degree r in the directional arguments is closed if and only if $f(x, y) = h(x)L^r$, for some $h \in F(M)$.

It should be noted that our treatment is entirely global; i.e, it does not make use of the local coordinate techniques.

University of Liverpool, Department of Physics, Liverpool, GB
P. Rowlands, A mathematical description of the fermionic state
p.rowlands@liverpool.ac.uk
A unified mathematical description of the fermionic state and its interactions and gauge symmetries is presented in a minimalist form which suggests possible connections to other formalisms, including Finsler geometry.

Mu'tah University – Department of Mathematics, Mu'tah, Jordan
Mashhour. I. M. M. Al Ali Bani Ata, On translation planes of certain semifields and thier autotopisms
mashhour_ibrahim@yahoo.com

Transylvania University, Brasov, Romania
N. Brinzei, Projective and conformal transformations in Shimada spaces
nico.brinzei@rdslink.ro
In the framework of Finsler spaces endowed with Shimada-type metric (including the Berwald-Moor particular case), are provided necessary and sufficient conditions for projective flatness. As well, for conformal transformations, the conditions for having projectively related structures are evidentiated. At the end, are given conditions to characterize the Shimada spaces which are projectively related to Berwald spaces.

Romanian Academy of Sciences, Transylvania University, Brasov, Romania
G. Atanasiu, Conformal metrical distingueshed connections in vector bundles
gh_atanasiu@yahoo.com
Let $\xi = (E,p,M)$ be a vector bundle over a paracompact, n-dimensional differentiable manifold M, with $(m+n)$ - dimensional total space E and $p : (x,y) \to x$.
In the paper, starting from a distingueshed linear connection $D\Gamma(N)$, compatible with a conformal metrical structure on E, we find the **Weyl connection** in the adapted frames to a nonlinear connection N on E.

Institute of Mathematics, University of Debrecen, Debrecen, Hungary
Tran Quoc Binh, Cartan-type connection and connection sequences
binh@math.klte.hu
In a generalized Finsler space (M, g) there exists a great variety of different metric connections. One of the most often used connection is Cartan connection.
It has been characterized by certain condtions by M. Matsumoto [M], and also by B. Hassan [H]. Many interesting aspects of this connections have been studied by J.Grifone [G], I.Z.Szabo [S], R.Miron [Mi], Tamassy-Kis [T-K] ans others. In this talk, by making use of a non linear connection in the tangent bundle of M we slightly alser Hassan's third condition and we show that these conditions still uniquely determine a metric coonection. The notion of a sequence of such connections also is introduced and we showed that in the case of classical Finsler space (M, F) every connection sequence contain at most three different non-linear connections and the limit connectiopn is just the non-linear connection of the Cartan connection.

Romanian Academy of Sciences, Transylvania University, Brasov, Romania
***Gheorghe Muteanu*,** The intrinsic geometry of harmonic curves in a complex Finsler space
gh.munteanu@info.unitbv.ro
In this note we investigate some general aspects in geometry of complex curves of a complex Finsler space. The critical points of $\overline{\mathcal{J}}$ -energy gives a harmonic map. We rediscover a result of Nishikawa for harmonic curves using other way. The intrinsic geometry (the induced

tangent Chern-Finsler connection, the holomorphic sectional curvature, etc.) of holomorphic curves are studied in the last section.

Okan University, Kadikoy and Savronik, Organize Sanayii Bölgesi, Eskisehir, Turkey
Yarman T., Tachyonic interaction, or the same, de Broglie relationship, as imposed by the energy conservation law
tyarman@gmail.com
The theory developed by the author, as an alternative to the general theory of relativity (GTR), essentially consists of the law of energy conservation, in the broader sense of the concept of "energy" delineated by the "mass & energy equivalence" of the special theory of relativity. Thus, the "rest mass" of an object brought quasi-statically into a gravitational field, must be decreased as much as the binding energy coming into play. This, in return, via the quantum mechanical description of the object in hand, makes that the "characteristic length" of the object stretches just as much, so does its "unit unit period time", were this considered as a clock.
As striking as this may be, the present approach does not have to assume the "principle of equivalence" of Einstein. Everything is based on the law of energy conservation. Furthermore, the present approach does not yield any inconsitencies, or incompatibilities, such as the breaking of the fundamental relationship $E = mc^2$, or the violation of the laws of energy conservation or momentum conservation, contrary to what is yield by the GTR.
Now, in Einstein's GTR, were an object immersed into a gravitational field, its mass increases, and its length contracts if lied along the field, only. In the present approach, however, the mass decreases just as much, the length of it stretches as much, no matter how this length is directed in the field. Anyway, in the present theory, there happens no "singularity", thus no black holes.
All this, delineates a geometry quite different than the Peudo-Romanian geometry underlined by the GTR, and the author believes, is worth to be reported to the very first chapter of the Conference on the Finsler extensions of Relativity Theory, to be soon held in Cairo.

Institute of Theoretical and Experimental Biophysics of Russian Academy of Science, Pushchino, Moscow region, Russia
V.A. Panchelyuga, S.E. Shnoll, Acceleration modes and phenomenology of macroscopic fluctuations effect
panvic333@yahoo.com
shnoll@iteb.ru
In our works was shown influence of quickly rotating massive body on the shape of the fine structure of constructed upon small samples distribution functions (histograms) of fluctuations of α-decay rate, appearing for the moments corresponding to acceleration and braking of centrifuge rotor and named as “acceleration modes”. Subsequent experiments with high frequency sources of fluctuations and special experimental system providing acceleration modes in an artificial way confirm these results.
The fact that acceleration modes can influence the shape of fine structure of histograms allows in a new fashion to consider the phenomenology of macroscopic fluctuations effect. Basic phenomena of the macroscopic fluctuations effect are known to be connected with space-time position of the Earth, the Moon and the Sun. The work presents results of analysis of the Earth-Moon-Sun system dynamics from the point of view of accelerations modes and relations of the analysis to the phenomenology of macroscopic fluctuations effect. Special consideration is give to space-time anisotropy following from phenomenology of the named effect.

Department of Mathematics and Statistics, Dr. Ram Manohar Lohia Awadh University, Faizabad, India
Chayan Kumar Mishra, Deen Dayal Singh Yadav, Projective Curvature Inheritance in an NP-Fn
chayankumarmishra@yahoo.com
deendayal1976@yahoo.co.in
The concept of projective curvature inheritance in Finsler space have been studied by ***Singh***. In the present paper, we study the projective curvature inheritance in an NP-Fn .Some special cases are also dealt in the last section of this paper.

Department of Mathematics and Statistics, Dr. Ram Manohar Lohia Awadh University, Faizabad, India
Chayan Kumar Mishra, Deen Dayal Singh Yadav, Decomposition of Weyl Tensor Fields in a Recurrent Finsler Space
chayankumarmishra@yahoo.com
deendayal1976@yahoo.co.in
E. Ozkara Canfes and S. Aynur Uysal have studied the Recurrent Weyl spaces having decomposable projective curvature tensor in a Riemannian space. The object of present paper is to study the decomposition of Weyl's curvature tensor fields and also to study the properties of Weyl's curvature tensor fields in such a decomposable space. We have obtained certain results of significance in the subsequent sections of this paper.