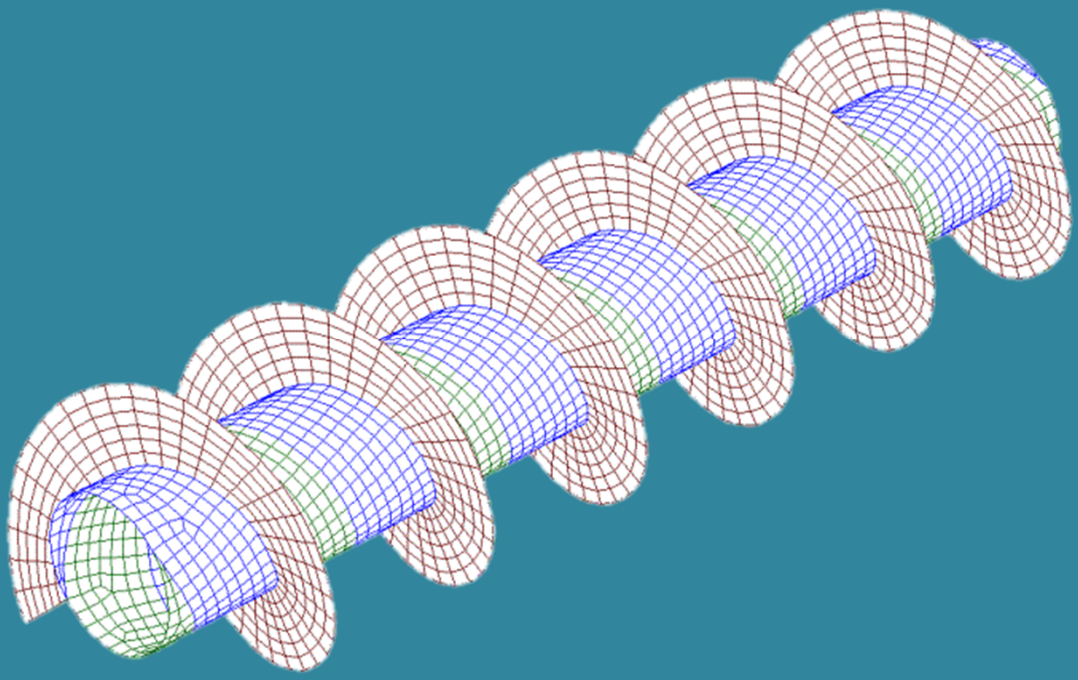
Balıkesir Üniversitesi
Fen Edebiyat Fakültesi
Matematik Bölümü

13-16 Haziran 2012
Burhaniye / BALIKESİR

X. Geometri Sempozyumu

BİLDİRİ ÖZETLERİ



DORA YAYINCILIK

T.C.
BALIKESİR ÜNİVERSİTESİ
FEN EDEBİYAT FAKÜLTESİ
MATEMATİK BÖLÜMÜ

X. GEOMETRİ SEMPOZYUMU

13-16 Haziran 2012

Burhaniye, Balıkesir / TÜRKİYE

BİLDİRİ ÖZETLERİ

BALIKESİR UNIVERSITY
FACULTY OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICS

X. GEOMETRY SYMPOSIUM

13-16 June 2012

Burhaniye, Balıkesir / TURKEY

ABSTRACTS

ÖNSÖZ

X. Geometri Sempozyumu, 13-16 Haziran 2012 tarihleri arasında Balıkesir Üniversitesi Fen Edebiyat Fakültesi Matematik Bölümü tarafından Burhaniye Uygulamalı Bilimler Yüksek Okulu'nda düzenlenmektedir. Daha önce Elazığ Fırat, Sakarya (2), Zonguldak Karaelmas, Eskişehir Osmangazi, Bursa Uludağ, Kırşehir Ahi Evran, Antalya Akdeniz ve Samsun Ondokuz Mayıs üniversitelerinde düzenlenmiş olan Geometri sempozyumlarının onuncusunu düzenlemenin mutluluğunu yaşıyoruz. Amacımız ülkemizde geometriye ilgi duyan tüm araştırmacıları bir araya getirerek yaptıkları çalışmaları birbirlerine tanıtıp bilimsel tartışmalar yapmalarına imkan sağlamaktır.

Bu kitapçık X. Geometri Sempozyumunda sunulacak olan konuşmaların özetlerini kapsamaktadır. Toplam 6 adet çağrılı konuşma, 84 adet bildiri ve 19 adet poster sunumu yapılacaktır. Umuyoruz ki bu sempozyum bilimsel anlamda yeni işbirliklerinin başlamasına vesile olacak ve ülkemizde matematiğin ilerlemesine katkıda bulunacaktır.

Düzenleme Kurulu Adına

Prof. Dr. Cihan ÖZGÜR

TEŞEKKÜR

Bu sempozyumun düzenlenmesinde maddi ve manevi desteklerini esirgemeyen başta üniversitemiz Rektörü Prof. Dr. Mahir ALKAN'a, Rektör Yardımcılarımız Prof. Dr. Oktay ARSLAN ve Prof. Dr. Mehmet DOĞAN'a, Genel Sekreterimiz Orhan DURAK'a; sempozyum afişi ve bu kitapçığın kapak tasarımlarını yapan Sındırgı Meslek Yüksekokulu Müdür Yardımcısı Yrd. Doç. Dr. İbrahim ÖZMEN'e; sempozyumun ev sahipliğini yapan Burhaniye Uygulamalı Bilimler Yüksekokulu Müdürü Yrd. Doç. Dr. M. Emin AKKILIÇ ve Müdür Yardımcısı Yrd. Doç. Dr. M. Oğuzhan İLBAN'a çok teşekkür ederiz.

Ayrıca X. Geometri Sempozyumu organizasyonuna sponsor olan Sındırgı Belediyesi ve Burhaniye Belediyesi'ne, bu kitapçığın basımını üstlenen Dora Yayınevi'ne Sempozyum Düzenleme Kurulu olarak teşekkürlerimizi sunarız.

X. GEOMETRİ SEMPOZYUMU

Balıkesir Üniversitesi, Balıkesir

13-16 Haziran 2012

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Balıkesir Üniversitesi, Balıkesir

13-16 Haziran 2012

BİLDİRİ ÖZETLERİ / ABSTRACTS

Çağrılı Konuşmaların Özetleri
Abstracts of Invited Lectures

Matematiğin Önemi

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Abstract

Faraday'ın 1830 yılında elektriği keşfinden sonra 35 yıl (1865'e kadar) süre ile Faraday'ı yalanladılar. 1865'de Türev'in imdadına yetişmesi ile MAXWEL, Faraday'ın ne bulduğunu gördü ve dünyaya ilan etti. Böylece hem Faraday meşhur oldu hem de dünya yeni bir döneme girdi. Bu matematiğin insanlara ilk büyük yardımı oldu.

Bir diğer önemi de 1969'da Ay'a yapılan seyahatte olmuştur. Suni Peyk yerden Ay'a doğrudan bir hareketle ulaşamadı. Seyahat ancak birkaç adım da gerçekleştirilebildi.

I. Adım: Suni Peyk, Houston'dan fırlatıldıktan sonra yer etrafında bir yörüngeye girdi. Bu giriş ve bir müddet yer etrafında döndükten sonra yörüngeden çıkış matematik sayesinde yapılabilmiştir.

II. Adım: Ay'a doğru yoluna devam eden Peyk'in Ay etrafında bir yörüngeye oturması ve bir müddet Ay etrafında döndükten sonra bu yörüngeden çıkıp Ay'a doğru yönelmesi ve Ay'a inmesi de yine matematik sayesinde yapılabilmiştir.

III. ve IV. adımlar ise Ay'dan Dünya'ya geri dönüş yolculuğu ile ilgili olup, I. ve II. adımların tekrarıdır.

Matematik insanlar için bir zorluk olan çok sayıda alfabeyi 1'e indirme gayreti içindedir.

Matematik sayesinde Ay ve Güneş tutulmalarının çözülmesine benzer olarak Deprem problemi de çözülme yolundadır. Depremin ne zaman, nerede, hangi süre ve şiddette olacağının önceden tespiti matematik sayesinde olacaktır.

Hyperbolicity of Geodesic Flows

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Abstract

Each Riemannian manifold hosts a natural flow in its unit tangent bundle, the so called geodesic flow. A celebrated theorem of D. V. Anosov vouchsafes that the geodesic flow of a Riemannian manifold of everywhere negative sectional curvature is hyperbolic, a property that heralds complicated dynamical behaviour on compact manifolds. Of this phenomenon, the well-known instance of the Poincaré half-plane will be elaborated and some recent work of the speaker will be presented. The exact conditions under which the geodesic flow of a Riemannian manifold is hyperbolic are unknown.

References

[1] W. Klingenberg, *Riemannian manifolds with geodesic flow of Anosov type*, Annals of Mathematics 99(1974)1-13.

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On Three Dimensional Trans-Sasakian Manifolds

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Abstract

In 1985 J.A. Oubina introduced the notion of trans-Sasakian manifolds. Sasakian, Kenmotsu and Cosymplectic manifolds can be considered as special cases of trans-Sasakian manifolds. At first we explain the history of trans-Sasakian structure. Some geometric properties have been discussed. Among others we study a compact connected 3-dimensional trans-Sasakian manifold of constant curvature. The existence of 3-dimensional trans-Sasakian manifolds have been proved by concrete examples. Some results have been verified by examples.

Some Recent Work in Frechet Geometry

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Abstract

Some recent work in Frechet geometry is briefly reviewed. In particular an earlier result on the structure of second tangent bundles in the finite dimensional case was extended to infinite dimensional Banach manifolds and Frechet manifolds that could be represented as projective limits of Banach manifolds. This led to further results concerning the characterization of second tangent bundles and differential equations in the more general Frechet structure needed for applications. A summary is given of recent results on hypercyclicity of operators on Frechet spaces.

Submanifolds Associated with Graphs: A Link Between Differential Geometry and Graph Theory

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Abstract

Several years ago, the speaker introduced a graph representation to visualize some submanifolds of almost Hermitian manifolds presenting an homogeneous behavior with respect to the ambient almost complex structure (slant, semi-slant, pseudo-slant or bi-slant submanifolds). That preliminary idea led to the definition of the association between submanifolds and graphs, which was established in two papers in collaboration with L. M. Fernández and A. Rodríguez-Hidalgo. They studied some properties about the shape of the involved graphs, and showed some characterizations of submanifolds from this point of view.

In this talk, we will review the main facts about this theory and present the newest advances, developed in collaboration with L. Boza. In particular, we will extend this association to a more general context, dealing with vector spaces of even dimension. Then, we will be able to apply some interesting results to the submanifolds setting, proving new theorems and providing new examples.

Thus, we will go a step forward in this association between two traditionally remote research areas, which can be of benefit to both of them.

Translation Surfaces in Some Homogenenous 3-spaces: Minimality

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Abstract

A surface M in the Euclidean space is called a *translation surface* if it is given by the graph $z(x, y) = f(x) + g(y)$, where f and g are smooth functions on some interval of $\mathbb{R}$. Scherk proved that, besides the planes, the only minimal translation surfaces are given by

$$z(x, y) = \frac{1}{a} \log \Big| \frac{\cos(ax)}{\cos(ay)} \Big|,$$

where a is a non-zero constant. These surfaces are now referred as *Scherk's minimal surfaces*.

Translation surfaces can be defined in any 3-dimensional Lie groups equipped with left invariant Riemannian metric. In this talk we present some recent results on minimal translation surfaces in two homogeneous 3-dimensional spaces, namely the Heisenberg group Nil_3 (see [1]) and solvable space Sol_3 (see [2]).

A translation surface in the Heisenberg group Nil_3 is a surface constructed by multiplying (using the group operation) two curves. We completely classify minimal translation surfaces in the Heisenberg group Nil_3. In the same spirit, a translation surface in the homogeneous space Sol_3, is parametrized by $x(s, t) = \alpha(s) * \beta(t)$, where α and β are curves contained in coordinate planes and $*$ denotes the group operation of Sol_3. We study translation surfaces in Sol_3 whose mean curvature vanishes.

The study of translation surfaces in the Euclidean space was extended when the second fundamental form was considered as a metric on a non-developable surface. A classification is given for translation surfaces for which the second Gaussian curvature and the mean curvature are proportional. See [3, 4].

References

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Bildiri Özetleri
Abstracts of Contributed Talks

$(\kappa, \mu, \upsilon = const.)$-Contact Metric Manifolds with $\xi(I_M) = 0$

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Abstract

We give a local classification of $(\kappa, \mu, \upsilon = const.)$-contact metric manifold (M, ϕ, ξ, η, g) with $\kappa < 1$ which satisfies the condition " the Boeckx invariant function $I_M = \frac{1-\frac{\mu}{2}}{\sqrt{1-\kappa}}$ is constant along the integral curves of the characteristic vector field ξ".

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$\frac{\lambda}{2}-$ Legendre curves in 3-dimensional Heisenberg Group IN^3

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Abstract

In this study, we focused on $\frac{\lambda}{2}-$ Legendre curves and non-$\frac{\lambda}{2}-$Legendre curves in 3-dimensional Heisenberg group IN^3. Also, we gave some characterizations of these curves.

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A Characterization of k-slant Helices in $\mathbb{E}^m$

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Abstract

In this paper we study with the curve in $\mathbb{R}^m$ for which the ratios between two consecutive curvatures are constant (*ccr*-curves). We have shown every point of a generic, ccr- curve is a Darboux vertex for the curve. We also consider k-slant helices in $\mathbb{R}^m$. We give curvature conditions of k-slant helices with respect to their k-type Darboux vectors. Further, we give some examles of k-type slant helices in $\mathbb{R}^m$ for the case $m = 3, 4$ and 5.

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A Generalization of a Surface Pencil with a Common Line of Curvature

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Abstract

We analyzed the problem of constructing a surface pencil from a given line of curvature as in the work of Li et al.(C.-Y. Li, R.-H. Wang, C.-G. Zhu: Parametric representation of a surface pencil with a common line of curvature. Comp. Aided Des. 43(9)(2011), 1110-1117), who derived the necessary and sufficient conditions on the marching-scale functions for which the given curve is a line of curvature on a surface. They assumed that these functions have a factor decomposition. In this study, we generalized their assumption to more general marching-scale functions and derived the sufficient conditions on them for which the given curve is a line of curvature on a surface. Finally, using generalized marching-scale functions we illustrated the subject with some figures.

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A Generalization of a Theorem of Salimov, Gezer and Aslancı

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Abstract

Salimov, Gezer and Aslancı[1] prove that the complete lift of almost complex structure, when restricted to the cross-section determined by an almost analytic 1-form, is an almost complex structure on cotangent bundle of a Riemannian manifold. In this note we generalize their theorem for the case of a non-Riemannian base manifold.

References

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A Note on Semi-Symmetric Spaces with Metric F-Connection

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Abstract

In this work, we consider semi-symmetric spaces with metric F-connection and examine some curvature properties of the spaces having such a connection. We obtain some conditions for these spaces to have same curvature with the Riemannian connection and to have conformally flat curvature. Also, a special reccurent torsion tensor is found so that the space with F-connection becomes an Einstein space.

References

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Almost Cosymplectic (κ, μ)-Spaces with Cyclic-Parallel Ricci Tensor

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Abstract

In this study, considering cyclic-parallel Ricci tensor for almost cosymplectic (κ, μ)-spaces, we show that such type manifolds are locally Riemannian manifold which is locally the product of a Kaehler manifold N and an interval or unit circle S^1.

References

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Almost Cosymplectic (κ, μ)-Spaces Satisfying Some Curvature Conditions

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Abstract

In this study, we concentrate on conformally flat, ξ-conformally flat and C-Bochner curvature tensors for almost cosymplectic (κ, μ)-spaces.

References

[1] T. W. Kim, H. K. Pak, *Canonical foliations of certain classes of almost contact metric structures*, Acta Math. Sinica, Eng. Ser. Aug., 21, 4 (2005), 841–846..

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Almost Cosymplectic Manifolds of Constant φ-Sectional Curvature

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Abstract

The object of the paper is to give a new version of Schur's lemma on spaces of constant curvature for almost cosymplectic manifolds with Kaehlerian leaves.

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Application of Meusnier's Sphere of Saddle Surface in Game Theory

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Abstract

Let $\mathfrak{S}$ be saddle surface in R^3 and $\Phi = \alpha_i(t)$ be C^2-class curves in $\mathfrak{S}$ which their Meusnier's sphere is $\mathbb{S}^2_{(O,(0,0,-R))}$ and passing $(0,0,0)$. In this case the curves $\Phi = \alpha_i(t)$ have important properties at the point $(0,0,0)$ in terms of game theory. This article gives some of them and Matlab applications.

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Benz Surfaces of Rotational Surfaces in $\mathbb{E}^4$

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In the present paper we describe the class of Benz surfaces of standard rotational surfaces and generalized rotational surfaces in $\mathbb{E}^4$ and give examples for these classes of rotational surfaces.

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Bisector Curves of Planar Rational Curves in Lorentzian Plane

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In this paper, the bisector curves of two planar rational curves are studied in Lorentzian plane. The bisector curves are obtained by two different methods. Consequently, some experimental results are demonstrated.

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Chen Inequalities for Submanifolds of Real Space Forms Endowed with a Semi-Symmetric Non-Metric Connection

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Abstract

In this paper we prove Chen inequalities for submanifolds of real space forms endowed with a semi-symmetric non-metric connection, i.e., relations between the mean curvature associated with the semi-symmetric non-metric connection, scalar and sectional curvatures, Ricci curvature and the sectional curvature of the ambient space. The equality cases are considered.

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Chen-Ricci Inequality on Bi-Slant Submanifolds of Generalized Complex Space Forms

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Abstract

In this paper, we study Chen-Ricci inequality on bi-slant submanifolds, semi-slant submanifolds and hemi-slant submanifolds in generalized complex space forms and complex space forms.

References

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Complete Systems of Invariants of Vectors for Real and Imaginary Unitary Transformation Groups in n-Dimensional Unitary Space

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Abstract

Real unitary and imaginary unitary real linear transformations in unitary space C^n are defined. It is shown that the set $U_r(n)$ of all real unitary transformations is a group. Complete system of invariants of vectors for this group is found. Besides, it is shown that the set $U_s(n)$ of all imaginary unitary transformations is a group. Complete system of invariants of vectors for this group is found too.

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Complex Split Quaternion Matrices

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Abstract

The main purpose of this paper is to give answers of the following two basic questions " If $AB = I$, is it true that $BA = I$ for complex split quaternion matrices?" and "How can the inverse of a complex split quaternion matrix be found ?". For this purpose, we define the complex adjoint of a complex split quaternion matrix and give a way of finding inverse of a complex split quaternion matrix by using complex matrices.

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Conformal Triangles in Hyperbolic and Spherical Space

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Abstract

In this presentation, conformal simplices and conformity in Euclidian space which were considered in the joint paper of Igor RIVIN and Daryl COOPER are investigated. After this investigation, conformity conditions in spherical and hyperbolic spaces are obtained.

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Connection Preserving Maps and Some Applications

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Abstract

In this paper, it is investigated which geometric properties are invariant or not under connection preserving and conformal maps defined between two Riemannian manifolds. In first section, some fundamental definitions and theorems are given for later use. Later, it is shown that some special curvatures and tensor fields on Riemannian manifolds are invariant under connection preserving, conformal and isometry maps. Also, some applications of connection preserving maps in E^3 are given.

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Constant Angle Surface in Hyperbolic Space

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Abstract

In this paper we study constant angle surface in Hyperbolic-3 space. A constant angle surface in Hyperbolic space is a spacelike surface whose unit normal vector field makes a constant angle with a fixed timelike vector or spacelike vector.

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Contributions to Differential Geometry of Partially Null Curves in Semi-Euclidean Space

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Abstract

In this paper, first, a characterization of spherical partially null curves in Semi-Euclidean space is given. Then, to investigate position vector of a partially null curve, a system of differential equation whose solution gives the components of the position vector of a partially null curve on the Frenet axis is established by means of Frenet equations. Additionally, in view of some special solutions of mentioned system, characterizations of some special partially null curves are presented

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Darboux Frame On The Lightlike Surfaces

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Abstract

In this study, the Darboux frame is given for curves lying on the lightlike surface of three dimensional Minkowski space. Moreover, known curvatures of the curve are obtained according to the Darboux frame and relationships between these curvatures are acquired. In specific case, by taking into consideration that the surface is a lightlike cone, similar characterizations are investigated.

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Darboux Rotation Axis of a Null Curve in Minkowski 3-space

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Abstract

In this paper, the Darboux rotation axis for a null curve in Minkowski 3- space is decomposed into two simultaneous rotation. The axes of these simultaneous rotations are joined by a simple mechanism. One of these axes is a parallel of the principal normal of the null curve, the direction of the other is the direction of the Darboux vectors of the curve.

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Differential Equations Characterizing Space Curves of Constant Breadth and Solutions

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Abstract

In this study, we first show that the system of Frenet-like differential equations [1] characterizing space curves of constant breadth [2,3] is equivalent to a third order linear homogeneous differential equation with variable coefficients. Then, by using Taylor matrix method based on collocations points[4], we obtain the set of solution of the mentioned differential equation under fhe initial conditions in terms of Taylor polynomials. Furthermore, we discuss that the obtained results are useable to determine curves of constant breadth.

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Euler's Formula and De Moivre's Formula for Hyperbolic Quaternions

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Abstract

In this paper, Euler's formula and De moivre's formula are generalized for hyperbolic quaternions. De Moivre's formula implies that there is one quaternion satisfying $q^n = p$ for any $n \in Z$.

References

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Frenet Vectors and Geodesic Curvatures of Spheric Indicators of Timelike Salkowski Curve in Minkowski 3-Space

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Abstract

In this work, we consider a timelike Salkowski curve and its Frenet trihedron. Then, the spherical indicatrix curves of this Frenet trihedron are found. Besides, the Frenet trihedrons of these spherical indicatrix curves and derivative vectors of their ages are expressed. Finally, the arc lenghts of spherical indicatrix curves and their geodesic curvatures on E_1^3, S_1^2 and H_0^2 are calculated.

References

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A New Approach to Inclined Curves in $\mathbf{E}^4$

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Abstract

In this study, we generalize the parallel transport frame from 3−dimensional to 4−dimensional in Euclidean space.

Moreover, using the generalization we define inclined curves in Euclidean 4-space and give some characterizations for these curves. And then, we illustrate some examples for generalized helices in 3−dimensional Euclidean space and we draw the figures by using the Mathematica Programme.

References

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Duality in Designing of Ruled and Developable Surfaces

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Abstract

We study on generalization of the theory of Bertrand curves for ruled and developable surfaces based on line geometry, planes and points are geometric dual of one another in three dimensional space and a developable surface can also be considered as a one parameter family of planes.

References

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Geodesics of the Synectic Metric

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Abstract

The main purpase of the paper is to investigate geodesics on the tangent bundle of the riemannian manifold with respect to the Levi-Civita connection of the synectic metric ${}^{S}g = {}^{C}g + {}^{V}a$, where ${}^{C}g$-cmplete lift of riemannian metric g, ${}^{V}a$-vertical lift of the symmetric tensör field a.

References

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Geometrical Aspects Of Golden Surfaces

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Abstract

In this paper we study the geometry of a surface M in the Euclidean three-dimensional ambient whose shape operator S is a Golden structure and a Golden tangent structure, respectively. Furthermore, we introduce the concept of Golden curve on a manifold and an example is given on the Dini's surface.

References

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Helicoidal Surfaces in Lorentz Space with Constant Mean Curvature and Constant Gauss Curvature

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Abstract

In this study, we investigate all helicoidal surfaces in Lorentz 3-Space with constant mean curvature and constant Gauss curvature whose generating curve is a graph of polynomial.

References

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Indicatrices of Null Cartan Curves in Minkowski 4-Space

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Abstract

In this study, we investigate indicatrices of null Cartan curves in Minkowski 4-space which lie on lightcone and pseudo-sphere, and give some characterizations for these curves to be a generalized helix in terms of Cartan curvatures.

References

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Inextensible Flows of a Speacial Type of Developable Ruled Surface Associated Focal Curve of Circular Helices in E^3

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Abstract

In this paper, we study inextensible flows of focal curves associated with a special type of developable surface in E^3. We give some characterizations for curvature and torsion of focal curves associated with developable surfaces in E^3. Finally, we obtain that if flow of this developable surface is inextensible then this surface is not minimal.

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Integral Representation Formula and Harmonic Maps in the Lorentzian Heisenberg Group Heis^3

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Abstract

In this paper, we describe a method to derive a Weierstrass-type representation formula for simply connected immersed minimal surfaces in Lorentzian Heisenberg group Heis^3. We consider the Lorentzian left invariant metric and use some results of Levi-Civita connection. Furthermore, we show that any harmonic map of a simply connected coordinate region D into Heis^3 can be represented the form.

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Intrinsic Geometry of the Special Equations in Galilean 3-Space G_3

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In this study, we investigate a general intrinsic geometry in 3-dimensional Galilean space G_3. Then, we obtain some special equations by using intrinsic derivatives of orthonormal triad.

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Inverse Surfaces of Tangent, Principal Normal and Bi-normal Surfaces of a Space Curve in Euclidean 3-Space

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Abstract

We study inverse surfaces of tangent, principal normal and bi-normal surfaces of a space curve in Euclidean 3-Space $\mathbb{E}^3$ with respect to the sphere $S_c(r)$. We give the geometric properties about these surfaces and also obtain various results.

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Lagrangian Energy Function on Minkowski 4-Space

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Abstract

The aim of this paper is to apply the necessary and sufficient conditions of well-known Lagrangian equations with time dependent case to Minkowski 4-space. For given jet bundle structure of Minkowski space, all fundamental geometrical properties for time dependent case have been obtained. The energy equations have been applied to the numerical example in order to test its performance. This study showed some physical application in Minkowski space. Results showed that Lagrangian functions depend on time coordinates.

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L-Dual Lifted Tensor Fields Between the Tangent and Cotangent Bundle of a Lagrange Manifold

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Abstract

In this study, it is obtained the image on the cotangent bundle of the tensor fields (i.e. the type of (1,1), (0,2) and (2,0)) on the tangent bundle of a Lagrange manifold by Vertical, Complete and Horizontal lifts under the Legendre transformation..

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Lightlike Surfaces with Planar Normal Sections in R_1^3

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Abstract

A lightlike surface M in semi Euclidean space R_1^3 is said to have planar normal sections if normal sections of M are planar curves. In the present paper we investigate necessary and sufficient conditions for a lightlike surface in R_1^3 to have degenerate and non-degenerate planar normal sections, respectively.

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Mechanical Systems on an Almost Kähler Model of a Finsler Manifold

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Abstract

In this study, we present a new analogue of Euler-Lagrange and Hamilton equations on an almost Kähler model of a Finsler manifold. Also, we give some geometrical and physical results about the related mechanical systems and equations.

References

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Mechanism Theory and Dual Frenet Formulas

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Abstract

The results written in this manuscript imply that, at regular points, the Gaussian curvature of a developable ruled surface is identically zero. The author has also computed and interpreted the dual geodesic trihedron, the dual Frenet-Serret frame, the dual form of usual Frenet-Serret equations, the dual curvature function, the dual torsion function, relations between the dual geodesic trihedron and the dual FrenetSerret frame of the ruled surface. The author has derived original properties of the developable ruled surfaces, and real and dual spherical spatial motions.

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Multiple Motion with One Center

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Abstract

A planar motion can be carried another planes which intersect the first plane. This can be made n-times. Thereby it is possible to define a motion which it has one center and non-rigid. We study this motion and give some Matlab applications in this paper.

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On Biharmonic Legendre Curves in $\mathcal{S}-$Space Forms

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Abstract

J. S. Kim, M. K. Dwivedi and M. M. Tripathi obtained the Ricci curvature of integral submanifolds of an $\mathcal{S}$-space form in [3]. On the other hand, D. Fetcu and C. Oniciuc studied biharmonic Legendre curves in Sasakian space forms in [1] and [2]. Motivated by their studies, in this paper, we focus our interest on biharmonic Legendre curves in $\mathcal{S}-$space forms to generalize the results of [2]. We find curvature characterizations of these special curves in four cases.

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On Chaki Pseudo-Symmetric Manifolds

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Abstract

Quasi-Einstein and generalized quasi-Einstein manifolds are the generalizations of Einstein manifolds. In this study, we consider a super quasi-Einstein manifold, which is another generalization of Einstein manifold. We show that there is no Chaki pseudosymmetric super quasi-Einstein manifold.

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On Ricci Semisymmetric Riemannian Manifold of Mixed Generalized Quasi-Constant Curvature

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Abstract

The object of the present study is a type of Riemannian manifold called manifold of mixed generalized quasi-constant curvature. Firstly, it is shown that every Ricci semisymmetric (or semisymmetric) Riemannian manifold of mixed generalized quasi-constant curvature (non-Einstein manifold) ($n > 2$) is both a nearly-quasi Einstein manifold and manifold of nearly quasi-constant curvature. This manifold is also conformally flat. In addition, some properties of this manifold are examined.

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On Contact CR-Submanifolds

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Abstract

In this work, we have studied contact CR-submanifolds of Sasakian manifolds which is special class of contact metric manifolds. We have given characterizations for an arbitrary submanifold of a Sasakian manifold to be contact CR-submanifold, contact CR-product, totally contact geodesic, totally contact umbilical and contact parallel.

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On Differential Equations of Timelike Slant Helices in Minkowski 3-Space

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Abstract

In this study, we investigate tangent indicatrix, principal normal indicatrix and binormal indicatrix of a timelike curve in Minkowski 3-space $\mathbb{E}_1^3$ and we construct their Frenet equations and curvature functions. Moreover, we obtain some differential equations which characterize a timelike curve to be a slant helix by using the Frenet apparatus of spherical indicatrix of the curve. Also related examples and their illustrations are given.

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On Dual Smarandache Curves and Smarandache Ruled Surfaces

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Abstract

In this paper, by considering dual geodesic trihedron (dual Darboux frame) we define dual Smarandache curves lying fully on dual unit sphere $\tilde{S}^2$ and corresponding to ruled surfaces**.** We obtain the relationships between the elements of curvature of dual spherical curve (ruled surface) $\tilde{\alpha}(s)$ and its dual Smarandache curve (Smarandache ruled surface) $\tilde{\alpha}_1(s)$ and we give an example for dual Smarandache curves of a dual spherical curve.

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On Focal Representation of a Regular Curve in $\mathbb{E}^{m+1}$

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Abstract

In this study we consider focal representation of a regular generic curve in $\mathbb{E}^{m+1}$. We have shown that if γ is a k-slant helix in $\mathbb{E}^{m+1}$ then the focal representation C_γ is $(m-k+2)$-slant helix. We also give some examples for the case $m = 2, 3, 4$.

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On Hypercomplex Structures

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Abstract

A hypercomplex algebra is a real associative algebra with unit . A poly-affinor structure on a manifold is a family of endomorphism fields (i.e. tensor fields of type (1,1)). If poly-affinor structure is an algebra (under the natural operations) isomorphic to a hypercomplex algebra, the poly-affinor structure is called hypercomplex. In this paper we define some tensor operators which are applied to pure tensor fields.. Using these operators we study some properties of integrable commutative hypercomplex structures endowed with a holomorphic torsion-free pure connection whose curvature tensor satisfy the purity condition with respect to the covariantly constant structure affinors.

On Integral Invariants of Ruled Surfaces Generated by the Darboux Frames of the Transversal Intersection Curve of Two Surfaces in E^3

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Abstract

In this paper, the some characteristic properties of ruled surfaces which are generated by the Darboux frame of the transversal intersection curve of two surfaces were given in 3-dimensional Euclidean space E^3. Also, the relations between the integral invariants of the closed ruled surfaces were showned. Finally, the examples for parametric-parametric and imlicit-implicit surfaces were given.

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On Lorentzian Concircular Structure Manifolds

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Abstract

In this paper, we have researched the conditions $\widetilde{C}(\xi,X)\widetilde{C}=0$, $\widetilde{C}(\xi,X)R=0$, $\widetilde{C}(\xi,X)S=0$ and $\widetilde{C}(\xi,X)C=0$ on a Lorentzian concircular structure manifold. According to these cases, LCS-manifold have been classified.

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On Null Generalized Helices in the Minkowski 4-space

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Abstract

In this paper; we obtain some results about Frenet curvatures and harmonic curvatures for a null Frenet curve of osculating order 4 in the Minkowski 4-space by using the Frenet frame consisting of two null and two space-like vectors from [1]. Moreover, we give some examples for null curve and null helix.

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On Para-Sasakian Manifolds with Generalized Tanaka-Webster Connection

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Abstract

In this paper we study canonical paracontact connection on a para-Sasakian manifold. We prove that a Ricci-flat para-Sasakian manifold with respect to canonical paracontact connection is an η-Einstein manifold.

References

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Isometric Surfaces and III-Laplace-Beltrami Operator in Three Dimensional Euclidean Space

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Abstract

In this paper, isometric helicoidal and rotational surfaces are studied, and generalized by Bour's theorem in three dimensional Euclidean space. Moreover, the third Laplace-Beltrami operators of two classical surfaces are obtained.

References

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On Pseudo-Slant Submanifolds of a Nearly Kenmotsu Manifold

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Abstract

In this paper, pseudo-slant submanifolds of a nearly Kenmotsu manifold are studied. Necessary and sufficient conditions are given on a totally umbilical proper slant submanifold and show that it is totally geodesic if the mean curvature vector $H \in \mu$. Moreover, we studied the integrability condition of the distributions on pseudo-slant submanifolds of a nearly Kenmotsu manifold.

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On Ruled Surfaces with Pseudo Null Base Curve in Minkowski 3- Space

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Abstract

In this study, we characterize ruled surfaces with pseudo null (spacelike curve with null normals) base curve in Minkowski 3-space $\mathbb{E}_1^3$ These surfaces are classified as timelike, spacelike and null surfaces. We obtain striction curve, distribution parameter, Gaussian curvature and some theorems related to them. Finally, we give some examples of ruled surfaces with pseudo null base curve in $\mathbb{E}_1^3$.

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On the Parallel Submanifols of Indefinite Complex Space Forms

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Abstract

In this study we will investigate parallel submanifolds of indefinite complex space forms and study several properties about them which are the similar with parallel submanifolds of complex space forms.

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On the Quaternionic Involute-Evolute Curves in the Semi-Euclidean Space $\mathbb{E}_2^4$

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Abstract

Serret-Frenet formulas of a quaternionic curve by the aid of quaternions in real Euclidean spaces $\mathbb{E}^3$ and $\mathbb{E}^4$ are introduced by K. Bharathi and M. Nagaraj, [1]. Moreover, Serret-Frenet formulas, inclined curves, harmonic curvatures and some characterizations for a quaternionic curve in the semi-Euclidean spaces $\mathbb{E}_1^3$ and $\mathbb{E}_2^4$ are given by A. C. Çöken and A. Tuna, [2]. In this study, after introducing algebraic properties of semi-quaternions and considering mentioned calculations, some characterizations of semi-quaternionic involute-evolute curves in the semi-Euclidean spaces $\mathbb{E}_1^3$ and $\mathbb{E}_2^4$ are obtained.

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On the Quaternionic Normal Curves in the Semi-Euclidean Space E_2^4

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Abstract

In this paper, we define the semi-real quaternionic normal curves in four dimensional semi-Euclidean space E_2^4. We obtain some characterizations of semi-real quaternionic normal curves in terms of their curvature functions. Moreover, we give necessary and sufficient condition for a semi-real quaternionic curve to be a semi-real quaternionic normal curves in E_2^4.

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On the Theory of Strips and Joachimsthal Theorem in the Lorentz Space $\mathbb{L}^n$, $(n > 3)$

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Abstract

In this study the theory of strips and Joachimsthal Theorem in $\mathbb{L}^3$ are generalized to Lorentz space $\mathbb{L}^n$, $(n > 3)$. Furthermore, the Joachimsthal Theorem is investigated when the strip is time-like and space-like.

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On the Two Parameter Homothetic Motions

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Abstract

One and two parameter planar motions are investigated in a detailed manner [1]. Moreover, two parameter motions in three dimensional spaces are defined [2] and [3]. In this study, sliding velocity, pole lines, Hodograph and acceleration poles of two parameter homothetic motions at $\forall(\lambda, \mu)$ positions are obtained. By defining two parameter homothetic motion along a curve in Euclidean space $\mathbb{R}^3$, the theorems related to this motion and characterizations of trajectory surface are given.

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On the Two-Parameter Quantum 3d Space and Its Logarithmic Extension

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Abstract

The quantum group name comes from Drinfeld's work [1]. Drinfeld introduced the concept of quantum group as a deformation of Hopf algebra corresponding to the usual Lie group by defining a deformation parameter. In this study, we show that the logarithmic extension of the two parameter quantum 3d space has a Hopf algebra structure(quantum group). We also construct a differential calculus of the logarithmic extension.

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On Vectorial Type Deformations of Riemannian Manifolds with G_2 Structures

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Abstract

In this work, Riemannian manifolds with structure group G_2 are considered. Vectorial type deformations are applied to fundamental 3-form on such a manifold and then 2-fold vector cross product determined by the new fundamental 3-form and the new Levi-Civita covariant derivative of the new metric are expressed in terms of old ones. After applying deformation, the change in the class of manifolds with parallel G_2 structures is investigated.

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Pythagorean-Hodograph Curves in Lorentz Space

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Abstract

PH curves are investigated in Euclidean space. At this work, PH curves are characterized with hyperbolic numbers and split quaternions in Minkowski space.

References

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Quasi-Einstein Warped Product Manifolds with Semi-Symmetric Non-Metric Connections

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Abstract

We obtain some results about quasi- Einstein warped products $I \times_f M_2$ and $M_1 \times_f I$ with semi-symmetric non-metric connections.

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Representation Formulae for Bertrand Curves in Galilean and Pseudo-Galilean 3-Space

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Abstract

In this study, we give some characterization of Bertrand curves in Galilean and pseudo-Galilean space. We obtain representation formulae for Bertrand curves in Galilean and pseudo-Galilean 3-space. Then we find that these Bertrand curves are also circular helices.

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Representation Formulas of Dual Spacelike Curves Lying on Dual Lightlike Cone

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In this paper, we give the representation formulas for dual spacelike curves lying on dual light-like cone and present dual asymptotic frame along dual spacelike curve. Moreover, we give some examples of dual curves.

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A Class of a 3-Dimensional Trans-Sasakian Manifolds

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Abstract

In this paper we study Ricci solitons and gradient Ricci solitons on a 3-dimensional trans-Sasakian manifolds admitting quarter symmetric metric connection. At first we prove on a 3-dimensional trans-Sasakian manifold given with quarter symmetric metric connection, Ricci soliton with a potential vector field V collinear with the characteristic vector field ξ, has constant scalar curvature provided $\alpha = \beta$ =constant. Also we investigate gradient Ricci solitons for a 3-dimensional trans-Sasakian manifold admitting quarter symmetric metric connection. Finally we study a 3-dimensional trans-Sasakian manifold admitting Ricci solitons, which satisfies $R.S = 0$, $P.S = 0$ and $Z.S = 0$ with quarter symmetric metric connection.

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Semi-Symmetry Properties of S-Manifolds Endowed with a Quarter-Symmetric Non-Metric Connection

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Abstract

In this paper, the curvatures are studied on S-manifolds endowed with a quarter-symmetric non-metric connection. In addition, the conditions of semi-symmetry, Ricci semi-symmetry and projective semi-symmetry of this this quarter-symmetric non-metric connection are investigate.

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Some Characterizations of Euler Spirals in E_1^3

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Abstract

In this study, some characterizations of Euler spirals in E_1^3 have been presented by using their main property that their curvatures are linear. Moreover, discussing some properties of Bertrand curves and helices, the relationship between these special curves in E_1^3 have been investigated with different theorems and examples. The approach we used in this paper is useful in understanding the role of Euler spirals in E_1^3 in differential geometry.

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Some Criterions for Constancy of Almost Hermitian Manifolds

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Abstract

The axiom of slant 2-spheres is defined. It is proved that a Kaehlerian manifold satisfying this axiom for some slant angle $\theta \in (0, \frac{\pi}{2})$, is flat. Later, the axiom of co-holomorphic 3-spheres is studied. It is proved that if an almost Hermitian manifold M with dimension $2m \geq 6$ satisfies the axiom of co-holomorphic 3-spheres, then M has pointwise constant type α if and only if M has pointwise constant anti-holomorphic sectional curvature α. Some applications of this result are given. Lastly, we define a new axiom by making a modification on the axiom of co-holomorphic 3-spheres and prove that an almost Hermitian manifold M with dimension $2m \geq 6$ satisfying the new axiom is an $\mathcal{L}_2$-manifold with constant sectional curvature.

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Some Properties of Finite $\{0,1\}$-Graphs

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Abstract

Let $G = (V, E)$ be a connected simple graph, X be a subset of V, A be finite subset of non-negative integers and $n(x, y)$ be the total number of common neighbours of any two vertices x and y of X. The set X is called $A-semiset$ if $n(x, y) \in A$ for any subset B of A, the set X is called $A-set$. The graph $G = (V, E)$ is a $A-semigraph$ and $A-graph$ if V is the $A-semiset$ and a $A-set$, respectively. Mulder [2] observed that $\{0, \lambda\}-semigraphs$ (these graphs are called $(0, \lambda)-graphs$ by Mulder [2]), $\lambda \geq 2$, are reguler. In this paper, we determined some properties of finite $\{0, 1\}-graphs$.

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Spacelike Constant Slope Surfaces and Bertrand Curves in $\mathbf{E}_1^3$

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Abstract

We define Lorentzian Sabban frames for the curves on the hyperbolic plane $\mathbf{H}^2$ and the de Sitter 2-space $\mathbf{S}_1^2$, respectively. We show that timelike Bertrand curves and spacelike Bertrand curves can be constructed from unit speed spacelike curves on $\mathbf{H}^2$ and from unit speed spacelike and timelike curves on $\mathbf{S}_1^2$, respectively. Furthermore, we obtain the relations between Bertrand curves and helices. We define the notion of de Sitter evolutes of curves on $\mathbf{H}^2$ and $\mathbf{S}_1^2$, and demonstrate that the unit Darboux vectors of Bertrand curves are equal to these evolutes. Also, we investigate the relations between Bertrand curves and spacelike constant slope surfaces in $\mathbf{E}_1^3$.

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Special Curves in Three Dimensional Lie Groups with a Bi-Invariant Metric

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Abstract

In this study, we define slant helices and obtain a characterization in three dimensional Lie groups with a bi-invariant metric. Moreover, we give some relations between the slant helices and their involutes and spherical images. Finally we give special cases of Lie groups as an example.

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Special Partner Curves Derived from Mannheim Partner Curves

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Abstract

In this paper, we obtain new partner curves by rotating the Frenet frame of a Mannheim partner curves to an angle of Darboux. We give necessary and sufficient conditions for these new curves to be Mannheim partner curves. Also, we analyzed the constraints on these new curves to be Bertrand and involute-evolute partner curves.

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Submanifolds of Restricted Type

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Abstract

In the present study we consider restricted type of submanifolds. We obtained certain conditions to be of restricted type for the following surfaces: rotational surfaces in $\mathbb{E}^4$, spherical product surfaces in $\mathbb{E}^3$ and $\mathbb{E}^4$, tensor product surfaces in $\mathbb{E}^4$.

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Surfaces Family with Common Null Asymptotic Curve

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Abstract

We analyzed the problem of finding a surfaces family through an asymptotic curve with Cartan frame. We obtain the parametric representation for surfaces family whose members have the same as an asymptotic curve. By using the Cartan frame of the given null curve, we present the surface as a linear combination of this frame and analysed the necessary and sufficient condition for that curve to satisfy the asymptotic requirement. We illustrate the method by giving some examples.

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Tangent Bundle of a Hypersurface with Semi-Symmetric Metric Connection

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Abstract

In this paper, we show that the complete lift of semi-symmetric metric connection on a Riemann manifold to its tangent bundle is a semi-symmetric metric connection. Then, we obtain some characterizations with respect to semi-symmetric metric connection and establish the Weingarten, Gauss and Codazzi-Ricci equations, so-called structure equations, in the tangent bundle of hypersurface.

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The Concept of Angle in Minkowski 3-space

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Abstract

In this paper we study the concept of angle in Minkowski 3-space. We introduce the angles on coordinate planes, spacelike, timelike and Galilean planes. The Properties of these angles are given and some Lorentzian geometrical interpretation, lemmas and related examples are presented.

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The $\mathcal{L}$-Sectional Curvature of S-Manifolds

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Abstract

In 1963, K. Yano introduced the notion of f-structure on a C^∞ $(2n+s)$-dimensional manifold M, as a non-vanishing tensor field f of type $(1,1)$ on M which satisfies $f^3 + f = 0$ and has constant rank $r = 2n$. Almost complex ($s = 0$) and almost contact ($s = 1$) are well-known examples of f-structures. A wider class of f-structures was introduced by D.E. Blair defining the notion of K-structure and its particular case of S-structure which generalizes Sasakian structure. It is well known that, for $s \geq 2$, there are not manifolds endowed with an S-structure (called S-manifolds) of constant sectional curvature with respect to the Riemannian connection and, for Sasakian manifolds, the unit sphere is the only one. The obstruction appears when plane sections involving the structure vector fields are considered. For this reason, it is interesting to study the sectional curvature of planar sections spanned by vector fields orthogonal to those structure vector fields. These sectional curvatures are called $\mathcal{L}$-sectional curvatures.

In this communication, we investigate the $\mathcal{L}$-sectional curvature of S-manifolds with respect to the Riemannian connection and to certain semi-symmetric metric and non-metric connections naturally related with the S-structure, obtaining conditions for them to be constant and giving examples of S-manifolds in such conditions. Moreover, we calculate the scalar curvature in all the cases.

Type-3 Slant Helix with respect to Parallel Transport Frame in $\mathbf{E}^4$

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Abstract

In this study, we define a new slant helix by using the parallel transport frame and we called this curve as a type−3 slant helix in 4−dimensional Euclidean space.

Moreover, we obtain the axis of slant helix and we give a vector field called Darboux vector field of the curve via its axis. And then, we obtained some characterizations for type−3 slant helix in the terms of the harmonic curvatures and the Darboux vector field D. Finally, we get the relations between type−3 slant helix and the other special curves.

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Warped Product Semi-Invariant Submanifolds of Lorentzian Paracosymplectic Manifolds

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Abstract

In this paper we study warped product semi-invariant submanifolds of a Lorentzian paracosymplectic manifold and obtain some nonexistence results. It is proved that the distributions involved in the definition of a warped product semi-invariant submanifold are always integrable. A necessary and sufficient condition for a semi-invariant submanifold of a Lorentzian paracosymplectic manifold to be warped product semi-invariant submanifold is obtained.

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Weakly Symmetric, Weakly Ricci Symmetric and Weakly Symmetric Quasi-Einstein Conditions in LP-Sasakian Manifolds

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Abstract

In this paper, we have obtained the necessary and sufficient conditions for weakly symmetric, weakly Ricci symmetric in a LP-Sasakian manifold. Furthermore, we have researched conditions over 1-forms which arised from the definition of weakly symmetric and weakly Ricci-symmetric.

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A Fixed Point Theorem for Surfaces

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Abstract

The article of this note is to outline a proof of "very homeomorphism of the plane or surface into itself that leaves a continuum $M \subset \mathbb{R}^3$ invariant has a fixed point in $F(M)$".

We proved that if F is a Contraction Mapping, then there is at least one fixed point of F, where $M \subset E^3$ is a compact surface and $F : M \to M$ is a surface mapping.

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Poster Özetleri
Abstracts of Posters

Wintgen Ideal Surfaces in Euclidean 4-Space

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Abstract

Wintgen ideal surfaces in $\mathbb{E}^4$ form an important family of surfaces; namely, surfaces with circular ellipse of curvature. In this paper we give a characterization of Wintgen ideal surfaces in $\mathbb{E}^4$. We also consider some examples of these type of surfaces.

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A Study on Ruled Surface of Weingarten Type

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We study ruled surfaces in $\mathbb{R}^3$ which are obtained from dual spherical indicatrix curves of dual Frenet vector fields. We find the Gaussian and mean curvatures of the ruled surfaces and give some results of being Weingarten surface.

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Application of Partial Metric to the Normed Spaces

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Abstract

In this paper, we consider the normed space together with partial metric. We recall concepts of partial metric and dualistic partial metric and stated Contraction Princible which is given for normed spaces induced by partial metric. Some fixed point theorems are restated for normed spaces induced by partial metric due to Contraction Princible.

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Characterizations of Mannheim Surface Offsets in Dual Space D^3

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Abstract

In this paper, we study Mannheim surface offsets in dual space. By the aid of the E. Study Mapping, we consider the ruled surfaces as dual unit spherical curves and define the Mannheim offsets of the ruled surfaces by means of dual geodesic trihedron(dual Darboux frame). We obtain the relationships between the invariants of Mannheim ruled surfaces. Furthermore, we give the conditions for these surface offset to be developable.

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Inextensible Flows of Timelike Curves in Minkowski Space-Time $\mathbb{E}_1^4$

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Abstract

In this paper, we study inextensible flows of timelike curves in $\mathbb{E}_1^4$. Necessary and sufficient conditions for an inextensible flows are expressed as a partial differential equation involving the curvature.

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k-Fibonacci Spirals of Minimal Energy

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Abstract

The 3-dimensional k-Fibonacci spirals are studied from a geometric point of view. These curves appear naturally from studying the k-Fibonacci numbers $\{F_{k,n}\}_{n\in\mathbb{N}}$ and the related hyperbolic k-Fibonacci functions. In the present paper, we deal with the k-Fibonacci Spirals in 3-dimensional Euclidean space $\mathbb{E}^3$. Further we calculated their minimal energies.

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On Gauss-Bonnet-Grotemeyer Theorem

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Abstract

In this study, we discuss the variant proof of Gauss-Bonnet Theorem which is presented by K. P. Grotemeyer in 1963 and we also give some results.

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On Pseudo Null and Partially Null Rectifying Curves in 4 -Dimensional Semi-Riemannian Space with Index 2

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In this study, we define rectifying curves in 4-dimensional semi-Riemannian space with index 2 and characterize pseudo null and partially null rectifying curves in terms of their curvatures. We also study W-rectifying curves in the same space.

References

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On Some Type of Warped Product Submanifolds in a Lorentzian Paracosymplectic Manifold

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Abstract

In this paper we study warped product semi-slant and warped product anti-slant submanifolds of a Lorentzian paracosymplectic manifold. We obtain some nonexistence results for warped product semi-slant and warped product anti-slant submanifolds in a Lorentzian paracosymplectic manifold, respectively.

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On Spacelike Intersection Curve of a Spacelike surface and a Timelike Surface in Minkowski 3-Space

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We study transversal intersection curve of a spacelike surface and a timelike surface in Minkowski 3-space. We derive two different characterizations of transversal intersection curve.Finally we give two examples that illusturates these characterizations.

References

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On The Geodesic Curve of the Timelike Ruled Surface with Spacelike Rulings

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Abstract

In this paper, we analyze the non-linear differential equation to determine the geodesic curves on ruled surfaces which is obtained by a strictly connected spacelike straight line moving with Frenets frame along a timelike curve in $\mathbb{R}_1^3$. When we assume that curvature and torsion of base curve and components with respect to Frenets frame of spacelike straight-line are constants, for special integration constants, we show that the resulting non-linear differential equation can be integrated exactly. Finally, examples are given to show the geodesic curve on the timelike ruled surfaces with spacelike rulings.

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On the Natural Lift Curves and the Geodesic Sprays

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Abstract

In this paper, firstly, the natural lift and the geodesic spray concepts are defined in Minkowski 4-space. Then, it is proved that the natural lift curve is an integral curve of the geodesic spray X if and only if the original curve is a geodesic on M, where M is a hypersurface in Minkowski 4-space.

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On W_2-Curvature Tensor of Generalized Sasakian Space Forms

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Abstract

The object of the present paper is to study generalized Sasakian space forms on W_2-curvature tensor. It is shown that W_2-flat generalized Sasakian space form is an Einstein manifold.

References

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Self Similar Surfaces in Euclidean Spaces

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Abstract

In the present paper we describe the self-similar surfaces of the surfaces in Euclidean space. We give some examples for these types of surfaces.

References

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Some Characterizations of Constant Breadth Curves in Euclidean 4-space E^4

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Abstract

In this paper, we obtain the differential equations characterizing the curves of constant breadth in Euclidean 4-space E^4. Furthermore, we give a criterion for a curve to be the curve of constant breadth in E^4. As an example, the obtained results are applied to special case for which $\rho = const.$, $k_2 = const.$, $k_3 = const.$

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Some Characterizations of Dual Curves of Constant Breadth in Dual Lorentzian Space D_1^3

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Abstract

In this paper, we study dual curves of constant breadth in dual Lorentzian space D_1^3. We obtain the differential equations characterizing dual curves of constant breadth in D_1^3 and we introduce some special cases for these dual curves. Furthermore, we obtain that the total torsion of a closed dual spacelike curve of constant breadth is zero while the total torsion of a simple closed dual timelike curve is equal to $2n\pi$, $(n \in \mathrm{Z})$.

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Some Characterizations of Spacelike Curves According to Bishop Frame in Minkowski 3-Space E_1^3

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Abstract

In this study, by using Laplacian operator and Levi-Civita connection, we give some characterizations of spacelike curves according to Bishop Frame in Minkowski 3-space E_1^3.

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Some Remarks on α-Cosymplectic Manifolds

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Abstract

The object of the present work is to study α-cosymplectic manifolds which have some curvature and tensor conditions. Supposing previous studies, some notes and details are given for α-cosymplectic manifolds. Furthermore, in order to achieve general results, almost α -cosymplectic manifolds are examined.

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The Natural Lift Curve of the Spherical Indicatrix of a Null Curve in Minkowski 3-Space

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Abstract

In this study, we dealt with the natural lift curves of the spherical indicatrices of a null curve.Furthermore, some interesting results about the original curve were obtained depending on the assumption that the natural lift curves should be the integral curve of the geodesic spray on the tangent bundle $T\left(S_1^2\right)$ and $T(\Lambda)$.

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