ALEKSANDROV, A.A.

Dyeing and finishing chrome glove leather. Leg.prom. 14 no.11:14-15 N '54. (MLRA 7:12)

(Dyes and dyeing--Leather)

ALEKSANDROV, A.A.

Smooth improved-grain finish for leather. Leg.prom.15 no.2:53-54 F '55. (MIRA 8:4)

1. Glavnyy dispatcher Moskovskogo khromovogo zavoda.
(Leather)

ALEKSANDROV, A.A.

Let us do away with losses in raw materials. Leg.prom. 15 no.9: 44-45 S '55. (MLRA 9:1)

(Leather)

ALEKSANDROV, A.A.

[redacted]

Drum dyeing and staining of leather. Leg.prom. 16 no.5:36-37 My '56. (MLRA 9:8)

(Dyes and dyeing--Leather)

ALEKSANDROV, ~~Anatoliy Alekseyevich~~; VOLKOV, V.A., retsenzent; FRIDMAN, B.O., retsenzent; PLEMYANNIKOV, M.N., redaktor; MEDVEDEVA, L.A., tekhnicheskiy redaktor

[Manual for specialists in chrome leather tanning] Spravochnik mastera proizvodstva khromovykh kozh. Moskva, Gos.nauchno-tekhn. izd-vo M-va legkoi promyshl., 1957. 386 p. (MIRA 10:10)
(Tanning--Handbooks, manuals, etc.)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100820005-5"

ALEKSANDROV, A.A.

Using the method of diazotization in dyeing chrome-tanned suede in various colors. Leg. prom. 18 no.2:42-44 F '58. (MIRA 11:2)
(Dyes and dyeing--Leather)

ALEKSANDROV, A.A.

Drying leathers by the method of glueing on glass. Kozh.-obuv. prom. no.5:28-29 My '59. (MIRA 12:6)
(Leather--Drying)

ALEKSANDROV, A.A.; FRIDMAN, B.I.[deceased]; PAVLOV, L.P., retsenzent; MASHNIKOV, Ye.M., nauchnyy red.; GRACHEVA, A.V., red.; SHVETSOV, S.V., tekhn. red.

[Handbook of master worker in the saddle and industrial leather industries] Spravochnik mastera proizvodstva shorno-sedel'nykh i tekhnicheskikh kozh. Moskva, Izd-vo nauchno-tekhn.lit-ry RSFSR, 1961. 411 p. (MIRA 15:1)

(Leather)

ALEKSANDROV, A. D.

Kadochnaia kul'tura limona [Lemon culture in wooden tubs].
Krymizdat, 1952. 51 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 7 October 1953

ALEKSANDROV, A. D.

Lemon

Cultivation of lemons indoors., Sad. i og., no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 1952, Uncl.

ALEKSANDROV, A.D., professor.

Citrus fruit in the north. Nauka i zhizn' 20 no.8:14-16 Ag '53.
(MLRA 6:8)
(Citrus fruits)

ALEKSANDROV, A.D., doktor sel'skokhozyaystvennykh nauk, prof.

Viticulture and wine making in France. Izv. TSKhA no.6:221-231 '60.
(MIRA 13:12)
(France--Viticulture) (France--Wine and wine making)

ALEKSANDROV, A.

For you, medical workers. Okhr. truda i sots. strakh. 3 no. 10:67-69 O '60. (MIRA 13:11)

1. Zaveduyushchiy otdelom okhrany truda TSentral'nogo komiteta profsoyuzov meditsinskikh rabotnikov.
(Hospital--Staff) (Medical law and legislation)

ALEKSANDROV, A. D.

5A ASE (Aleksandr Danilovich) A53

600. Quantum Conditions and Schrodinger's Equation. A. Alexandrov. Comptes Rendus de l'Acad. des Sciences, U.S.S.R. 4. pp. 198-202, Nov. 1, 1934. In English.—It is proved that the quantum conditions and Schrödinger's equation follow, for the average values of coordinates and the gradient of potential energy, from the general principles of quantum mechanics and the second law of Newton. N. M. B.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

ALEKSANDROV, A.D.

2

Errors in colorimetry and the measurement of colored space. A. D. Aleksandrov. *J. Exptl. Theoret. Phys. U.S.S.R.* 17, 785-91(1937). With a Demkina colorimeter, the errors of measurement of the 3 primary colors are not greater than 1.2%. The eye is more sensitive to minute differences in the quality than in the quantity of light. Shroedinger's equation for the ellipsoid of dispersion is not satisfied by the exptl. data. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ALEKSANDROV, A. D.

"Concerning Theorems of Unicity for Closed Surfaces," Dokl. AN 22, No. 3, 1939.

Steklov. Inst. of Math., Acad. Sci.

ALEKSANDROV, A.

"Existence of a Given Polyhedron and of a Convex Surface with a Given Metric," Dokl. AN 30, No. 2, 1941.

Inst. On Math. Acad. of Sci.

ALEKSANDROV, A.

Roentgenological diagnosis of high location of gastric tumors with a double contrast method of Copelman and Tagger. Suvrem.med.,Sofia no.11:33-41 '59.

1. Iz Katedrata po rentgenologiia i ragiologiia - ISUL. Zav. kat.: prof. G. Tenchov.

(STOMACH neopl.)

ALEKSANDROV, A. D.

"The Inner Geometry of an Arbitrary Convex Surface," Dokl. An 32, No. 7, 1941.

ALEKSANDROV, A.D.

O gruppakh s invariantnoy meroy. Dan, 34 (1942), 7-11
O rasshirenii khausdorfova prostranstva do H-zamknutogo, Dan, 34 (1942), 138-141
Additive set-function in abstract spaces. Matem. sb., 8(50), (1940), 306-348
Additive set-functions in abstractsspaces. matem. sb., 9(51), (1941),563-628
Additive set-functions in abstract spaces. matem. sb.,13(55), (1943), 169-238
O beskonechno malykh izgibaniyakh neregulyarnykh pove khnostey. matem. sb., 1(43), (1936), 307-322.
Osnovaniya vnutrenney geometrii poverkhnostey. L., nauchn. byull. un-ta, 7(1946), 3-4

SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A.G.,
Markushevich, A.I.,
Rashevskiy, P.K.
Moscow-Leningrad, 1948

ALEKSANDROV, A. D.

"On Groups with an Invariant Measure," Dokl. AN, 34, No.1, 1942.

Steklov Inst. Math.; Acad. Sci.,

ALEKSANDROV, A.

"Existence and Uniqueness of a Convex Surface with a Given Intefral Curvature," Dokl. AN 35, No. 5, 1942.

Steklov Math. Inst., Acad. Sci.

ALEKSANDROV, A.

"Smoothness of the Convex Surface of Bounded Gaussian Curvature," Dokl. AN 36, No. 7, 1942.

Steklov Math. Inst., Acad. Sci.

ALEKSANDROV, A. D.

"On the Extension of a Hausdorff Space to an H-Closed Space," Dokl. AN, 37, No.4, 1942.

Math. Inst., Acad. Sci.

ALEKSANDROV, A. D.

"The Inner Metric of a Convex Surface in a Space of Constant Curvature," Dokl. AN 45, No. 1, 1944.

Steklov Math. Inst., Acad. Sci.

ALEKSANDROV, A. D.

"Isoperimetric Inequalities for Curved Surfaces," Dokl. AN 47, No. 4, 1945.

Steklov Inst. of Math. Acad. of Sci.

ALEKSANDROV, A. D.

"Curves on Convex Surfaces," Dokl. AN, 47, No. 5, 1945.

Steklov Inst. of Math. Acad. of Sci.

ALEKSANDROV, A. D.

Aleksandrov, A. D. On triangles on convex surfaces. Doklady Akad. Nauk SSSR (N.S.) 50, 19–22 (1945). (Russian)

Aleksandrov, A. D. Curvature of convex surfaces. Doklady Akad. Nauk SSSR (N.S.) 50, 23–26 (1945). (Russian)

Aleksandrov, A. D. Convex surfaces as surfaces of positive curvature. Doklady Akad. Nauk SSSR (N.S.) 50, 27–30 (1945). (Russian)

Aleksandrov, A. D. An isoperimetric problem. Doklady Akad. Nauk SSSR (N.S.) 50, 31–34 (1945). (Russian)

All these results have since also appeared in the author's book, Intrinsic geometry of convex surfaces [Moscow-Leningrad, 1948; these Rev. 10, 619] and are mentioned in the review. *H. Busemann* (Los Angeles, Calif.).

SO: Mathematiocal Review, Vol. 14, No. 6, pp 523-608, 1953.

ALEKSANDROV, A. D.

Alexandroff, A. D. On the metric of a convex surface in a space of constant curvature. C. R. (Doklady) Acad. Sci. URSS (N.S.) 51, 411–413 (1946).

Define the angle α between two segments S_1, S_2 (that is, isometric images of Euclidean segments) in a metric space with distance xy at a common end point p as follows. Let $x_i \neq p$ and denote by φ the angle opposite x_1x_2 in a Euclidean triangle with sides px_i and x_1x_2. Then $\alpha = \liminf \varphi$ as $x_i \to p$ in such a way that $x_iS_i/x_ip_i \to 0$. Let a convex surface S mean either the complete boundary B of a convex set or an open subset of B any two points of which can be connected by a shortest line in S. A metric space M is isometric to a convex surface in a simply connected space of constant curvature K if and only if (1) M is homeomorphic to an open region on a sphere; (2) any two points of M can be connected by a segment; (3) every point p of M has a neighborhood U such that, for any triangle in U (that is, a set of points a_1, a_2, a_3 and segments connecting them), the relation $\alpha_1+\alpha_2+\alpha_3-\pi \geq K\tau$ holds, where α_i is the angle at a_i and τ is the area of the Euclidean triangle with sides a_ia_k.

H. Busemann (Northampton, Mass.).

Source: Mathematical Reviews, Vol 8, No. 3

ALEKSANDROV, A. D.

Alexandroff, A. D. On the gluing of convex surfaces. C. R. (Doklady) Acad. Sci. URSS (N.S.) 54, 99-101 (1946).

Let $P_1, P_2, \cdots$ be closed pieces of convex surfaces in the three-dimensional Euclidean (or hyperbolic or spherical) space. The P_i are considered as polygons. It is assumed that the edges are rectifiable and have semitangents at their endpoints. The concept of total (or integral of the) geodesic curvature can be generalized to these edges [see the expression $\tau_b(C)$ in the same C. R. (N.S.) 47, 315-317 (1945); these Rev. 7, 167]. The total geodesic curvature is assumed to be a function of bounded variation on the subsegments of an edge.

Let the edges and vertices of the P_i be identified so as to form a manifold M (possibly with a boundary) and so that the mapping of corresponding edges on each other is length preserving. In order that M be locally isometric to convex surfaces it is necessary and sufficient that the sum of the angles [defined as in the paper cited above] at one vertex does not exceed 2π and that the sum of the two total geodesic curvatures corresponding to the same edge is nonnegative. The manifold M is isometric to a closed convex surface if it is homeomorphic to a sphere. No proofs are given.

H. Busemann (Los Angeles, Calif.).

Source: Mathematical Reviews, Vol. [illegible] No. 8

Aleksandrov, A. D.

Aleksandrov, A. D. On the work of S. E. Cohn-Vossen. Uspehi Matem. Nauk (N.S.) 2, no. 3(19), 107-141 (1947). (Russian)

Source: Mathematical Reviews, Vol 9 No. 9

Aleksandrov, A. D.

3000

Aleksandrov, A. D. Geometry and topology in the Soviet Union. I. Uspehi Matem. Nauk (N.S.) 2, no. 4(20), 3-58 (1947). (Russian)

Aleksandrov, A. D. Geometry and topology in the Soviet Union. II. Uspehi Matem. Nauk (N.S.) 2, no. 5(21), 9-92 (1947). (Russian)

Source: Mathematical Reviews, Vol 10 No. 4

ALEKSANDROV, A. D.

"Homological Relationships in Regions of Duality," Dokl. AN No.3, 1947.

Corr. Mem., Acad. Sci.

ALEKSANDROV, A. D.

PA 53T43

USSR/Mathematics - Geometry
Mathematics - Surfaces

Sep 1947

"Method of Combining in the Theory of Surfaces," A. D. Aleksandrov, Corr Mem, Acad Sci USSR, Math Inst, imeni V. A. Steklov, Acad Sci USSR, 3 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 9

Presents series of theorems and theories dealing with process of constructing geometric figures by cementing together other figures. Process is old as geometry itself, nevertheless still need for theoretical work. Submitted, 23 Jun 1947.

53T43

ALEKSANDROV, A.D.

Formalism in the mathematical sciences. Vest. LGU 3 no.12:137-144 D '48.
(MIRA 12:9)

1. Chlen-korrespondent AN SSSR.
(Mathematics)

Aleksandrov, A. D. Foundations of the inner geometry of surfaces. Doklady Akad. Nauk SSSR (N.S.) 60, 1483–1486 (1948). (Russian)

Let M be a two dimensional topological manifold metrized in such a way that the distance of two points equals the length of a shortest connection of the points. A geodesic triangle abc on M is a set homeomorphic to a circular disk whose boundary consists of shortest connections from a to b, from b to c, and from c to a. For any geodesic triangle abc on M let ABC denote the Euclidean triangle whose sides equal the distances of the corresponding vertices in abc. If k_1, k_2 are curves on M issuing from a point O and $x_i \epsilon k_i$, $x_i \neq O$, and $\gamma(x_1, x_2)$ is the radian measure of the angle X_1OX_2, then $\limsup_{x_i \to O} \gamma(x_1, x_2)$ is called the upper angle of k_1, k_2 at O. If the limit exists, "angle" is used instead of "upper angle." The sum of the upper angles in a geodesic triangle abc minus π, is called the excess $\epsilon(abc)$ of abc. The manifold M is said to have finitely bounded (integral) curvature if for every open region G on π with a compact closure a number $B(G)$ exists such that for any finite collection of nonoverlapping geodesic triangles $a_ib_ic_i$ in G the relation $\sum |\epsilon(a_i [illegible]| \leq B(G)$ holds.

The main theorem is this: R has finitely bounded curvature if and only if in every open region G with a compact closure the metric induced in G by the metric in M can be uniformly approximated by Riemannian metrics, whose integral curvatures are bounded (in their totality). Further results are: if M has finitely bounded curvature then angles exist for any pair of geodesic arcs (shortest connections) issuing from a point O; if the excess of every triangle in M is zero then M is locally Euclidean.

The excess yields in an obvious way a set function $\omega(T)$ on M corresponding to the integral curvature. Let $\omega(T) = \omega^+(T) - \omega^-(T)$ be the standard decomposition of $\omega(T)$ into its positive and negative parts. Let P be a geodesic polygon on M and $Z: \sum a_ib_ic_i$ a simplicial decomposition of P into geodesic triangles. If D_Z is the maximal diameter of the $a_ib_ic_i$, and $\sigma(Z)$ the sum of the areas of the triangles $A_iB_iC_i$, then $\sigma(P) = \lim \sigma(Z)$ exists for $D_Z \to 0$, provided M has finitely bounded curvature, and the degree of approximation of $\sigma(Z)$ to $\sigma(P)$ can be estimated by

$$-\tfrac{1}{2}\omega^-(P)d_Z^2 \leq \sigma(P) - \sigma(Z) \leq \tfrac{1}{2}\omega^+(P)d_Z^2.$$

No proofs are given.

H. Busemann.

Source: Mathematical Reviews, Vol 10 No. 2

Srw

ALEKSANDROV, A.D.

Aleksandrov, A. D. Curves on manifolds of bounded curvature. Doklady Akad. Nauk SSSR (N.S.) 63, 349–352 (1948). (Russian)

The paper states a number of results, unfortunately without any indications of the proofs. Let M be a two-dimensional manifold with bounded curvature [see A. D. Aleksandrov, same Doklady (N.S.) 60, 1483–1486 (1948); these Rev. 10, 147; quoted as A]. A curve on M with initial point p has at p a direction if it forms with itself at p an angle [see A], which then equals 0. Shortest connections issuing from p have directions [see A] at p. All curves considered are assumed to have directions at their end points. The angle of two curves X, Y issuing from p exists and equals the limit of the angle between two shortest connections from p to points $x \epsilon X$ and $y \epsilon Y$ with $x \rightarrow p$, $y \rightarrow p$. In order to take points like vertices of a cone into account, the sector angle between X and Y is defined as the supremum of the sum of the angles formed by X, Y and a finite number of curves issuing from p between X and Y. The sector angles with the same vertex are additive. The total sector angle equals 2π except at an at most countable number of points. The set of directions from p for which no shortest arc with origin p and these directions exist has angular measure 0.

Let L be a simple arc from p to q and Q a geodesic polygon on the "right" of L (except for p and q) bounding with L a domain G. Let α and β be the sector angles of L and Q at p and q measured in G and φ_i the sector angles of Q at its vertices measured in the complement of G. Then the sum $\alpha+\beta+\sum(\pi-\varphi_i)$ approaches a limit as Q approaches L, which is called the right total geodesic curvature (t.g.c.) of L. Both the right and the left t.g.c. of a shortest connection are nonpositive, but need not be zero. If an arc L lies on the boundary of a closed domain G and is a shortest connection of its end points in G, then L has nonpositive t.g.c. toward G. Under an additional hypothesis on the integral curvature of the subregion of G the converse holds for sufficiently small subarcs of the boundary of G. A curve is said to have right geodesic curvature of bounded variation (g.c.b.v.) if for every finite subdivision of L into subarcs the sum of the absolute values of the right t.g.c. stays below a number M, and inf M is the variation of the right t.g.c. of L. If L has right g.c.b.v. then the right t.g.c. is a completely additive function of the arc and L has finite arc length.

If L bounds together with a shortest connection L_0 of its end points a domain G on M which is homeomorphic to a

Source: Mathematical Reviews, Vol 10 No. 5

ALEKSANDROV, A.D.

Additive functions of a domain in the theory of convex surfaces.
Uch. zap. LGU no.96:82-100 '48. (MLRA 10:8)
(Surfaces)

ALEKSANDROV, A. D.

USSR/Mathematics - Tensors Jan/Feb 49
Mathematics - Geometry, Differential

"Review of V. F. Kagan's Book, 'The Bases of the Theory of Surfaces in Tensor Analysis,'" A. D. Aleksandrov, 5 pp

"Uspekhi Matemat Nauk" Vol IV, No 1 (29)

Very favorable review of subject book, very comprehensive work on differential geometry of surfaces.

36/49T31

Also see [redacted] report U-3081, 16 Jan 1953.

ALEKSANDROV, A. D

PA 64/49T64

USSR/Mathematics — May/Jun 49
Differential Geometry

"Fundamentals of Differential Geometry and Their Exposition," A. D. Aleksandrov, 31 pp

"Uspekh Matemat Nauk" Vol IV, No 3 (31)

Criticizes lack of sufficient strictness in basic definitions of concepts contained in recent differential geometry texts by V. I. Milinskiy, P. K. Rashevskiy, S. P. Finikov, S. S. Byushgeus, V. F. Kagan, and others. P. K. Rashevskiy's book, "A Course in Differential Geometry," is evaluated as the best text, both foreign and Soviet, in this

[redacted]

64/49T64

USSR/Mathematics (Contd) — May/Jun 49

field. Gives complete rigorous definitions of a curve, surface, and manifold, and lists requirements for a differential geometry textbook.

[redacted]

64/49T64

ALEKSANDROV, A.D.

"Quasi-geodesics," Dokl. AN., No. 6, 1949. Leningrad.

Steklov Inst. of Math., USSR, Acad. of Sci.

Aleksandrov, A.D.

Aleksandrov, A. D. On surfaces represented as the difference of convex functions. Izvestiya Akad. Nauk Kazah. SSR. 60, Ser. Mat. Meh. 3, 3–20 (1949). (Russian. Kazak summary)

The paper gives detailed proofs for the results which were listed earlier without proof [Doklady Akad. Nauk SSSR 72, 613–616 (1950); these Rev. 12, 353]. It is shown that all functions $f(x,y)$ whose first derivatives exist and satisfy a Lipschitz condition may be represented as difference of convex functions and also all functions which represent polyhedra.

H. Busemann (Auckland).

Source: Mathematical Reviews, Vol 13 No. 10

ALEKSANDROV, A.D

Source: Mathematical Reviews, Vol 11 No. 1

Aleksandrov, A. D. Quasigeodesics. Doklady Akad Nau SSSR (N.S.) 69, 717–720 (1949). (Russian)

On a surface with bounded curvature the right and left integral curvatures $\tau_r(\lambda)$, $\tau_l(\lambda)$ exist for every curve Λ which has at each point a definite direction backward and forward. Define the total geodesic curvature of Λ as the least upper bound of $\frac{1}{2}\sum_k\{|\tau_r(\lambda_k)|+|\tau_l(\lambda_k)|-|\tau_r(\lambda_k)+\tau_l(\lambda_k)|\}$ over all decompositions of Λ into a finite number of arcs λ_k. A quasigeodesic is a curve whose total geodesic curvature is zero. Every shortest arc is a quasigeodesic but not conversely. For convex surfaces this definition coincides with the previous definition of the author [see Intrinsic Geometry of Convex Surfaces, OGIZ, Moscow-Leningrad, 1948, these Rev. 10, 619]. A quasigeodesic has (with an obvious de... nition) right and left integral geodesic curvatures of bou... variation and is rectifiable.

The sequence of completely additive set function... ...ed on a manifold R is said to converge weakly to ... every continuous function which differs from zero ... a compact set, $\int_R f(x)\mu_n(dE)\to\int_R f(x)\mu(dE)$. On a sur... let inner metrics $\rho_1, \rho_2, \cdots$ of bounded curvature be c... Then ρ_n is said to tend regularly to ρ_0 if ρ_n tends uni... to ρ_0 on every compact subset of R, and if the positive ... negative parts of the integral (Gauss) curvatures of ρ_n te... weakly ... those of ρ_0. For any surface of bounded curvatu... and metric ρ_0 there exist sequences of polyhedral or Ri... mannian metrics ρ_n which tends regularly to ρ_0. If und... regular convergence of ρ_n to ρ_0 a sequence of quasigeodesic... λ_n of ρ_n converges to a curve λ_0, then λ_0 is a quasigeodesi... of ρ_0, and every quasigeodesic λ_0 of ρ_0 is the limit of ... sequence of quasigeodesics λ_n of ρ_n. On surfaces where th... ratio of integral curvature to area is bounded, every qua... sigeodesic is a geodesic.

H. Busemann (Los Angeles, Calif.).

Aleksandrov, A.D.

Convex Domains, Extremal Problems, Integral Geometry

Aleksandrov, A. D. Vypuklye mnogogranniki. [Convex Polyhedra]. Gosudarstv. Izdat. Tehn.-Teor. Lit., Moscow-Leningrad, 1950. 428 pp.

This work discusses problems of the following nature. What is the degree of freedom in prescribing certain data for a convex polyhedron, which then determine the polyhedron up to a certain elementary transformation (motion, translation, similitude)? The book is encyclopedic with regard to these questions, but does not treat problems like that solved by Steinitz' theory, because there uniqueness is a priori out of the question. The most novel feature, besides many new proofs and hitherto unpublished minor results, is the equal footing given to bounded and unbounded polyhedra. In both cases the number e of vertices, k of edges, and f of faces is assumed to be finite, but in the unbounded case some of the edges may be infinite rays, consequently some of the faces may extend to ∞. Doubly covered plane convex polygonal regions are considered as polyhedra to simplify the formulation of the theorems.

In the first chapter the definition and elementary properties of a convex polyhedron are treated. The plane scheme of a polyhedron is defined as a set of convex polygonal regions in the plane with given identification of edges and vertices. The elementary topology of convex polyhedra is developed; it is shown that a bounded polyhedron is homeomorphic to a sphere and that this is the case if and only if $e-k+f=2$. For an unbounded polyhedron homeomorphic to a plane $e-k+f=1$. This is mentioned here in order to indicate that practically no demands are made on the reader's knowledge. Chapter 2 describes the methods and results and proves, in two ways, Cauchy's lemma on the distribution of plus and minus signs. For a given plane scheme to be the scheme of a convex polyhedron it is obviously necessary that it have "positive curvature," that is, that the sum of the angles with the same vertex is at most 2π. It is shown in chapters 3 and 4 that for a given plane scheme with positive curvature and $e-k+f=2$, up to motions, exactly one bounded convex polyhedron belonging to this scheme exists. The problem is also solved for infinite polyhedra, but for uniqueness additional hypotheses become necessary. The number of actual edges may be smaller than k. The determination of the actual number of edges is carried through. Chapter 5 treats the analogous problems for convex polyhedra with a boundary.

Source: Mathematical Reviews, Vol 12 No. 9.

A. D. Aleksandrov Card 1 of 2

Aleksandrov, A. D. On certain questions of scientific work and the education of mathematicians. Vestnik Leningrad. Univ. 1950, no. 1, 3-20 (1950). (Russian)

Source: Mathematical Reviews, Vol 13 No. 2

ALEKSANDROV, A. D.

IA 159T37

USSR/Mathematics - Differential Geometry

Mar/Apr 50

"Unique Determination of Convex Surfaces of Revolution," A. D. Alexandrov, Leningrad, A. V. Pogorelov, Khar'kov, 22 pp

"Matemat Sbor" Vol XXVI, No 2

Considers triply continuous differentiable convex surfaces with Gaussian curvature everywhere positive. Submitted 30 Jan 48.

159T37

ALEKSANDROV, A. D.

"Quasi-geodesics on Multiform Homeomorphic Spheres," Dokl. AN, 70, No. 4, 1950.

Steklov Inst. of Math, Leningrad Div., USSR Acad. Sci.

ALEKSANDROV, A.D.

Aleksandrov, A. D. Surfaces represented by the differences of convex functions. Doklady Akad. Nauk SSSR (N.S.) 72, 613–616 (1950). (Russian)

Let F be a surface in E^3 which can be represented locally in the form $z=f_1(x,y)-f_2(x,y)$, where f_i is a convex function. The surface F can be approximated by analytic surfaces for which the integral over the absolute value of the Gauss curvature is uniformly bounded. Hence F has bounded curvature in the sense previously defined by the author [same Doklady (N.S.) 63, 349–352 (1948); these Rev. 10, 325], and all results derived for these surfaces hold for F. In addition, a shortest arc on F has at every point right and left hand tangents, and F has at every point p a tangent cone. The intrinsic metric on this cone approximates the metric of F in the vicinity of p. The measure of the spherical image of a domain on F equals the total intrinsic curvature of the domain in the same sense as in the analogous result for convex surfaces established by the author [Intrinsic Geometry of Convex Surfaces, OGIZ, Moscow-Leningrad, 1948; these Rev. 10, 619]. Also, as in the last reference, the intrinsic area of a domain on F equals the extrinsic area.

H. Busemann (Los Angeles, Calif.).

Source: Mathematical Reviews, Vol 12 No. 5

ALEKSANDROV, A. D.

★**Aleksandrov, A. D. A theorem on triangles in a metric space and some of its applications.** Trudy Mat. Inst. Steklov., v. 38, pp. 5–23. Izdat. Akad. Nauk SSSR, Moscow, 1951. (Russian) 20 rubles.

A segment $T(a, b)$ from a to b in a metric space is a curve from a to b whose length equals the distance ab of a and b. Let $a \neq x \in T(a, b)$, $a \neq y \in T(a, b)$. On a surface with constant curvature K construct a triangle $a'x'y'$ such that $a'x' = ax$, $a'y' = ay$, $x'y' = xy$ (if $K > 0$, this is possible only when these three numbers are sufficiently small) and denote by $\gamma_K(x, y)$ the radian measure of the angle at a' in $a'x'y'$. The upper angle α between $T(a, b)$ and $T(a, c)$ is defined as $\alpha = \lim_{x \to a} \sup_{y \to a} \gamma_K(x, y)$. This number is independent of K. If the limit exists, we call it the angle between $T(a, b)$ and $T(a, c)$. The K-excess of a triangle abc formed by segments $T(a, b)$, $T(b, c)$, $T(c, a)$ is the sum of the upper angles minus the sum of the angles in a triangle $a'b'c'$ on a surface of curvature K with $ab = a'b'$, $bc = b'c'$, $ca = c'a'$. The main result is: If α_K is the angle at a' in the triangle $a'b'c'$ and v is the least upper bound of the K-excesses of the triangle axy, where $a \neq x \in T(a, b)$, $b \neq y \in T(a, c)$, then $\alpha - \alpha_K \leqq v$.

The applications of this theorem concern spaces in which the curvature is less than or equal to K, that is, the K-excess is non-positive. The function $\gamma_K(x, y)$ is then non-decreasing: if x_0 is the center of a and x on $T(a, b)$, y_0 the center of a and y on $T(a, c)$, then $\gamma_K(x_0, y_0) \leqq \gamma_K(x, y)$. It follows from this inequality that $x_0y_0 \leqq x_0'y_0'$ (but not conversely). The reviewer has shown how strong the implications of the last inequality above are for $K = 0$, i.e., of $2x_0y_0 \leqq xy$, [Acta Math. 80, 259–310 (1948); these Rev. 10, 623]. The angle between any two segments $T(a, b)$ and $T(a, c)$ exists, even in a stronger sense than above. Segments are locally unique.

H. Busemann (Los Angeles, Calif.).

SO: Mathematical Review, Vol. 14, No2,, 1953.

231T95

USSR/Physics - Quantum Mechanics 11 May 52

"Concerning Einstein's Paradox in Quantum Mechanics," A. D. Aleksandrov, Corr Mem, Acad Sci USSR, Leningrad State U imeni Zhdanov

"Dok Ak Nauk SSSR" Vol 84, No 2, pp 253-256

Author states that in 1935 Einstein, from consideration of a concrete example, came to a conclusion concerning the incompleteness of quantum mechanics. The author calls this "Einstein's paradox." Bohr offered a soln of this problem on the basis of his "complementarity principle."

231T95

Another soln was given by L. I. Mandel'shtam on the basis of a purely statistical concept of quantum mechanics. This viewpoint was developed by D. I. Blokhintsev as a counterbalance to the conclusions of Einstein and Bohr. In the present article the author gives a different soln of the paradox and clarifies the errors of the others mentioned. Also gives 2 views on quantum mechanics. Submitted 14 Mar 52.

231T95

ALEKSANDROV, A. D.

Significance of the Wave Function, Corr. Mbr., Acad. Sci., USSR - A.D.Aleksandrov. DAN SSSR, Vol.85,no.2, pp.291-4, Jul 52.

In the problem of the significance of the psi-function there are three points of view) for brevity, in the case of the electron): (1) psi characterizes the objective state of the electron; (2) psi is a "description of information concerning the state," (see Fock, Einstein, and Bohr of 1936); (3) psi relates not to the electron but to the "ensemble" (see D.I.Blokhintsev, Fundamentals of Quantum Mechanics, 1949; L.I.Mandel'shtam, Works, 5, 1950). Shows the falsity of (2) and (3), on basis of Stalin's precepts, and extends and enlarges (1). Presented 20 May 52.

252T88

ALEKSANDROV, A.D.

Aleksandrov, A. D., and Strel'cov, V. V. Estimates of the [redacted]on a surface. Doklady Akad. Nauk SSSR (N.S.) 93, 221–224 (1953). (Russian)

Let τ_r^+, τ_l^+ be the positive parts of right and left total geodesic curvatures of a curve L lying on a surface G homeomorphic to a disc, moreover ω_L^+ the positive part of the integral curvature of L as point set. Then $\sigma = \tau_r^+ + \tau_l^+ - \omega_L^+$ is a sort of excess for L. Denote by ω^+, ω^- the positive and regular parts of the integral curvature of G, and by p and d the perimeter and diameter of G. If $\omega^+ < 2\pi$, then the length s of L is bounded by a quantity which depends only on p, σ, and ω^+ (no such estimate exists for $\omega^+ \geqq 2\pi$). If $\omega_0 = \omega^+ + \sigma \leqq \pi$ then $s \leqq p/(1+\cos\frac{1}{2}\omega_0)$; if $\pi < \omega_0 < 2\pi$, then $s \leqq p/\sin\frac{1}{2}\omega_0$. If $\omega_0 < \pi$ and r is the distance between the endpoints of L, then $s \leqq r/\cos\frac{1}{2}\omega_0$. In both these theorems the exact conditions for the equality sign are given. If G is convex (i.e., the boundary curve has non-negative geodesic curvature), then $p \leqq (\pi + \frac{1}{2}\omega^-)d$ and if also $\pi \leqq \omega_0 < 2\pi$ then $s < (\pi + \frac{1}{2}\omega^-)d/\sin\frac{1}{2}\omega_0$. If G is not convex then, in general, only $s < 3\pi d/2\sin\frac{1}{2}\omega_0$.

H. Busemann.

Aleksandrov, A. D.

1 - F/W

Aleksandrov, A. D. Some theorems on partial differential ~~equations of the~~ second order. Vestnik Leningrad. Univ. 9 (1954), no. 8, 3–17. (Russian)

Let $F(x, z)=F(x_1, \ldots, x_n, z, z_1, \ldots, z_n, z_{11}, z_{12}, \ldots, z_{nn})$ be continuous in all variables and of class C' in z, z_i, z_{ik}. We say that $F(x, z)$ is, for a given function $u(x)$ of class C'' (defined in a domain G of x-space), elliptic at a point $x_0 \in G$ if, with $u_i=\partial u/\partial x_i$, $u_{ik}=\partial^2 u/\partial x_i x_k$ and $F_{ik}=\partial^2 F/\partial z_i \partial z_k$, the form $\sum F_{ik}\xi_i\xi_k$ is positive definite for $x=x_0$. (Observe that usually negative definiteness is also admitted for the elliptic character.) The main result is the following: If $u(x)$ and $v(x)$ are two solutions of $F(x, z)=0$ defined in G and $F(x, z)$ is elliptic at $x_0 \in G$ for $z=(1-t)u+tv$ and all $0 \leq t \leq 1$, then $u(x)-v(x)$ does not attain in the interior of G an absolute minimum or maximum different from 0. This theorem was used by the author and Sen'kin for rigidity problems on convex surfaces [[illegible] Vestnik 10 (1955), no. 8, 3–13; MR 17, 295] and [illegible] It contains [illegible] that a linear homogeneous elliptic [illegible] solution different from zero [illegible] is zero.

H. Busemann (Los Angeles)

ALEKSANDROV, A.D.

On filling space with polyhedra. Vest.Len.un.9 no.2:33-43 F '54.
(Polyhedra) (Spaces, Generalized)
(MLRA 9:7)

ALEKSANDROV, A-D.

SHISHKIN, B. K., professor; ROMANKOVA, A. G., kandidat biologicheskikh nauk, starshiy nauchnyy sotrudnik; MARKOV, G. S., doktor biologicheskikh nauk, dotsent; DANILEVSKIY, A. S., kandidat biologicheskikh nauk, dotsent; SHTEYNBERG, D. M., doktor biologicheskikh nauk; LOMAGIN, A. G. aspirant; SELL'-BEKMAN, I. Y., mladshiy nauchnyy sotrudnik; ZHINKIN, L. N., doktor biologicheskikh nauk, professor; IPATOV, V. S., student V kursa; KOZLOV, V. Ye. kandidat biologicheskikh nauk, starshiy nauchnyy sotrudnik; KARTASHEV, A. I., kandidat biologicheskikh nauk, starshiy nauchnyy sotrudnik; NITSENKO, A. A., starshiy naychnyy sotrudnik; VASILEVSKAYA, V. K., doktor biologicheskikh nauk, dotsent; RYUMIN, A. V., kandidat biologicheskikh nauk; NAUMOV, D. V., Kandidat biologicheskikh nauk, mladshiy nauchnyy sotrudnik; KHOZATSKIY, L. I. kandidat biologicheskikh nauk, dotsent; GOROBETS, A. M., kandidat biologicheskikh nauk, starshiy nauchnyy sotrudnik; GODLEVSKIY, V. S. assistent; GERBIL'SKIY, N. L., doktor biologicheskikh nauk, professor; ALEKSANDROV, A. D., professor; KOLODYAZHNYY, V. I.; TURBIN, N. V.; ZAVADSKIY, K. M.

[Theory of species and the formation of species]. Vest. Len.un. 9 no. 10:43-92 O '54. (MLRA 8:7)

1. Chlen-korrespondent Akademii nauk SSSR (for Shishkin, Aleksandrov)

(Continued on next card)

SHISHKIN. B. K., professor; ROMANKOVA, A. G., kandidat biologicheskikh nauk, starshiy naychnyy sotrufnik, and others.

[Theory of species and the formation of species]. Vest. Len. Un. 9 No. 10:43-92, 0'54. (MLRA 8:7)

2. Leningradskiy gosudarstvennyy universitet (for Shishkin, Romankova, Markov, Ipatov, Kozlov, Kartashev, Godlevskiy, Gerbil'skiy, Aleksandrov) 3. Zoologicheskiy institut Akademii nauk SSSR (for Shteynberg, Naumov) 4. Kafedra entomologii Leningradskogo gosudarstvennogo universiteta (for Danilevskiy). 5. Kafedra darvinizma Leningradskogo gosudarstvennogo universitete (for Lomagin, Gorobets). 6. Kafedra geobotaniki Leningradskogo gosudarstvennogo universiteta (for Nitsenko). 7. Kafedra botaniki Leningradskogo gosudarstvennogo universiteta (for Vasilevskaya). 8. Kafedra zoologii pozvonovhnykh Leningradskoye otdeleniye Vsesoyuznogo instituta undobreniy, agropochvovedeniya i agrotekhniki (for Sell'Bekman) 10. Institut eksperimental'noy Meditsiny Akademii meditsinskikh nauk SSSR (for Zhinkin)

(Origin of species)

ALEKSANDROV, A. D.

USSR/ Geography - Mountain climbing

Card 1/1 : Pub. 86 - 8/36

Authors : Aleksandrov, A. D., Mem. Corresp. of the Ac. Sci. USSR, and Berkov, V. P.

Title : Climbing on the highest point in the world

Periodical : Priroda 43/8, 62-72, Aug 1954

Abstract : An account is given of the discovery of Mount Everest and the substitution of this name for the native name Chomolungma. A description is given of the typography of the region and the various attempts to climb the mountain, culminating in success in 1953, are recounted. Map; illustrations.

Institution : ...

Submitted : ...

ALEKSANDROV, A. D.

Aleksandrow, A. D. What is geometry? Wiadom. Mat. (2) 1, 4-46 (1955). (Polish)

Translation of the author's popular expository article in Bol'šaya Sovetskaya Enciklopediya, 2d ed., vol. 10, pp. 533-549, Moscow, 1952.

Smh

1 - F/W

ALEKSANDROV, A.D.; SENKIN, Ye.P.

Non-deflectivity of convex surfaces. Vest.Len.un.10 no.8:3-13 Ag '55. (MLRA 9:1)

(Surfaces of constant curvature)

ALEKSANDROV, A.D., redaktor; KOLMOGOROV,A.N., akademik, redaktor; LAVRENT'YEV, M.A., akademik, redaktor; RYVKIN, A.Z., redaktor izdatel'stva; POLIVANOVA, Ye.B., tekhnicheskiy redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor

[Mathematics, its content, methods, and significance] Matematika, ee soderzhanie, metody i znachenie. Moskva. Vol.1. 1956. 294 p. Vol.2. 1956. 395 p. Vol.3. 1956. 336 p. (MIRA 9:12)

1. Akademiya nauk SSSR. Matematicheskiy institut. 2. Chlen-korrespondent AN SSSR (for Aleksandrov)
(Mathematics)

Aleksandrov, A.D.

Aleksandrov, A. D. Geometry and topology in the Soviet Union. I. Acad. R. P. Romîne, An. Romîno-Soviet. Ser. Mat. Fiz. (3) 10 (1956), no. 2(17), 5–28. (Romanian)
A translation of the article listed in MR 10, 261.

ALEKSANDROV, A.D.; SEN'KIN, Ye.P.

Supplement to the article "Nondeflectivity of convex surfaces."
Vest.Len.un. 11 no.1:104-106 '56. (MLRA 9:5)
(Polyhedra) (Surfaces)

1-FW

2

Aleksandrov, A. D. Uniqueness theorems for surfaces in the large. I. Vestnik Leningrad. Univ. 11 (1956), no. 19, 5–17. (Russian)

The paper lists without complete proofs various uniqueness theorems which follow from a slight generalization of the principal result in one of the author's earlier papers [same Vestnik 9 (1954), no. 8, 3–17; MR 17, 493]. In E^{n+1} let S be a hypersurface of class C'', $k_1 \geq k_2 \geq \cdots \geq k_n$ its principal curvatures, n its unit normal, $\mathfrak{x}$ the vector from the origin of a Cartesian coordinate system to the point $(x_1, \cdots, x_n)$ on S. We say that S is convex if $k_i > 0$ $(i = 1, \cdots, n)$. We consider functions $\phi(k_1, \cdots, k_n, \mathfrak{n}, \mathfrak{x})$ of class C' with (*) $\partial\phi/\partial k_i \cdot \partial\phi/\partial k_j > 0$ $(i, j = 1, \cdots, n)$. For convex S we require (*) only for $k_i > 0$. The relation to elliptic partial differential equations comes through the fact that, because of (*), ϕ, when symmetric in $k_1, \cdots, k_n$, becomes elliptic after its arguments have been expressed in terms of $u(x_1, \cdots, x_n)$ and its derivatives, where $x = u(x_1, \cdots, x_n)$ represents S. It is an important generalization beyond previous results that this remains frequently true for non-symmetric ϕ.

The following are samples of the many results: For a closed surface S_0, star-shaped with respect to the origin,

1/3

let ϕ be invariant under dilation of S_0 from O. If for another closed star-shaped surface S the function ϕ has the same value at points on the same ray from O, then S originates from S_0 by a dilation from O. Applying this to $\phi = k_1 \cdots k_n r^n (\mathfrak{n}\mathfrak{e})^{-1}$ yields that a convex surface is determined up to dilation from O when the area of its spherical image is given as function of the cone projecting a variable domain on S. Also, various characterizations of the sphere by Blaschke, Grotemeyer, Süss follow.

If the surface S is the boundary of a bounded domain and $\phi(k_1, \cdots, k_n) = \text{const}$, then S is a sphere. This contains very many well-known results as special cases: $\phi = k_1 + k_2$ and convex S (Liebmann), general S (H. Hopf and Voss); arbitrary $\phi(k_1, k_2)$ and analytic S (A. D. Alexandrov); $\phi(k_1, \cdots, k_n)$ or $\phi(k_1^{-1}, \cdots, k_n^{-1})$ elementary symmetric and S convex (Süss, Hsiung, Chuan-Chih); analytic arbitrary $\phi(k_1, \cdots, k_n)$ (Voss, but not all his results are obtainable from the theorem).

If two convex surfaces S', S'' have the same closed hemisphere as spherical image and the same supporting function along their boundaries and if

$$\phi(k_1', \cdots, k_n', \mathfrak{n}) = \phi(k_1'', \cdots, k_n'', \mathfrak{n})$$

for points of S', S'' with the same normal $\mathfrak{n}$ then S'' 2/3

Aleksandrov, A. D.

1-FW

2

originates from S' by a translation. This implies: If for a closed convex surface S the function $\phi(k_1, \cdots, k_n, \mathrm{u})$ has the same values at points with normals which are symmetric with respect to a plane P, then S has a plane of symmetry parallel to P.

Under more general hypotheses on ϕ the following holds in E^3: Let S^0, S' be piecewise analytic surfaces, where S^0 is convex and closed and S' is simply connected and closed (self-intersection allowed). If k_1^0, k_2^0 are the principal curvatures of S^0 at the point with normal u, and $\partial\phi/\partial k_1 \cdot \partial\phi/\partial k_2 > 0$ for all k_i with $k_1 = lk_1^0$, $k_2 = lk_2^0$ and if $\phi(k_1', k_2', \mathrm{u}) = \phi(k_1^0, k_2^0, \mathrm{u})$ for points of S' and S^0 with the same normal u, then S' is congruent to S^0. When S^0 is a sphere then the condition for ϕ (supposing it independent of u) becomes $\partial\phi/\partial k_1 \cdot \partial\phi/\partial k_2 > 0$ for $k_1 = k_2$ and $\phi = \text{const}$ on S', and the assertion is that S' is a sphere. For symmetric ϕ this is due to H. Hopf.

Remarks on various generalizations conclude the paper.

H. Busemann (Los Angeles, Calif.).

NESMEYANOV, A.N.; TOPCHIYEV, A.V.; KURCHATOV, I.V.; SKOBELTSYN, D...; KAPITSA, P.B.; IOFFE, A.F.; VINOGRADOV, A.P.; ERENBURG, I.G.; TIKHONOV, N.S.; FADEYEV, A.A.; FRANK, I.M.; VEKSLER, V.I.; KORNEYCHUK, A.Ye.; POPOVA, N.V.; LEBEDEVA, Z.A.; VASILEVSKAYA, V.L.; PETROVSKIY, I.G.; ALEKSANDROV, A.D.; ARTSIMOVICH, L.A.; MESHCHERYAKOV, M.G.

Irene Joliet-Curie; obituary. Vest.AN SSSR 26 no.4:73-72 Ap '56.
(Joliet-Curie, Irene, 1897-1956) (MIRA 9:7)

ALEKSANDROV, A.D.

Ruled surfaces in metric spaces [with summary in English, p.207].
Vest.Len.un. 12 no.1:5-26 '57. (MLRA 10:5)
(Surfaces) (Spaces, Generalized)

ALEKSANDROV, A.D.

Uniqueness theorems for surfaces in the large. Part 2. (with summary in English). Vest. LGU 12 no.7:15-44 '57. (MLRA 10:6)
(Surfaces) (Differential equations)

ALEKSANDROV, A.D.

3-3-2/40

AUTHOR: Aleksandrov, A.D., Professor, Rector of the Leningrad State University imeni A.A.Zhdanov

TITLE: Student Education is the Most Important Political Problem (Vospitaniye studenchestva - vazhneyshaya politicheskaya zadacha)

PERIODICAL: Vestnik Vysshey Shkoly, March 1957, # 3, p 12-19 (USSR)

ABSTRACT: The article says that student education is one of the most important tasks in building-up Communism. The aim is to create an"intelligentsia"whose creative work is to solve the problems of developing science, technics and culture on the road to Communism. The 20th KPSS Congress called for increased student activity. However, there are occurrences which prove that a certain part of the students lack consciousness and high performance standards. These students often discuss questions and supposed "lacks" in their training programs without comprehensive knowledge of the subject or principle involved. Some even create disorder and commit immoral deeds. Yet, such occurrences are rare. The main evil in the author's opinion is that the students and occasionally even whole organizations lack the ability to

Card 1/3

3-3-2/40

Student Education is the Most Important Political Problem

discriminate between demagoguery or what is "in vogue" and what is fundamentally sound. The author is not convinced that these are solitary instances and that the mass is sound. He says it is necessary to eliminate the general deficiencies in education which cause the abovementioned situation, through the increased influence of social organizations, such as Komsomol, Professional Union and the Students Dormitory Councils. An indispensable part of communistic education is general culture,(broad marxist training and a lively interest in public affairs, all science and art). An important element of communistic education is to develope the communistic attitude towards work. Students are told time and again that every man is obliged to work to his utmost. The author urges very close contact between student and instructor avoiding, however, familiarity. The basis of education is instruction (the lectures and seminars). The main object of education is the transmission not of a certain amount of knowledge but of training. The school can only convey the fundamentals of science, a man becomes a true specialist only thru practice

Card 2/3

Student Education is the Most Important Political Problem 3-3-2/40

and study. Student independent work is strongly recommended.

ASSOCIATION: Leningrad State University imeni A.A.Zhdanov (Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova)

AVAILABLE: Library of Congress

Card 3/3

ALEKSANDROV, A.D., Rector, Leningrad University.

"On Differential Geometry in the Large and on Metric Methods in Differential Geometry,"
paper submitted for Eleventh Intl Congress of Mathematicians, Edinburgh, Scotland, 14-21 Aug 58.

AUTHOR: ALEKSANDROV, A.D. 43-1-1/10

TITLE: The Dirichlet Problem for the Equation $\text{Det}\,\|z_{ij}\| = \varphi(z_1, \ldots, z_n, z, x_1, \ldots, x_n)$. I. (Zadacha Dirikhle dlya uravneniya $\text{Det}\,\|z_{ij}\| = \varphi(z_1, \ldots, z_n, z, x_1, \ldots, x_n)$. I

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya Matematiki, Mekhaniki i Astronomii, 1958, Nr 1(1), pp.5-24 (USSR)

ABSTRACT: The author investigates the equation

(1) $f(\xi, z, x)\ \text{Det}\,\|z_{ij}\| = h(x)$,

where $\xi = \text{grad}\ z(x)$; x is the totality $x_1, x_2, \ldots, x_n$ of the independent variables, z_{ij} are the second derivatives of the unknown function z and f is subject to certain conditions of boundedness and continuity. In connection with his former publications [Ref.1 - 7] the author applies his special geometric methods which are based on the approximation of surfaces by polyhedra and of set functions by functions consisting of a finite number of point-masses. In order to be able to apply these methods the notion of the normal mapping φ is introduced which is determined by a surface S, and then a set function $\omega_f(M;S)$ is defined

Card 1/2

The Dirichlet Problem for the Equation $\operatorname{Det} \| z_{ij} \| = \varphi$ $(z_1, \ldots, z_n, z, x_1, \ldots, x_n)$. I 43-1-1/10

$$(2) \qquad \omega_f(M;S) = \int_{\varphi_S(M)} f(\xi, z(\xi), x(\xi))\, d\,Z$$

where $M \subset D$, D is the definition range in the x-space, $\varphi_S(M)$ is the normal mapping of M determined by S and denotes an n-dimensional auxiliary space. Then (1) is equivalent to the equation

$$(3) \qquad \omega_f(M;S) = \nu(M)$$

and the problem is to determine a surface S for which the function $\omega_f(M;S)$ is equal to the given set function $\nu(M)$.

In the present first 3 paragraphs of the paper the existence of a convex surface S is proved which satisfies (3), from this one concludes the existence of a generalized solution of (1).

A detailed English summary is added to the paper. 12 Soviet references are quoted.

SUBMITTED: 25 June 1957

AVAILABLE: Library of Congress

1. Normal mapping 2. Functions 3. Surfaces

Card 2/2

GAL'PERN, S.A. (Moskva); LOPSHITS, A.M. (Moskva); BALK, M.B. (Smolensk); ZHAROV, V.A. (Yaroslavl'); BYAKIN, V.I. (L'vov); ARNOL'D, V.I. (Moskva); MANIN, I.Yu. (Moskva); DYNKIN, Ye.B. (Moskva); PROIZVOLOV, V. (Moskva); ALEKSANDROV, A.D. (Leningrad); VITUSHKIN, A.G. (Moskva).

Problems of elementary mathematics. Mat. pros. no.3:267-270 '58.
(Mathematics--Problems, exercises, etc.) (MIRA 11:9)

ALEKSANDROV, A.D.

Studying the maximum principle. Part 1. Izv.vys.ucheb.zav.; mat.no.5: 126-157 '58. (MIRA 11:11)

1. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Functional analysis)

AUTHOR: ~~ALEKSANDROV, A.D.~~ 43-7-2/18

TITLE: Uniqueness Theorems for Surfaces "in the Large".III (Teoremy edinstvennosti dlya poverkhnostey "v tselom".III)

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya Matematiki,Mekhaniki i Astronomii, 1958, Nr 7 (2), pp 14-26 (USSR)

ABSTRACT: In the (n+1)-dimensional Riemannian space let be given a continuous family $\{S\}$ of surfaces S. For S let (at least locally) the representation $z = z(x^1,\dots,x^n)$ be possible, where z is two times differentiable and has bounded second derivatives. Let the function $\phi(k_1,\dots,k_n,n_i,z,x^i)$, where the $k_1 \geqslant k_2 \dots \geqslant k_n$ are the principal curvatures and n_i are the covariant components of the unit normal in x^i be continuously differentiable with respect to all arguments; let the derivatives of ϕ be bounded everywhere; let $\frac{\partial\phi}{\partial k_i} \geqslant 0$ $(i=1,\dots,n)$ and for a certain neighborhood of each point of S let $\frac{\partial\phi}{\partial k_i} > \text{const} > 0$. Let $\overline{S}$ be a smooth n-dimensional surface in the domain G which is covered by the family $\{S\}$. Let $S' \in \{S\}$ be a surface such that for points of $\overline{S}$

Card 1/2

and S' with the same $(\overline{x}^i)$ and (x'^i) always $z' \geqslant \overline{z}$ (or $z' \leqslant \overline{z}$).
Theorem: If under the given assumptions in a certain neighborhood of every (x^i) holds: $\phi' \geqslant \overline{\phi}$ (or $\phi' \leqslant \overline{\phi}$), then $\overline{S}$ lies on S'.
From the theorem which has still three lemmas there result numerous conclusions which are composed in further eleven theorems. As special cases there result several results of Blaschke, Süss and Grotemeyer on spheres and affine spheres.
3 Soviet and 5 foreign references are quoted.

SUBMITTED: 27 January 1958
AVAILABLE: Library of Congress
Card 2/2 1. Surfaces-Theory 2. Mathematical analysis

AUTHOR: Aleksandrov, A.D., Volkov, Yu.A. 43-58-13-4/13

TITLE: Theorems of Uniqueness for Surfaces in the Large. IV (Teoremy yedinstvennosti dlya poverkhnostey"v tselom". IV)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1958, Nr 13(3), pp 27-34 (USSR)

ABSTRACT: The paper contains a detailed representation of the results partially announced in [Ref 1]. The theorems and their proofs correspond to those ones of [Ref 3] . In contradistinction to [Ref 3] only Euclidean spaces are considered where the principal curvatures are understood in the sense of the relative differential geometry. The analogy to the results of [Ref 3] is considerable so that the author points to [Ref 3] because of the numerous conclusions. One of the conclusions contains a result of Süss [Ref 4] .
There are 4 references, 3 of which are Soviet and 1 German.

SUBMITTED: March 22, 1958

1. Mathematics 2. Surfaces--Theory

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ALEKSANDROV, A.D.

Uniqueness theorems for surfaces in the large. Part 3 [with summary in English]. Vest. LGU 13 no.7:14-26 '58. (MIRA 11:5)
(Surfaces)

ALEKSANDROV, A.D.; VOLKOV, Yu.A.

Uniqueness theorems for surfaces in the large. Part 4 [with summary in English]. Vest. LGU 13 no.13:27-34 '58. (MIRA 11:8)
(Surfaces)

16(1)

AUTHOR: Aleksandrov, A.D. SOV/43-58-19-1/16

TITLE: Uniqueness Theorems for Surfaces "in the Large".V. (Teoremy yedinstvennosti dlya poverkhnostey "v tselom".V)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1958, Nr 19(4), pp 5-8 (USSR)

ABSTRACT: The following theorem already formerly formulated by the author [Ref 1] is proved : Let S be a two times differentiable closed surface without self-intersection in an (n+1)-dimensional space of constant curvature. Let the principal curvatures $k_1 \geqslant \ldots \geqslant k_n$ of S be bounded. Let $\phi(k_1,\ldots,k_n)$ continuously differentiable ;

$$\frac{\partial \phi}{\partial k_i} > 0, \quad i = 1,\ldots,n.$$ If ϕ is constant on S, then S is a sphere. ϕ needs not to be symmetric. The theorem also holds for self-intersection, if this is small in a certain sense. The boundedness of the second derivatives can be replaced by Lipschitz conditions for the first

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Uniqueness Theorems for Surfaces "in the Large".V SOV/43-58-19-1/16

derivatives.
There are 5 references, 4 of which are Soviet, and 1 German.

SUBMITTED: May 6, 1958

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16(1)

SOV/43-59-1-1/17

AUTHOR: Aleksandrov, A.D.

TITLE: Uniqueness Theorems for the Surfaces "in the Large" VI (Teoremy yedinstvennosti dlya poverkhnostey "v tselom", VI)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 1(1), pp 5-13 (USSR)

ABSTRACT: In the preceding contributions of the author [Ref 1-5] there figured a certain function ϕ of the principal curvatures and of other magnitudes in the statements of uniqueness. In the present paper it is shown that the uniqueness theorems can be formulated without ϕ with the aid of purely geometric relations in many important cases. In [Ref 5] it was proved: If $\phi(k_1, \ldots, k_n)$ is constant on a closed surface without self-intersection in a space of constant curvature, then the surface is a sphere. Now a geometric statement is given: Let k_i, $\bar{k}_i$ be the principal curvatures in the points $x, \bar{x} \in S$. Then there are either all $\Delta k_i = \bar{k}_i - k_i = 0$, or there are Δk_i of different sign. If for variable $x, \bar{x}$ all $\Delta k_i \rightarrow 0$, then the

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ratio of max Δk_i and min Δk_i remains bounded. Then S is a sphere.

There are 9 Soviet references.

SUBMITTED: July 31, 1958

AUTHOR: Aleksandrov, A.D. SOV/140-58-5-12/14

TITLE: Investigations on the Maximum Principle. 1 (Issledovaniya o printsipe maksimuma. 1)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 5, pp 126-157 (USSR)

ABSTRACT: In the domain G of the variables $x^1, \ldots, x^n$ let the linear operator

(1) $$L(u) = a^{ik}u_{ik} + b^j u_j + cu$$

be given, where the matrix of the coefficients a^{ik} is assumed to possess nowhere negative eigen values. What can be said about the point set on which the solution u of $L(u)=0$ (or, more generally, a function u for which it is $L(u) \geqslant 0$ or $L(u) \leqslant 0$) attains its absolute maximum or minimum? The author announces several contributions (at least six) which are to give rather a general answer to the question, which simultaneously will contain several statements on certain boundary value problems connected with the problem, and which are to extend essentially the well-known results of Hopf [Ref 1] and Nirenberg [Ref 2].

The present contribution contains a detailed introduction and

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a survey of the obtained results, as well as the following main result from which all further results are obtained as conclusions.

Let a^{ik}, b^i and c be bounded, the admissible functions u are assumed to be two times differentiable in G and continuous in $\overline{G}=G+\Gamma$ together with their first derivatives. It is asked for the set of the zeros of a function u which satisfies the conditions $u \geqslant 0$, $L(u) \leqslant 0$, whereby it is known that u vanishes on at least one point. The answer to this question is denoted as the principle of zero extension. It is said that u touches zero in the point x_0, if $u(x_0)=u_i(x_0)=0$, $i=1,2,\dots,n$. It is said that $x_0 \in \Gamma$ is an ordinary point with respect to the operator L, if from $u \geqslant 0$, $L(u) \leqslant 0$ and from the assumption that u touches zero in the point x_0 it follows that in G in the neighborhood of x_0 there are points where u=0. It is said that L does not degenerate in a domain U in the direction l, if after a rotation, bringing the axis x^1 into the direction l, the condition $a^{11} > \text{const} > 0$ is satisfied in U. A surface which possesses the equation $x^1 = a\left[\sum_{i>1} (x^i)^2\right]^{p/2}$, $a > 0$, $p > 1$ in a

certain rectangular coordinate system, is called a paraboloid.

Fundamental theorem (principle of zero extension):
If the point $x_0 \in \Gamma$ in the interior of G can be touched by the vertex of a paraboloid and if L does not degenerate in the neighborhood of x_0 in the direction of the axis of the paraboloid, then x_0 is an ordinary point. If, however, such a paraboloid does not exist even for smooth Γ, then x_0 cannot be an ordinary point also for strongly elliptic L. If the consideration is restricted to functions u which are two times differentiable in $\overline{G}=G+\Gamma$, and the first derivatives of which satisfy the Hölder condition, then x_0 is always ordinary, as soon as Γ possesses a tangential plane in x_0 and L does not degenerate in the neighborhood of x_0 in the direction of the normal.
The author announces 14 theorems which follow from this main result, e.g.
Theorem: If the boundary value problem $L(u)=0$, $\alpha u_\nu+\beta u=0$ possesses a nonnegative solution $u\neq 0$, then every other solution

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Investigations on the Maximum Principle. 1 SOV/140-58-5-12/14

v is proportional to this solution u.
There are 4 references, 2 of which are Soviet, 1 is German, and 1 French.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova (Leningrad State University imeni A.A.Zhdanov)

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ALEKSANDROV, A.D.

24(5) PHASE I BOOK EXPLOITATION SOV/3313

Akademiya nauk SSSR. Institut filosofii

Filosofskiye voprosy sovremennoy fiziki [sbornik]; (Philosophical Problems of Modern Physics; Collection) Moscow, Izd-vo AN SSSR, 1959. 426 p. Errata slip inserted. 7,000 copies printed.

Ed.: I. V. Kuznetsov and N. E. Omel'yanovskiy; Ed. of Publishing House: V. K. Moroz; Tech. Ed.: S. G. Markovich.

PURPOSE: This book is intended for physicists but may be read gainfully by other scientists and the educated layman interested in the philosophical questions of advanced physics.

COVERAGE: This book contains 12 articles on philosophical problems in physics. Problems are divided into three subject divisions: 1) general problems; 2) problems of quantum theory; 3) problems in the theory of relativity. The views of Einstein, Bohr, Born, Planck, Pauli, Schrödinger, Heisenberg, Janossy, et al. are presented, and subjected to criticism from the Soviet side by Omel'yanovskiy, Polikarov, Fok, et al. Questions dealing with idealism, agnosticism, and dialectical materialism in the philosophy of physics are discussed. This collection of articles is the third in a series under the same title. Earlier volumes were published in 1952 and 1958. References accompany each article.

TABLE OF CONTENTS:

Aleksandrov, A. D.

PHASE I BOOK EXPLOITATION SOV/3493

Vsesoyuznoye soveshchaniye po filosofskim voprosam yestestvoznaniya

Filosofskiye problemy sovremennogo yestestvoznaniya; trudy soveshchaniya... (Philosophic Problems of Modern Natural Science; Transactions of the All-Union Conference on Philosophic Problems of Natural Science) Moscow, Izd-vo AN SSSR, 1959. 663 p. Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR.

Ed. of Publishing House: A.I. Kompaneyets; Tech. Ed.: I.N. Dorokhina; Editorial Committee: P.N. Fedoseyev, Corresponding Member, Academy of Sciences USSR (Chairman), B.M. Vul, Corresponding Member, Academy of Sciences USSR, M.E. Omel'yanovskiy, Academician, Academy of Sciences UkrSSR, N.M. Sisakyan, Corresponding Member, Academy of Sciences USSR, V.N. Stoletov, Professor, and Ye.N. Chesnokov, Candidate of Philosophical Sciences (Scientific Secretary)

PURPOSE: This book is intended for natural scientists and philosophers who are interested in coordinating Communist philosophy with science.

COVERAGE: This is a publication of the transactions of the All-Union Conference on Philosophic Problems of Natural Science which took place in Moscow, October 21-25, 1958. The Conference was attended by 20 academicians and 30 corresponding members of the Academy of Sciences USSR, 15 academicians and 34 members of republic and special academies, 186 university and college workers, 240 workers of scientific research institutes, and 75 party officials. The purpose of the Conference, as expressed by the Chairman of the Organization Committee, K.V. Ostrovityanov, was to unite the efforts of Soviet philosophers and scientists in the dialectical-materialistic interpretation of the achievements of modern science, and to provide the philosophical background required for the study of modern scientific problems.

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ALEKSANDROV, A.D.

30(9) SOV/30-59-1-47/57

AUTHOR: Chesnokov, Ye. N., Candidate of Philosophical Sciences

TITLE: Problems Concerning Philosophy of Modern Natural Science (Filosofskiye voprosy sovremennogo yestestvoznaniya)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 132-138 (USSR)

ABSTRACT: At the end of October last year an All-Union conference took place which dealt with these problems. The conference had been convened by the Akademiya nauk (Academy of Sciences) and the Ministerstvo vysshego obrazovaniya SSSR (Ministry of Higher Education of the USSR). More than 600 well-known experts in the spheres of sciences and philosophy took part, among them Academicians and Corresponding Members, Academy of Sciences, USSR, representatives of the Academies of the Union Republics and Branch Academies as well as scientists from scientific research institutes and universities. Scientific representatives from Bulgaria, Rumania, Germany, Hungary and Czechoslovakia were guests. It was the aim of the conference to unite the creative powers of Soviet philosophers and scientists for the purpose of a dialectic-materialistic generalization of the achievements of modern science and for raising its level which is intended to contribute towards a solution of the most

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important scientific problems in as short a period as possible. Such were the ideas expressed by Academician A. N. Nesmeyanov, President of the AS USSR and K. V. Ostrovityanov, Chairman of the Committee for the Organization of the Conference on the occasion of their opening speeches.

Further, the following reports were heard and discussed:

M. B. Mitin, Academician, spoke about Lenin's "materialism and empiriocriticism" as the great ideological weapon for the perception and transformation of the world.

M. E. Omel'yanovskiy, Academician of the AS UkrSSR, dealt in his report with V. I. Lenin and the philosophical problems of modern physics.

B. M. Kedrov, Doctor of Philosophical Sciences, Corresponding Member, Academy of Pedagogical Sciences RSFSR, reported on the interrelation in nature of the forms of movement of matter.

V. A. Fok spoke about the interpretation of quantum mechanics.

A. D. Aleksandrov, Corresponding Member, Academy of Sciences, USSR, spoke about the philosophical meaning and the importance of the theory of relativity.

S. L. Sobolev, Academician, and A. A. Lyapunov, Professor,

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dealt with cybernetics and natural science.

V. A. Ambartsumyan, Academician, spoke about some methodical problems of cosmogony.

V. A. Engel'gardt, Academician, and G. M. Frank, Corresponding Member, AMS USSR reported on the role of physics and chemistry in investigating biological problems.

A. I. Oparin, Academician spoke about the formation of life in the light of the achievements of modern natural science.

N. I. Grashchenkov's report dealt with the Lenin's reflex theory and modern physiology of the sensual organs.

A. Z. Zhmudskiy opposed the opinion expressed by M. E. Omel'yanovskiy who said that in the capitalist countries a crisis in physics is approaching.

16(1) 1

AUTHOR: Aleksandrov, A.D. SOV/140-59-3-1/22

TITLE: Investigations on the Maximum Principle. II

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 3, pp 3-12 (USSR)

ABSTRACT: This paper is a direct continuation of the author's paper [Ref 1]. In the domain G of the n-dimensional space $(x_1, \ldots, x_n)$ the author considers two times differentiable functions u and the operator $Lu = \sum a_{ik}u_{ik} + \sum b_i u_i + cu$, where it is assumed that the matrix $\| a_{ik} \|$ nowhere has negative eigenvalues and that all coefficients are bounded in every closed domain contained in G. Let $u \geqslant 0$, $L(u) \leqslant 0$ everywhere in G and $u = 0$ in $X_0 \in G$. It is investigated on which set $M \subset G$ it holds $u = 0$ under these assumptions. The influence of the a_{ik} was considered in [Ref 1]. The author withdraws theorem IX of [Ref 1] concerning the influence of c

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Investigations on the Maximum Principle.II SOV/140-59-3-1/22

because it is incorrect; he states that c (at least locally) is unessential for the zero distribution. At the other hand, the author gives in a certain sense final assertions on the influence of the b_i to the set M. Four theorems and two lemmas are given altogether.
There are 2 references, 1 of which is Soviet, and 1 American.

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16(1)

AUTHOR: Aleksandrov, A.D. 05246 SOV/140-59-5-2/25

TITLE: Investigations on the Maximum Principle. III

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 5, pp 16-32 (USSR)

ABSTRACT: The results of the present paper are formulated by the author as theorem 1 in the introduction of the first part [Ref 1] of the author's investigations on the maximum principle. The considered question (conditions that a boundary point of a bounded domain is regular in a certain sense) was already investigated for single cases by M.V.Keldysh and M.A.Lavrent'yev [Ref 2]. Eleven theorems are proved altogether. There are 2 Soviet references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova (Leningrad State University imeni A.A.Zhdanov)

SUBMITTED: April 17, 1959

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16(1)

AUTHORS: Aleksandrov, A.D., Akilov, G.P., Ashnevits, I.Ya., Vallander, S.V., Vladimirov, D.A., Vulikh, B.Z., Gaburin, M.K., Kantorovich, L.V., Kolbina, L.I., Lozinskiy, S.M., Ladyzhenskaya, O.A., Linnik, Yu.V., Lebedev, N.A., Mikhlin, S.G., Makarov, B.M., Natanson, I.P., Nikitin, A.A., Polyakhov, N.N., Pinsker, A.G., Smirnov, V.I., Safronova, G.P., Smolitskiy, Kh.L., and Faddeyev, D.K.

SOV/43-59-19-14/14

TITLE: Grigoriy Mikhaylovich Fikhtengol'ts (Deceased)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 19(4), pp 158-159 (USSR)

ABSTRACT: This is a short obituary of G.M.Fikhtengol'ts, Professor of the Mathematical-Mechanical Faculty of Leningrad University, who died on June 26, 1959.
The authors mention M.V.Ostrogradskiy.
There is a photo of Fikhtengol'ts.

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USCOMM-DC-61,787

ALEKSANDROV, A.D.

30(7)
AUTHOR: None Given

SOV/53-68-4-6/12

TITLE: All-Union Conference on Philosophic Problems of Modern Natural Science (Vsesoyuznoye soveshchaniye po filosofskim voprosam sovremennogo yestestvoznaniya) By the Editor (Ot redaktsii)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 4, pp 717-727 (USSR)

ABSTRACT: The above conference took place at Moscow in October 1958; it was attended by more than 600 scientists, among them 20 Academicians and 30 Corresponding Members, AS USSR, as well as by delegates from Bulgaria, Hungary, East Germany, and Czechoslovakia. The following lectures delivered at the conference are listed: Academician M. B. Mishin (on Lenin's book: "Materialism and Empiricriticism"), Academician AS UkrSSR M. E. Omel'yanovskiy ("V. I. Lenin and the Philosophical Problems of Modern Critics"), Doctor of Philosophical Sciences B. M. Kedrov ("On the Relationship of the Forms of Motion of Matter in Nature"), Academician V. A. Fok ("Interpretation of Quantum Mechanics" - already published in Uspekhi fizicheskikh nauk, 1957, Vol 62, Nr 4), Corresponding Member AS USSR A. D. Aleksandrov ("The Philosophical Content of and the

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Significance of the Theory of Relativity"), Academician V. A. Ambartsumyan ("Some Methodological Problems of Cosmogony"), Academician S. L. Sobolev and Professor A. A. Lyapunov ("Cybernetics and Natural Science"), Corresponding Member AMN USSR G. M. Frank and Academician V. A. Engel'gardt ("On the Part Played by Physics and Chemistry in the Investigation of Biological Problems"), Academician A. I. Oparin (" The Problem of the Origin of Life in the Light of the Progress Made by Modern Natural Science"), and, finally, Corresponding Member AS USSR N. I. Grashchenkov ("Lenin's Theory of Reflection and the Modern Physiology of the Sensory Organs"). About 50 delegates took part in the discussion of these lectures. Next, the introductory speech delivered by the President of the AS USSR, Academician A. N. Nesmeyanov, is reproduced, and so is the closing speech by Corresponding Member AS USSR P. N. Fedoseyev, and finally a resolution passed by the All-Union Conference on philosophical problems of modern natural science is given under the title "On the Tasks of dealing with Philosophical Problems of Natural Sciences". The resolution essentially contains an appeal for the

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investigation of all new scientific facts in the sense of the theory of Marx and Lenin and of dialectic materialism for adaptation of ideas to the resolution of the 20th Party Congress, cooperation of institutes, coordination of research work, as well as some problems of organization. In conclusion, a list of printed works is given, in which the lectures delivered during the conference were published. There are 8 Soviet references.

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16.5100

AUTHOR: Aleksandrov, A.D.

TITLE: Uniqueness Theorems for Surfaces in the Large. VII

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1960, No.2, pp.5-13.

TEXT: Let $H(x,y,z)$ be defined in the whole space except of $(0,0,0)$ and positively homogeneous of first degree.

Theorem 1: Let H be two times differentiable; in every point (with a possible exception of a point set of measure zero) let either $d^2H \equiv 0$ or let d^2H be a form the eigenvalues R_1 and R_2 of which are of different signs and satisfy the condition $A > \left|\frac{R_1}{R_2}\right| > \frac{1}{A}$; A = const. Then H is a linear function.

In theorem 1^a the author replaces the postulate for the twofold differentiability of H by the postulate for a continuous differentiability and the existence of generalized second derivatives integrable in the square.

Let S' and S" be envelopes of families of planes defined almost eveywhere by two times differentiable support functions H', H". The planes of the above mentioned families (resp. the surface points) are adjoined to eachother if their normals are parallel. Let the surfaces be convex. Let

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Uniqueness Theorems for Surfaces in the Large.VII S/043/60/000/02/01/011

$R_1' \geq R_2'$, $R_1'' \geq R_2''$ be the principal radii of curvature of S' and S".

Theorem 2: Let the difference H'-H" be two times differentiable and for almost all points adjoined to pairs let the differences $\Delta R_1 = R_1' - R_1''$, $\Delta R_2 = R_2' - R_2''$ be either equal to zero or of different sign, where almost everywhere $A > \left|\frac{\Delta R_1}{\Delta R_2}\right| > \frac{1}{A}$. Then S' and S" are equal and lie parallel.

Theorem 2^a asserts that theorem 2 holds also if H = H'-H" satisfies the conditions of theorem 1^a. Conclusion: If a general closed convex surface by a change of the support function is deformed so that the conditions of theorem 2 or 2^a are satisfied, then the deformation is a parallel transfer.
Theorem 3: The conditions of theorem 1 can be replaced by 1) in every point it holds either $R_1 = R_2 = 0$ or $R_1 R_2 < 0$; 2) if a point X with $R_1 \neq 0$, $R_2 \neq 0$ approximates an arbitrary fixed point X_0, then it holds $\left(\left|\frac{R_1}{R_2}\right| + \left|\frac{R_2}{R_1}\right|\right) r(XX_0) \to 0$, where $r(XX_0)$ is the distance between X and X_0.
There are 10 references: 9 Soviet and 1 American.

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AUTHOR: Aleksandrov, A.D.

TITLE: Investigations on the Maximum Principle. V

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.Matematika, 1960, No. 5, pp. 16 - 26

TEXT: The present paper is a direct continuation of (Ref. 4). It is assumed that the functions u(X) and the operators L(u) satisfy all assumptions of (Ref. 4, § 1). Especially, u(X) has almost everywhere a first and second general differential and the coefficients of this differential are called the derivatives. In (Ref. 4) the author formulated the following condition (A):
(A): Let the surface S have the equation $z = u(X) = u(x_1,\ldots,x_n)$. Let U be a subregion of the region of definition G of u(X), and let S_U be the part of S lying over U. Let M_U be the set of points of S_U, in which there exist supporting planes. It is demanded that for every $U \subset G$ every set contained in M_U with the measure zero has a spherical image with the measure zero.

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