"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, I.Ye., gornyy inzhener; BORTSOV, L.P., gornyy inzhener.

Delayed-action blasting in foreign countries. Gor. zhur. no.3:29-35 Mr '56. (Blasting) (MLRA 9:7)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Sitnikov, I.Ye.

MEDVEDEV, I.F., kand. tekhn. nauk; SITNIKOV, I.Ye., gornyy inzh.; PROKOF'YEV, A.S., gornyy inzh.

Electric blasting with a large number of delay intervals. Gor. zhur. no.2:31-33 F '58. (MIRA 11:3)

(Blasting)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

ALESENKO, V.G., gornyy inzh.; SAVVA, L.A., gornyy inzh.;
MASLENNIKOV, I.S., gornyy inzh.; SITNIKOV, I.Ye., gornyy inzh.

Interchamber and level pillar caving with a powerful blast.
Gor. zhur. no.7:39-41 Jl '61. (MIRA 15:2)
(Blasting)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, I.Ye.; KAZAKOV, A.T.

Efficiency of detonators. Gor.zhur. no.3:39-41 Mr '60. (MIRA 14:5)

(Detonators) (Blasting)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, I. Ye.

ALATORTSEV, S.A., prof., doktor tekhn.nauk; ANDREYEV, A.V., kand.tekhn. nauk; ANCHAROV, I.L., inzh.; BALINSKIY, S.I., inzh.; BELOUSOV, V.G., inzh.; VINNITSKIY, K.Ye., kand.tekhn.nauk; VLASOV, V.M., inzh.; VORONTSOV, N.P., kand.tekhn.nauk; GIPSMAN, M.K., inzh.; GLUZMAN, I.S., kand.tekhn.nauk; GUR'YEV, S.V., kand.tekhn.nauk [deceased]; DEMIN, A.M., kand.tekhn.nauk; YEGURNOV, G.P., kand. tekhn.nauk; YEFIMOV, I.P., inzh.; ZHUKOV, L.I., kand.tekhn. nauk; ZEL'TSER, N.M., inzh.; KOSACHEV, M.N., kand.tekhn.nauk; KOTOV, A.F., inzh.; KUDINOV, G.P., inzh.; LAPOVENKO, N.A., kand. tekhn.nauk; MAZUROK, S.F., inzh.; MEL'NIKOV, N.V.; MUDRIK, N.G., inzh.; NIKONOV, G.P., kand.tekhn.nauk; ORLOV, Ye.I., inzh.; POTAPOV, M.G., kand.tekhn.nauk; PRISEDSKIY, G.V., inzh.; RZHEVSKIY, V.V., prof., doktor tekhn.nauk; RYAKHIN, V.A., kand. tekhn.nauk; SIMKIN, B.A., kand.tekhn.nauk; SITNIKOV, I.Ye., inzh.; SOROKIN, V.I., inzh.; STASYUK, V.N., kand.tekhn.nauk; STAKHEVICH, Ye.B., inzh.; SUSHCHENKO, A.A., inzh.; TYUTIN, I.F., inzh.; TYMOVSKIY, L.G., inzh.; FISENKO, G.L., kand.tekhn.nauk; FURMANOV, B.M., inzh.; SHATAYEV, M.G., inzh.; SHESHKO, Ye.F., prof., doktor tekhn.nauk; TERPIGOREV, A.M., glavnyy red. [deceased];

(Continued on next card)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

ALATORTSEV, S.A.---(continued) Card 2.
KIT, I.K., zamestitel' glavnogo red.; SHESHKO, Ye.F., zamestitel' otv.red.; BUGOSLAVSKIY, Yu.K., red.; BYKHOVSKAYA, S.N., red.; DIONIS'YEV, A.I., kand.tekhn.nauk, red.; KOZIN, Yu.V., red.; SOKOLOVSKIY, M.M., red.; YASTREBOV, A.I., red.; DEMIDYUK, G.P., kand.tekhn.nauk, red.; KRIVSKIY, M.N., kand.tekhn.nauk, red.; LYUBIMOV, B.N., inzh., red.; MOLOKANOV, P.L., inzh., red.; REISH, A.K., inzh., red.; RODIONOV, L.Ye., kand.tekhn.nauk, red.; SLAVUTSKIY, S.O., inzh., red.; TRAKHMAN, A.I., inzh., red.; TRYMOVSKIY, L.G., inzh., red.; FIDELEV, A.S., doktor tekhn.nauk, red.; SHUKHOV, A.N., kand.tekhn.nauk, red.; TER-IZRAEL'YAN, T.G., red. izd-va; PROZOROVSKAYA, V.L., tekhn.red.; KONDRAT'YEVA, M.A., tekhn.red.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

ALATORTSEV, S.A.---(continued) Card 3.

[Mining; an encyclopedic dictionary] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red.A.M.Terpigorev. Chleny glav. red.A.I.Baranov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.10. [Mining coal deposits by the open-cut method] Razrabotka ugol'nykh mestorozhdenii otkrytym sposobom. Redkollegiia toma; N.V.Mel'nikov i dr. 1960. 625 p. (MIRA 13:2)

1. Chlen-korrespondent AN SSSR (for Mel'nikov).
(Coal mines and mining) (Strip mining)

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L 3132-66 EWT(m)/EWA(h)

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Nifontov, B. I.; Protopopov, D. D.; Sitnikov, I. YE.; Kulikov, A. V.

Underground nuclear explosions: problems concerning industrial application of nuclear blasts (Podzemnyye yadernyye vzryvy; problemy promyshlennykh yadernykh vzryvov) Moscow, Atomizdat, 1965. 157 p. illus., biblio. 2600 copies printed.

TOPIC TAGS: underground explosion, atomic energy, nuclear blast effect, nuclear debris, industrial nuclear application, nonmilitary nuclear application

PURPOSE AND COVERAGE: This book is intended for a wide circle of engineering and technical workers. The authors compile and classify data on experimental underground nuclear explosions in the USA, in the period 1951-1962. Information on projects for the application of underground explosions for industrial purposes is also given. The authors express their gratitude to Corresponding Member of the Academy of Sciences USSR, M.A. Sadovskiy for valuable advice given them at the time the book was written. The authors are grateful also to Z. I. Yefimova, who helped in the preparation of the manuscript.

Card 1/3

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Card 2/3

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OTHER: 089

Card 3/3

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. On the reduction of dimension by means of a mapping with a given set of fixed points. Uspehi Matem. Nauk (N.S.) 4, no. 6(34), 89–90 (1949). (Russian)

The author gives a proof of the following theorem, supplementing a result of Alexandrov in the paper reviewed above. Let E be an arbitrary r-dimensional set contained in a Euclidean or a Hilbert space R. Let E' be a closed subset of E of dimension not exceeding $r-2$. There exists a continuous map f of E into R, in which the image $f(E)$ of the set E is of dimension less than r and in which all points of E' remain fixed. *L. Zippin* (Flushing, N. Y.).

Source: Mathematical Reviews, 1950 Vol 11 No. 8

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. The definition of the dimension of a closed set by a metric property of the complementary space. Doklady Akad. Nauk SSSR (N.S.) 66, 1059–1062 (1949). (Russian)

Let K be a compact subset of Euclidean R^n and let $W=R^n-K$. Any $(n-1)$-dimensional cycle of W linked with every point of K will be called a K-sack. Let $\alpha^p K$ denote the lower bound of all $\epsilon>0$ such that an ϵ-deformation exists carrying K into a p-dimensional set. Let z be any true cycle in R^n, and let μz denote the upper limit of all $\epsilon>0$ for which there exists a K which is a carrier of z and is such that z does not bound in the ϵ-neighborhood of K. If z bounds in every carrier, set $\mu z=0$ (z is inessential). Now if z is a cycle of W denote by $\alpha_W^p z$ the lower bound of all $\alpha^p K$ for compacta K carrying cycles homologous to z in W. For convenience set $\alpha_W^{-1} z=1$. The principal theorem may now be stated. If $\dim K=r$, $0\leqq r\leqq n-1$, there exists an $\alpha>0$ such that if X is a K-sack then $\alpha_W^{r-1}X>0$, but if X is any cycle in W, $\alpha_W^r X=0$. There always exist K-sacks X for which μX is arbitrarily small. If $\dim K=n$, there is an $\alpha>0$ such that every K-sack z^{n-1} has $\mu z^{n-1}>\alpha$ (at the same time: $\alpha_W^{n-2}z^{n-1}>0$, and, trivially, $\alpha_W^{n-1}z^{n-1}=0$). The author sketches a proof which contains the following principal lemma: let $\bar{Q}$ be an n-dimensional polyhedron in R^n which is the closure of its open kernel Q. Let $p<n-1$ and let z^p be a cycle which bounds in Q. Then if we denote by Q' the boundary of $\bar{Q}$, we get $\alpha^p Q'\geqq\mu z^p$. *L. Zippin.*

Source: Mathematical Reviews, Vol 11 No. 1

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

21341 SITNIKOV, K. O nekotorykh metricheskikh svdistvakh zamknwtykh mnozhestv. Doklady akad. Nauk SSSR, Novaya seriya, T. LXVII, No. 2, 1949, S. 229-32 - Bibliogr: 5 Nazv.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. On continuous mappings of a Euclidean space. Doklady Akad. Nauk SSSR (N.S.) 71, 621–623 (1950). (Russian)

The author sketches a proof of the following natural extension of a theorem of Borsuk [Fund. Math. 21, 236–243 (1933)]. Let φ be a continuous map of the n-dimensional Euclidean space R^n into itself in which the counter-image $\varphi^{-1}y \subset R^n$ of each point $y \epsilon \varphi R^n$ has a diameter less than a fixed $\alpha > 0$. Then all the Betti groups of the open set φR^n are null-groups. The first step in this proof is the result that the map φ is of covering-order γ at every point of φR^n, where the constant $\gamma = \pm 1$. To achieve this, the author uses a simplicial approximation f to φ, defined on a large simplex T^n suitably subdivided; and T^n and fT^n are regarded as polyhedra in R^n. Then he uses an imbedding of R^n into R^{2n+1} in order to exploit a theorem of Kuratowski [Ann. Soc. Polon. Math. 17, 118–119 (1938)] in which there appears a topological image H of the polyhedron fT^n such that $g = Hf$ is a map of T^n that "moves" no point farther than the given $\alpha > 0$.

From the result that $\gamma = \pm 1$ it follows easily that φR^n is open and that compacta in φR^n have compact counter-images. The remainder of the proof, involving cycles and singular cycles, uses some earlier work of the author [same Doklady (N.S.) 66, 1059–1062 (1949); these Rev. 11, 45].

L. Zippin (Flushing, N. Y.).

Source: Mathematical Reviews, Vol. 11 No. 9

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Sitnikov, K.

Aleksandrov, P., and Sitnikov, K. On continuous mappings of closed manifolds. Doklady Akad. Nauk SSSR (N.S.) 71, 821–823 (1950). (Russian)

This note considers α-maps (inverse-sets of diameter less than a given $\alpha>0$) in the light of a theorem of Kuratowski cited in the preceding review. The following theorems are stated, the first as easy, the second with some discussion. (1) Let X be a compact neighborhood retract lying in a Euclidean or a Hilbert space. There is an $\alpha>0$, such that every α-map of X into any compactum Y induces an isomorphic map of the Betti groups of X into the corresponding groups of Y. Here one can choose for α any number such that an α-neighborhood $O(X, \alpha)$ of the set X in R can be retracted to X. (2) If X is an oriented n-dimensional closed pseudo-manifold lying in a Euclidean or a Hilbert space, then there is an α such that from the existence of an α-map f of X onto any closed pseudomanifold Y it follows that Y is orientable and that f is of degree ± 1. Here α can be chosen as any positive number less than the "existence-measure" of the basic n-dimensional cycle of the pseudo-manifold X. If X is an n-dimensional homological orientable manifold, then there is an $\alpha>0$ such that an α-map f of X onto an arbitrary homology manifold Y implies that X and Y are homologically equivalent and that f induces an isomorphism of the Betti groups of X and corresponding groups of Y. Here α can be chosen as any positive number such that an α-neighborhood of X can be retracted to X [obviously every such α is less than the existence-measure of the basic cycle of the manifold X]. *L. Zippin.*

Source: Mathematical Reviews, Vol. 11 No. 9

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K. A.

"Homological Encircling of Compacts in a Euclidean Space," Usp. Mat. Nauk Vol. 6 No. 4 (44), pp 193-220, 1951.

U-1635, 16 Jan 52

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Sitnikov, K.

Sitnikov, K. On homological girdling of compacta in Euclidean space. Doklady Akad. Nauk SSSR (N.S.) 81, 153–156 (1951). (Russian)

This is a generalization of the author's earlier work [same Doklady (N.S.) 66, 1059–1069 (1949); these Rev. 11, 45]. It contains as a special case the homological characterization of closed r-dimensional subsets of euclidean n-space R_n in P. Alexandroff's note [Math. Ann. 106, 161–238 (1932)].

Let x be a simplicial chain in R_n. For $p \geqq 0$, let $\alpha^p x$ denote the lower bound of all $\epsilon > 0$ such that there is an ϵ-displacement of the vertices of x following which all simplexes of x collapse to dimension at most p. Let τx be the lower bound of all ϵ such that there exists an ϵ-displacement of vertices which takes x into a zero-chain. The author proves the following theorem: Let F be an r-dimensional compactum in R_n, and let $\Gamma = R_n - F$. There exists a real number $\gamma > 0$ such that for every $k = 1, \cdots, r+1$, and arbitrary $\epsilon > 0$ there is an $(n-k)$-dimensional cycle v (called a girdle about F, of dimension $n-k$) which is bounding in Γ for $k > 1$, and which satisfies these conditions: a) $\alpha^{r-k+1} v < \epsilon$, b) $\tau v < \epsilon$, and furthermore has the following properties: 1) for every cycle w homologous to v in a γ-neighborhood of v (relative to Γ), $\alpha^{r-k} w > \gamma$; 2) for every chain x which can be displaced onto v in G, $\alpha^{r-k+1} x > \gamma$.

On the other hand, if $s > r$ and $k = 1, \cdots, s+1$, then, for an arbitrary $\gamma > 0$, every $(n-k)$-dimensional cycle z in Γ for which $\tau z < \gamma$ is homologous, in its own γ-neighborhood relative to Γ, to some cycle x' with arbitrary small $\alpha^{s-k} x'$. Further, if $s > r$ and $k = 2, 3, \cdots, s+1$, then for arbitrary $\gamma > 0$ every $(n-k)$-dimensional cycle z which is bounding in Γ and for which $\alpha^{s-k+1} z < \gamma$ (and $\tau z < \gamma$, for $s = n-1$) bounds in Γ a chain x for which $\alpha^{s-k+1} x < \gamma$.

L. Zippin.

Source: Mathematical Reviews, Vol 13 No. 5

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. **The duality law for non-closed sets.** Doklady Akad. Nauk SSSR (N.S.) 81, 359–362 (1951). (Russian)

For arbitrary complementary sets A, B in a (homology) manifold M^n, which is acyclic in dimensions q and $q+1$, the author proves a general duality law stating that $\nabla^p A$ and $\Delta^q B$ $(p+q=n-1)$ are isomorphic. Here $\nabla^p A$ and $\Delta^q B$ are (co-)homology groups of A and B, over the same coefficient group, defined as follows: A q-cycle in B is a sequence $\{z_k^q, x_k^{q+1}\}$ of ϵ_k-cycles and chains, $\epsilon_k \to 0$, all lying in some compact subset of B, such that $\partial x_k = z_{k+1} - z_k$. A cycle bounds if there exist $\{y_k^{q+1}, x_k^{q+2}\}$ ϵ'_k-chains with $\epsilon'_k \to 0$, lying in a compact subset of B, such that

$$\partial y_k = z_k, \quad \partial x_k^{q+2} = y_{k+1} - y_k - x_k^{q+1}.$$

Cycles modulo bounding cycles form the homology group $\Delta^q B$; $-\nabla^p A$ is the cohomology group of A, defined as the direct limit of the cohomology groups (infinite cochains) of the nerves of (infinite) star-finite coverings of A. For the proof of the duality law the author uses a third type of groups. Consider triangulated neighborhoods of A; they form a directed system in an obvious way. There are natural maps of the infinite cycles and co-cycles of a triangulated neighborhood to a refining triangulated sub-neighborhood (both maps in the same direction); the direct limits are called $\Delta_\nu^q A$ and $\nabla_\nu^q A$. By Poincaré duality which is compatible with the maps one gets an isomorphism of $\nabla_\nu^p A$ and $\Delta_\nu^{q+1} A$.

The author shows now that (a) $\nabla^p A \approx \nabla_\nu^p A$, and (b) $\Delta_\nu^{q+1} A \approx \Delta^q B$. (a) For each open covering of A one considers the neighborhood formed by the sets of the covering, and triangulates this neighborhood so fine that there is a canonical map into the nerve of the covering. Using the induced cohomology map one easily establishes the isomorphism. (b) For each $(q+1)$-cycle u on a triangulation of a neighborhood of A one constructs an element of $\Delta^q B$ by representing the neighborhood as union of an increasing sequence of finite open sub-complexes t_k, letting z_k^q be the boundary of the part u_k of u in t_k, and putting $x_k^{q+1} = u_{k+1} - u_k$. An "infinitely small" displacement will move all this into the complement of the neighborhood (a compact subset of B). This map is then shown to be an isomorphism; the reasoning is related to Steenrod's theory of regular cycles [Ann. of Math. (2) 41, 833–851 (1940); these Rev. 2, 73]. The connection with Alexandrov's duality law [Mat. Sbornik 21(63), 161–232 (1947); these Rev. 9, 456; note also the related work of S. Kaplan, Trans. Amer. Math. Soc. 62, 248–271 (1947); these Rev. 9, 456], involving the "non-linking" cycles in B and a similar subgroup of the cohomology group of A, is briefly considered; the two subgroups are topological invariants; compact coefficients have to be used. *H. Samelson* (Ann Arbor, Mich.).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K. A.

SITNIKOV, K. A. -- "Continuous Representations (Reflections) of Open Sets of Euclidean Space." Sub 28 May 52, Sci Res Inst of Mechanics and Mathematics, Moscow Order of Lenin State U imeni M. V. Lomonosov. (Dissertation for the Degree of Candidate in Physicomathematical Sciences).

SO: Vechernaya Moskva January-December 1952

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SITNIKOV, K. A.

USSR/Mathematics - Modern Algebra, Euclidean Spaces Sep/Oct 52

"Continuous Reflections of Open Sets of Euclidean Space," K. A. Sitnikov, Moscow

"Matemat Sbor" Vol 31 (73), No 2, pp 439-458

Investigates the continuous reflections of open sets of n-dimensional Euclidean space R^n into the same space R^n. In the author's opinion only a few theorems have been demonstrated in connection with this problem. Submitted 23 Apr 52.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. On continuous deformations of nonclosed sets. Doklady Akad. Nauk SSSR (N.S.) 82, 845–848 (1952). (Russian)

Theorem: In the n-dimensional closed (locally Euclidean triangulable) manifold M consider a set A and a cycle z (in the sense of the author's paper reviewed above) in a compact set $\Phi \subset M-A$; let g_θ and h_θ, $0 \leqq \theta \leqq 1$, be a deformation of A and Φ such that $g_\theta A$ and $h_\theta \Phi$ are disjoint, and suppose $h_1 z \sim 0$ in $M-g_1 A$; then $z \sim 0$ in $M-A$. Here A is arbitrary (not necessarily closed); this makes the theorem nontrivial. The necessary constructions take place in the product $M \times I$ of M and the unit interval I. In particular one considers the following sets: $A \times I \cup (M-\Phi) \times 0$, and its image under g_θ (i.e., apply g_θ at level θ), and $M \times I - (\Pi \cup u \times 1)$, where Π is the image of $\Phi \times I$ under h_θ, and u is a set carrying the homology $h_1 z \sim 0$ in $M-g_1 A$. The theorem can be extended to open manifolds by assuming that the deformations g and h tend to zero if one approaches "infinity".

H. Samelson (Ann Arbor, Mich.).

Source: Mathematical Reviews, Vol 13 No. 9

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Sitnikov, K. On the dimension of non-closed sets of Euclidean space. Doklady Akad. Nauk SSSR (N.S.) 83, 31–34 (1952). (Russian)

The theorem proved gives a solution to a problem posed by P. S. Alexandrov in 1935: Let A be an arbitrary r-dimensional set in Euclidean n-space R^n, $0 \leqq r \leqq n-1$; then (1) every cycle of dimension $<n-r-1$ (arbitrary coefficients) in R^n-A, if it bounds in an open set U, bounds already in $U-A$; (2) on the other hand there exist an open cell U in R^n and an $(n-r-1)$-cycle in $U-A$ (integral coefficients) which does not bound in $U-A$. Cycles and homologies are taken in the sense of the author [reference cited in the preceding review]. (R^n can be replaced by any locally Euclidean triangulable manifold.) (1) is easily proved, using a theorem of the author in the paper reviewed above. For (2), the hypothesis implies the existence of a map f of an open set O_A containing A into an r-simplex T^r, which is essential on A; one can assume O_A triangulated and f simplicial. In O_A one has then the obstruction co-cycle against deforming f into the boundary $\dot{T}^r$ of T^r, and the dual cycle z^{n-r}. Assuming (2) not to hold, it is then shown that $z^{n-r} \sim 0$ (in the sense of the author), namely a closed set F in O_A-A can be found such that $z^{n-r} \sim 0$ in O_A-F. This is done by removing z^{n-r} from A cell by cell, starting with the vertices: consider a simplex t^{n-r} of z^{n-r} and a convex open cell V containing it. For each vertex t^0 a point Φ^0 in $V-A$, and an infinite 1-drain x^1 are found such that $t^0 \sim 0$ in $V-\Phi^0$, with $\partial x^1 = t^0$. For an edge t^1 with vertices t^0_1, t^0_2 the cycle $\Phi^0_2-\Phi^0_1$ bounds on a compact set Φ^1 in $V-A$; using this, one shows that the 1-chain $t^1+x^1_1-x^1_2$ bounds in $V-\Phi^1$, etc. For the last step one has to assume that (2) fails. It follows then that the obstruction is 0, so that f is inessential on the r-skeleton of O_A, and then also on A; contradiction, q. e. d.

Another approach is sketched, involving a strengthening of the author's duality theorem [see the second preceding review] and a theorem giving a homology characterization of dimension: dim A is the largest r for which there are sets G, H in A ($\bar{H} \subset G$) and an (infinite) covering ω of G, whose nerve contains an r-cocycle which lies actually in H, but doesn't bound there, even if projected into an arbitrary refinement of ω.

H. Samelson (Ann Arbor, Mich.).

Source: Mathematical Reviews, Vol 13 No. 9

Smulyan

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SITNIKOV, K. A.

USSR/Mathematics - Societies

Jan/Feb 53

"Five Weekly Sessions (23 Sep - 21 Oct 52) of the Moscow Mathematical Society"

Usp Mat Nauk, Vol 8, No 1(53), pp 173-176

P. S. Aleksandrov, pres of the Soviety, urged members to assist in problems announced at the 19th Party Congress. The following reports were made: K.A. Sitnikov "Possibility of Capture in the Three-body Problem." S.L. Sobolev, "A Difference Equation." A. N. Kolmogorov, "Spectra of Dynamic Systems on a Torus." A. V. Bitsadze, "The Mixed-type Equation $u_{xx}-\mathrm{sgn}\,y.u_{yy}=0$ of M. A. Lavrent'yev." L.N. Sretenskiy, "The Motion of the Goryachev-Chaplygin Gyroscope." I.N. Vekua, "Systems of Elliptic Equations." V.V. Nemytskiy, "Structure of the Spectrum of Nonlinear Operator Equations." A.P. Yushkevich, "Mathematics of Central Asian Peoples in the 9-15th Centuries." L.S. Sretenskiy vice pres of the Society suggested felicitations for member S.S. Byushgens on his 70th birthday.

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SITNIKOV, K. A.

"Possibility of Capture in the Three-Body Problem," Mat. Sbor., 32, No.3, pp. 693-705, 1953

Shows how to construct a system of three bodies (of identical unit mass) that admits the phenomenon of capture, a possibility first observed by O. Yu. Shmidt (Possibility of Capture in Celestial Mechanics, Dokl. AN SSSR, 58, No.2, pp. 213-16, 1947) by means of numerical integration, thus refuting the opposite assertion of Shazi. The author does not employ numerical integration; his system depends on the three numerical parameters c,n,R ($c>0$; $R>1000c^2$; n sufficiently large). Shows that in this system capture is stable in the sense that in every system differing slightly from the given one capture will occur. Indebted to A. N. Kolmogorov for his guidance. Submitted 1 October 1952.

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SITNIKOV, K

Mathematical Reviews
Vol. 14 No. 9
October 1953
Topology

Sitnikov, K. Example of a two-dimensional set in three-~~dimensional~~ Euclidean space allowing arbitrarily small deformations into a one-dimensional polyhedron and a certain new characteristic of the dimension of sets in Euclidean spaces. Doklady Akad. Nauk SSSR (N.S.) 88, 21-24 (1953). (Russian)

Let K_k (k=1, 2, ...) be the 1-skeleton of the cell-complex into which Euclidean 3-space is subdivided by the planes $x = p/k$, $y = q/k$, $z = r/k$ (p, q, r arbitrary integers). Let Q_k be the set obtained from K_k by a translation, so chosen that all the Q_k are disjoint. The example of the title is the complement of the union of the Q_k. The deformation property is clear, since the complement of each K_k admits a "small" deformation onto the 1-skeleton of the dual subdivision. The dimension property follows from a theorem of the author [same Doklady (N.S.) 83, 31-34 (1952); these Rev. 13, 860], stating that any two points in the complement of an at most (n-2)-dimensional set in n-space can be connected by a continuum, which is impossible in the present case. This example, according to the author, contradicts a statement by Chogoshvili [Compositio Math. 5, 292-298 (1937)]. Theorem II states that an r-dimensional

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set in n-space, with r-dimensional closure, cannot be ε-deformed for sufficiently small ε, into any polyhedron of dimension less than r. Theorem III states: given an r-dimensional set A in n-space and an open set U, then $A \cap U$ admits a deformation within U which, roughly speaking, is constant on the boundary of U, and whose end result lies on a polyhedron of dimension r, and for some U the number r cannot be replaced by r-1. H. Samelson (Ann Arbor, Mich.).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K. A.

Defended his Candidates dissertation in the Mechanics and Mathematics Faculty of Moscow State University on 3 July 1954.

Dissertation: "On Continuous Reflections of Open Sets in Euclidean Space,"

SO: Vestnik Moskovskogo Universiteta, Seriya Fiziko-Matematicheskikh i Yestestvennykh Nauk, No. 1, Moscow, Feb 1953, pp 151-157: transl. in W-29782, 12 April 54, [redacted]

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SITNIKOV, K. A.

USSR/Mathematics - Combinatorial Topology

Card 1/1

Author : Sitnikov, K. A. (Moscow)

Periodical: Mat. sbor. 34 (76), 3-54, Jan/Feb 1954

Abstract : Demonstrates the theorem of duality, which first appeared in his article in Doklady Akademii Nauk (Vol 81, No 1, 359-362, 1951). Acknowledges the considerable assistance of P. S. Aleksandrov, and cites 7 of his topological works (1929-1952). Also refers to related work (1952) of Ye. F. Mishchenko and to those of S. Dowker (1947) and N. Steenrod (1940).

Submitted : October 10, 1953

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K.

Example of a two-dimensional set in a three-dimensional Euclidian space, not intersecting any of the regions of that space. Dokl. AN SSSR 94 no.6:1007-1010 F '54. (MLRA 7:2)
(Aggregates) (Spaces, Generalized)

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SITNIKOV, K.

USSR/Mathematics

Card : 1/1

Authors : Sitnikov, K.

Title : New corelations of the duality in the open sets

Periodical : Dokl. AN SSSR, 96, Ed. 5, 925 - 928, June 1954

Abstract : The article deals with the proving of a general theorem which is supposed to answer the question on duality of ordinary groups with compact factor-groups (Δ_c') of an open set A when the ordinary groups are taken along the discrete domain of coefficients (factors); otherwise, the theorem is to show whether or not those groups can be expressed through topological invariants of an additional set. Two references.

Institution : ....

Presented by: Academician, P. S. Aleksandrov, April 2, 1954

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SITNIKOV, KIRILL ALEKSANDROVICH

SITNIKOV, Kirill Aleksandrovich

SITNIKOV, Kirill Aleksandrovich, Academic Degree of Doctor of Physico-Mathematical Sciences, Based on his defense, 9 June 1955, in the Council of the Mathematics Inst of the Acad Sci USSR, of his dissertation entitled: "Combinative Topology of Free Quantities". For the Academic Title of Doctor of Sciences.

SO: Byulleten' Ministerstva, Vysshego Obrazovaniya SSSR, List No 19, 24 Sept. 1955, Decision of Higher Certification Commission Concerning Academic Degrees and Titles.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Sitnikov, K.A.

44-1-226

TRANSLATION FROM: Referativnyy zhurnal, Matematika, 1957, Nr 1, p 32 (USSR)

AUTHOR: Sitnikov, K.A. , Aleksandrov, P.S.

TITLE: Combinatorial Topology of Open Sets (Kombinatornaya topologiya nezamknutykh mnozhestv)

PERIODICAL: Tr. 3-go Vses. matem. s"yezda, 2, Moscow, AN SSSR 1956, pp 49-51

ABSTRACT: Bibliographic entry

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Sitnikov, K. A.

44-1-236

TRANSLATION FROM: Referativnyy zhurnal, Matematika, 1957, Nr 1, p 33 (USSR)

AUTHOR: Sitnikov, K.A.

TITLE: On the Metric-topological Properties of Closed Sets (O metriko-topologicheskikh svoystvakh zamknutykh mnozhestv)

PERIODICAL: Tr. 3-go Vses. matem. s"yezda, 2, Moscow, AN SSSR, 1956, p 135

ABSTRACT: Bibliographic entry

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SOV/20-122-1-7/43

AUTHOR: Sitnikov, K.A.

TITLE: Invariants of Homogeneous and Isotropic Turbulence in a Compressible Tenacious Fluid (Invarianty odnorodnoy i isotropnoy turbulentnosti v szhimayemoy vyazkoy zhidkosti)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 1, pp 29-32 (USSR)

ABSTRACT: The conservation of the impulse, the mass and the energy in hydrodynamics is expressed by the equations

$$(1)\quad \frac{\partial \varrho v_i}{\partial t} = -\sum_{k=1}^{3} \frac{\partial \pi_{ik}}{\partial x_k}, \quad \frac{\partial \varrho}{\partial t} = -\sum_{k=1}^{3} \frac{\partial \varrho v_k}{\partial x_k}, \quad \frac{\partial \varrho U}{\partial t} = -\sum_{k=1}^{3} \frac{\partial E_k}{\partial x_k},$$

where ϱ is the density, v_i are the components of velocity, π_{ik} is the tensor of the density of the impulse flow; U is the energy of the unit of mass, E_k are the components of the density of the energy flow. All hydrodynamic elements are assumed to be random magnitudes satisfying the conditions of homogeneity and isotropy. The mean values $\overline{\varrho}$ and $\overline{\varrho U}$ are independent of the time. Therefore in (1) the magnitudes ϱ and ϱU can be replaced by $\varrho' = \varrho - \overline{\varrho}$; $(\varrho U)' = \varrho U - \overline{\varrho U}$. Let α and β be any two of the magnitudes ϱv_i $(i=1,2,3)$, ϱ' and $(\varrho U)'$. Let A_k and B_k be the components of the

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vectors, the divergences of which they are, according to (1). Then

$$\frac{\partial \overline{\alpha\beta^*}}{\partial t} = \alpha \sum_{k=1}^{3} \frac{\partial B_k^*}{\partial x_k^*} + \sum_{k=1}^{3} \frac{\partial A_k}{\partial x_k} \beta^* = \sum_{k=1}^{3} \frac{\partial}{\partial \xi_k} (\overline{\alpha B_k^*} - \overline{A_k \beta^*}),$$

where $\xi_k = x_k^* - x_k$. After the integration over the sphere $r = |w| \leq R$ and under the assumption that αB_k^* and $A_k \beta^*$ are of the order $O(\frac{1}{r^2})$, for $R \to \infty$ one obtains

$$\lim_{R\to\infty} \frac{\partial}{\partial t} \iiint_{r \leq R} \overline{\alpha\beta^*(w,t)} dV_w = 0.$$

Consequently $\iiint \overline{\alpha\beta^*(w,t)}\, dV_w$ is an invariant. If the flow is not only homogeneous but also isotropic, then only 4 of the obtained invariants are different from zero. These are

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$$\Lambda_1 = \iiint \overline{\rho v \cdot \rho v^*}\, dV_w = \lim_{V \to \infty} \frac{1}{V} \left(\overline{\iiint_V \rho v\, dV_p} \right)^2, \quad \Lambda_2, \ldots \text{etc.}$$

The invariant Λ_2 has been found already by Chandrasekhar [Ref 3].
if the fluid is incompressible, then only $\Lambda_3 \neq 0$.
Then the author constructs the example of a flow with non-vanishing invariants.
Finally the author shows that in the last state of the turbulence fading, when the non-linear terms in the motion equations can be neglected, it holds:

$$\overline{v(t)^2} = \left(\frac{\Lambda_1}{48\bar{\rho}^2} + \frac{a^2}{16\bar{\rho}^2} \Lambda_2 \right) \left(\frac{1}{\pi[\nu' + (\varkappa - 1)\lambda]t} \right)^{3/2} + \frac{\Lambda_1}{12\bar{\rho}^2} \left(\frac{1}{2\pi\nu t} \right)^{3/2} + O\left(\frac{1}{t^{3/2}} \right),$$

where a is the velocity of sound, λ is the thermal conductivity,

$\nu = \frac{\eta}{\bar{\rho}}$, $\nu' = \frac{4\eta}{3\bar{\rho}} + \frac{\zeta}{\bar{\rho}}$, η and ζ are coefficients of viscosity

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16(1)

AUTHOR: Sitnikov, K.A. SOV/39-48-2-5/9

TITLE: Combinatorial Topology of Non-Closed Sets. III

PERIODICAL: Matematicheskiy sbornik, 1959, Vol 48, Nr 2, pp 213-226 (USSR)

ABSTRACT: The present paper is a continuation of the papers I and II of the author [Ref 1,2] published in the years 1954-1955. The present third part has the subtitle "Duality Isomorphism". The results are already announced by the author in [Ref 11,12]. The author mentions P.S.Aleksandrov, Chogoshvili, Kolmogorov, Pontryagin, and Mishchenko.
There are 12 Soviet references.

SUBMITTED: October 9, 1957

Card 1/1

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

IONOV, A.N.; SITNIKOV, K.I.; LIFANOVA, A.A.; Prinimali uchastiye: VORONIN, A.D.; SLAVINA, A.Yu.; GORDEYEV, M.I.; CHALYKH, Ye.G.; GORDEYEV, P.A., red.; KASIMOV, D.Ya., tekhn.red.

[Album of drawings for machinery, mechanized equipment, implements, attachments, and instruments for finishing large-panel apartment houses] Al'bom chertezhei mashin, mekhanizirovannykh ustanovok, inventaria, prisposoblenii i instrumentov dlia otdelki krupnopanel'nykh zhilykh domov. Moskva, Gostroiizdat. No.2. 1963. 210 p. (MIRA 17:2)

1. Gosudarstvennyy proyektnyy institut po organizatsii sel'skogo stroitel'stva i okazaniyu tekhnicheskoy pomoshchi.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, K. P.

"Paramagnetic Absorption in Some Salts of Elements of the Transition Groups." Cand Phys-Math Sci, Kazan State U, Kazan, 1954. (RZhFiz, Feb 55)

SO; Sum. No. 681, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SOV/56-34-5-5/61

AUTHOR: Sitnikov, K. P.

TITLE: The Measurement of the Spin Lattice Relaxation Time From the Shape of the Absorption Curve in Parallel Fields (Izmereniye vremeni spin-reshetochnoy relaksatsii po forme krivoy poglosheniya v parallel'nykh polyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 5, pp. 1090 - 1092 (USSR)

ABSTRACT: This paper exposes that the spin lattice relaxation time can be determined from the shape of the curve of the paramagnetic absorption in parallel fields. As is known, the paramagnetic absorption in parallel fields is at sufficiently low frequencies caused only by the spin lattice relaxation, satisfying the formula

$\chi'' / \chi_0 m = \rho\nu F(1 + \rho^2\nu^2)$, where χ'' denotes the imaginary part of the complex magnetic susceptibility, χ_0 - the equilibrium susceptibility per unit mass, m - the mass of the sample, ρ - the spin lattice relaxation time, ν - the frequency /

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of the oscillating field; F - a certain function of the constant field. For the measurement of ϱ the author uses the aforementioned formula. The absorption curves were determined according to the method worked out by Zavoyskiy (Ref 2). The corresponding measuring equipment has already been described in a previous paper (Ref 3). The formula in question for the sake of convenience, transformed to the form: $\chi''(H_c)=FD$, where

$F=H_c^2(b/c+H_c^2)^{-1}$; $D \equiv \varrho\nu/(1+\varrho^2\nu^2)$, $\chi''(H_c) \equiv \chi''(\chi_0 m)^{-1}$.

Finally there is obtained $\varrho=(1/\nu)(1/2D \pm \sqrt{(2D)^{-2}-1}$ and with the substitution $K \equiv (2D)^{-1}$ the expression

$\varrho\nu=K \pm \sqrt{K^2 - 1}$. The suggested method for the measurement of ϱ was verified with the salt $MnSO_4 \cdot 4H_2O$. The results from the measurement of D and the computed values of ϱ for various frequencies are compiled in a table. The Detye (Debaye) function increases at the frequency of 1 mc; at frequencies of 7,4 and

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13 mc it decreases, having a maximum v at 1,95 mc. The values of ν which were computed for various frequencies ρ agree well with each other and with the values computed by means of other methods. By this method the authors determined the values of ρ (for room temperature) for $CrK(SO_4)_2 \cdot 12H_2O$, $FeNH_4(SO_4)_2 \cdot 12H_2O$ and $CuSO_4 \cdot 5H_2O$. The results of these measurements are given in a table. As standard material in all cases the salt $Mn(NH_4)_2 \cdot (SO_4)_2\ 6H_2O$ was used. There are 2 tables and 5 references, 4 of which are Soviet.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: November 20, 1957

Card 3/4

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

The Measurement of the Spin Lattice Relaxation Time From the Shape of the Absorption Curve in Parallel Fields SOV/56-34-5-5/61

1. Maganese ammonium sulfate--Analysis 2. Maganese ammonium sulfate--Lattices 3. Nuclear spins--Measurement 4. Spectrographic analysis--Applications

Card 4/4

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SOV/56-34-5-6/61

AUTHOR: Sitnikov, K. P.

TITLE: Concerning the Experimental Verification of the Thermodynamical Theory of Paramagnetic Spin-Spin Relaxation in Parallel Fields (K voprosu ob eksperimental'noy proverke termodinamicheskoy teorii spin-spinovoy paramagnitnoy relaksatsii v parallel'nykh polyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 5, pp. 1093 - 1095 (USSR)

ABSTRACT: The author experimentally investigated the paramagnetic spin-spin absorption in a number of substances (at a frequency of ν = 600 Mc at room temperature). The curves of absorption were taken according to the method by Zavoyskiy (Ref 5). This method employs the experimentally found linear dependence of the grid current of any electron generator upon a small watt load at the generator. The experimental curves obtained by the author are all of the same type and differ from each other only in intensity and in half width. Therefore the discussion of one of these curves is sufficient. The curve of absorption can well be de-

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

Concerning the Experimental Verification of the Thermodynamical Theory of Paramagnetic Spin-Spin Relaxation in Parallel Fields SOV/56-34-5-6/61

scribed by a given formula. A table contains the values of the constants in this equation. Finally the author expresses his gratitude to B.M.Kozyrev, S.G.Salikhov, S.A.Al'tshuler and I.G.Shaposhnikov for a discussion of the results. There are 2 tables and 11 references, 10 of which are Soviet.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: December 4, 1957

1.Materials--Magnetic properties 2.Nuclear spins 3.Thermodynamics --Theory

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

S/058/61/000/011/015/025
A058/A101

AUTHOR: Sitnikov, K. P.

TITLE: Heat capacity of the spin system of iron-group transition element ions

PERIODICAL: Referativnyy zhurnal, Fizika, no. 11, 1961, 204, abstract 11E164 (V sb. "Paramagnitn. rezonans". Kazan', Kazansk. un-t, 1960, 113-119)

TEXT: The principal thermodynamic functions of paramagnetics are calculated in an approximation of weak interaction between a magnetic ion located in a crystal lattice and the environs of the ion. Concrete calculations are carried out for the case of S = 3/2. The magnetic heat capacity constant is calculated, and the temperature dependence of the entropy of heat capacity is established. The results are compared with data for the Cr^{3+} ion in chrome-potash alums.

V. Avvakumov

[Abstracter's note: Complete translation]

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S/056/60/039/003/001/045
B004/B060

24,2200 (1035,1160,1162)

AUTHOR: Sitnikov, K. P.

TITLE: A Study of Paramagnetic Relaxation in Magnetically Diluted Systems

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 3 (9), pp. 521-526

TEXT: The author points out at the beginning that the ions of the elements belonging to the iron group in the crystal lattice (crystal hydrates and their solid solutions) interact little with the medium. He writes down the statistical sum for the spin.

$Z^{sp} = \sum \exp(-\varepsilon_i/kT)\Omega(\varepsilon_i)$, where $\Omega(\varepsilon_i)$ is the multiplicity of the ε_i sublevel. The author studied the effect of the spin on the magnetic component b_m and the electric component b_e of the specific heat c for 1/2-, 1-, 3/2, and 5/2-spins, and obtained equations serving for the calculation of the free energy, entropy, and the specific heat. By his

Card 1/4

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A Study of Paramagnetic Relaxation in Magnetically Diluted Systems

S/056/60/039/003/001/045
B004/B060

experiments, the author wanted to study the paramagnetic absorption in parallel fields at room temperature, and to determine the constant b of specific heat and the spin-lattice relaxation time ρ as a function of the concentration of magnetic ions. In accordance with the thermodynamic theory formulated by I. G. Shaposhnikov (Ref. 3), the following relation is written down for the imaginary part χ'' of susceptibility:

$\chi''/\chi_0 m = F/\rho\nu + (1 - F)^2\rho_s\nu$; $F = H_c^2/(b/C + H_c^2)$ (7), where χ_0 is the specific equilibrium susceptibility, m the mass, ρ the spin-lattice relaxation time, ρ_s the spin-spin relaxation time, ν the frequency of the alternating field, H_c the constant outer field, and C the Curie constant. If the difference between ρ_s and ρ is sufficiently large, it is possible to find a frequency at which the first term of equation (7) becomes negligibly small, and absorption only depends on the inner relaxation:

$\chi''/\chi_0 m = (1 - F)^2\rho_s\nu$ (8). The author was able to attain this at 600 Mc/sec. The constant b/C was calculated from equation (8). The absorption curve was drawn by a method developed by Ye. K. Zavoyskiy

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

83756

A Study of Paramagnetic Relaxation in Magnetically Diluted Systems

S/056/60/039/003/001/045
E004/B060

(Ref. 6), involving the use of a generator descrited by S. G. Salikhov (Ref. 7). The substances investigated were magnetically diluted by introducing diamagnetic ions into the paramagnetic substance. Single crystals of solid solutions of chromium-potassium alum $[CrK(100-n) + nAlK] (SO_4)_2 \cdot 12H_2O$ and manganese sulfate $[Mn(100-n) + nMg]SO_4 \cdot 4H_2O$ were prepared. n denotes the concentration of diamagnetic ions Al^{3+} or Mg^{2+} in the solid solution. Fig. 1 shows the absorption curves for chrome alum with various concentrations of magnetic ions. A good agreement with equation (8) was found. Fig. 2 (chrome alum) and Fig. 3 (manganese sulfate) show that b/C rapidly decreases with magnetic dilution, and approaches the value $(b/C)_e = 0.22 \cdot 10^6$ oersteds for chrome alum, and $(b/C)_e = 0.40 \cdot 10^6$ oersteds for manganese sulfate. Since the total constant b/C and its electric component $(b/C)_e$ are thus known, it is possible to calculate the magnetic component of the constant from $b/C = (b/C)_m + (b/C)_e$. The equation $\chi''/\chi_{cm} = \rho\nu F/(1 + \rho^2\nu^2)$ (12) was used to determine ρ as a

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83756

A Study of Paramagnetic Relaxation in Magnetically Diluted Systems

S/056/60/039/003/001/045
B004/B060

function of the concentration of magnetic ions. This function is represented in Fig. 4 for chrome alum (ν = 7 Mc/sec). Table 1 gives the values of ρ for various concentrations of Cr^{3+}. Table 2 for various concentrations of Mn^{2+}. The constant δ of sublevel splitting in the electric field, and the constant H_i of the intrinsic field were calculated: for $CrK(SO_4)_2 \cdot 12H_2O$ $\delta = 0.14^o$, H_i = 1170 oersteds; for $MnSO_4 \cdot 4H_2O$ $\delta = 0.30^o$, H_i = 3913 oersteds, for $CuSO_4 \cdot 5H_2O$ H_i = 790 oersteds. There are 4 figures, 2 tables, and 12 references: 11 Soviet and 1 US.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet (Kazan' State University)

SUBMITTED: July 4, 1959 (initially) and May 16, 1960 (after revision)

Card 4/4

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

The Existence of Oscillating Motions in the Three-body Problem

S/020/60/133/02/14/068
B019/B060

body 3 is constantly on the Z-axis, if the two bodies 1 and 2 move in an ellipse in the XY-plane. A system of this type had already been investigated by A. N. Kolmogorov. The whole system can be described by the two parameters r and φ of body 1 with respect to the X axis. Evidence is given that a value v exists for each φ value (v is the velocity of body 3 in the Z-direction), so that in the course of time body 3 passes through the zero point for an infinite number of times. The existence of this oscillation is proven with the aid of two theorems. Finally, the case of a finite mass of body 3 is dealt with. Body 3 with mass m (bodies 1 and 2 both have mass M) is shown to pass through the center of gravity of bodies 1 and 2 for an infinite number of times in the course of time. It follows that m does not exceed a certain value α'. There are 2 French references.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences, USSR)

Card 2/3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

The Existence of Oscillating Motions in the Three-body Problem

S/020/60/133/02/14/068
B019/B060

PRESENTED: March 4, 1960, by A. N. Kolmogorov, Academician

SUBMITTED: March 1, 1960

✓B

Card 3/3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

24.5600
24.6200

36866
S/181/62/004/004/005/042
B108/B102

AUTHOR: Sitnikov, K. P.

TITLE: Thermodynamic properties of the spin system of cupric potassium sulfate and chromium potash alum

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 861 - 865

TEXT: The thermodynamic properties of the spin system of $CuK_2(SO_4)_2 6H_2O$ and $CrK(SO_4)_2 12H_2O$ are of interest to low-temperature thermometry. With the aid of statistical thermodynamics, the entropies and specific heats of these systems have been calculated with the representation of free ions in magnetically rarefied systems. The values agree with measurements. The specific heat of the spin system of cupric potassium sulfate is due to the electron magnetism, and at low temperatures to exchange interaction. The contribution of hyperfine splitting to the specific heat is small. There are 3 tables and 6 references: 4 Soviet and 2 non-Soviet.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: October 28, 1961

Card 1/1

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

S/181/62/004/010/048/063
B102/B112

AUTHOR: Sitnikov, K. P.

TITLE: On the thermodynamic properties of the spin system of copper potassium sulfate

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2946-2947

TEXT: The entropy of the spin system of copper potassium sulfate is calculated and compared with the measured data using the statistical formula $S/R = \ln(1+e^{-\theta}) + (\theta/T)\left[e^{-\theta/T}/(e^{-\theta/T}+1)\right]$ taken from an earlier work (FTT, 4, 862, 1962). Complete agreement was found when the absolute temperature was $T = \alpha T^* + \theta^*$, where $\alpha = 0.965$ is an empirical coefficient, T^* is the temperature measured and θ^* the constant of the Curie-Weiss law. In the temperature range where the magnetic susceptibility $\varkappa = C/T$ and where $\theta^* \geqslant T$, i.e. where the Curie-Weiss law is violated, $T = T^* + \theta^*$. These relations show that up to $T^* = 0.258^\circ K$ the empirical and absolute temperatures coincide, i.e., that up to this temperature the Curie law is satisfied. At lower temperatures $\theta^* = 0.028^\circ K$, as follows from $T = T^* + \theta^*$.

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

On the thermodynamic properties ... S/181/62/004/010/048/063
B102/B112

There is 1 table.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: June 15, 1962

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

S/181/62/004/012/026/052
B104/B102

AUTHOR: Sitnikov, K. P.

TITLE: An experimental proof of Van Vleck's theory for the specific heat of the spin system of paramagnetics

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3540-3542

TEXT: The Van Vleck formula is $cT^2 = a_1\delta^2 + a_2\tau^2 = b$ (1), where δ is the splitting of the sublevels of a multiplet in the electric field of a crystal and

$$\tau = \frac{N4S(S+1)\beta^2}{V_M k}$$

is the dipole-dipole splitting. S is the spin, β the Bohr magneton, N is Avogadro's number, V_M is the molar volume and b is the specific heat of the spin system. For $S = 1/2$, (1) assumes the form $cT^2 = a_2\tau^2 = b_m$ (3). At high temperatures ($T \gg \tau$), the formula $a_2 = QR/6$ holds. R is the gas

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constant, Q depends on the crystal structure of the paramagnetic and on the exchange interaction. These formulas offer a means of checking the theory by experiments. On comparing the experimental data obtained from copper salts (Table 1), from $CrK(SO_4)_2 \cdot 12H_2O$ and from $Mn(SO_4) \cdot 4H_2O$ it is shown that the results predicted by theory are wrong. There are 2 tables.

ASSOCIATION: Kazanskiy gosudarstvennyy universitet im. V. I. Ul'yanova-Lenina (Kazan' State University imeni V. I. Ul'yanov-Lenin)

SUBMITTED: July 9, 1962

Table 1: Measured and calculated values of the constant $(b/C)_m$ in copper salts; C is the Curie constant.
Legend: (1) Salt; (2) Constant of the dipole-dipole splitting; (3) $(b/C)_m \cdot 10^{-6}$, measured; (4) $(b/C)_m \cdot 10^{-6}$, calculated; (5) V_M, cm^3

1	2	3	4	5
$CuK_2(SO_4)_2 \cdot 6H_2O$	0.006	0.13	0.02	181.0
$Cu(NH_3)_4SO_4 \cdot H_2O$	0.008	0.30	0.04	136.0
$CuCl_2 \cdot 2H_2O$	0.015	0.35	0.12	71.3

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 41390-65 EWT(m)/EWP(b)/EWP(t) IJP(c) JW/JD

ACCESSION NR: AR5009699 UR/0058/65/000/002/E054/E054

SOURCE: Ref. zh. Fizika, Abs. 2E409

AUTHOR: Sitnikov, K. P.

TITLE: Thermodynamic properties of the spin system of a manganese-ammonium sulfate

CITED SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1962 g. Kazan', Kazansk. un-t, 1963, 6-9

TOPIC TAGS: manganese compound, spin system, low temperature research, thermodynamic property, splitting constant, specific heat, phase transition

TRANSLATION: To determine a thermometric body in the temperature interval below 1K, a study was made of the properties of the spin system of magnetically-dilute manganese-ammonium sulfate $Mn(NH_4)_2(SO_4)_2 \cdot 6H_2O$. Expressions are obtained for the temperature dependence of the entropy S/R and the specific heat C/R. The splitting constants of the Mn^{2+} ion in the $^6S_{5/2}$ state, situated in the electric field

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 41390-65

ACCESSION NR: AR5009699

of the crystal, are found to be $\delta_1 = \delta_2 = \delta_{ef} = 0.13K$. The internal magnetic field are found to be $\theta_1 = 0.505K$, $\theta_2 = 0.331K$, and $\theta_3 = 0.148K$. The calculated values of the entropy are in good agreement with the measurements of Cook and Hall (RZhFiz. 1960, no. 10, 26318), so that this salt can be recommended as a thermometric body in the temperature interval 1--0.06K, where a maximum of specific heat corresponding to the phase transition of this paramagnetic salt is observed.
I. Kalinkina.

SUB CODE: NP, TD ENCL: 00

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42426-65 EWT(1) IJP(c)
ACCESSION NR: AR5009703

UR/0058/65/000/002/E080/E080

12
B

SOURCE: Ref. zh. Fizika, Abs. 2E612

AUTHOR: Sitnikov, K. P.

TITLE: Maximum susceptibility of a paramagnet and its explanation

CITED SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1962 g. Kazan', Kazansk. un-t, 1963, 9-13

TOPIC TAGS: paramagnetism, paramagnetic susceptibility, temperature dependence, magnetization

21

TRANSLATION: A theoretical explanation is offered for the maximum susceptibility of a paramagnet at low temperatures and the shift of this maximum towards higher temperatures with increasing field. The explanation is based on the assumption that the dependence of the average magnetization $\overline{M}$ of the paramagnet on the field H is nonlinear at sufficiently low temperatures and in an arbitrary small external field. The temperature dependence of the susceptibility of copper potassium sul-

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42426-65
ACCESSION NR: AR5009703

fate and potassium chrome alum in the temperature region < 1°K, calculated by means of the obtained formulas, was in good agreement with the experimental data.

SUB CODE: EM ENCL: 00

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Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

LITVINOVICH, A.N.; BESPAYEV, Kh.A.; MAN'KOV, B.V.; SITNIKOV, K.P.

Distribution of rare and dispersed elements in the ores of the Tishinka deposit. Vest. AN Kazakh. SSR 20 no.10:56-63 O '64.
(MIRA 17:11)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 49020-65 EWT(1) IJP(c)

ACCESSION NR: AR5012296 UR/0058/65/000/003/E094/E094

SOURCE: Ref. zh. Fizika, Abs. 3E701

AUTHOR: Sitnikov, K. P.

TITLE: Limiting values of the magnetic moment and susceptibility of paramagnetics

CITED SOURCE: Sb. Itog. nauchn. konferentsiya Kazansk. un-ta za 1962 g. Kazan', Kazansk. un-t, 1963, 13-14

TOPIC TAGS: paramagnetic susceptibility, paramagnetic magnetic moment, paramagnet

TRANSLATION: Using general thermodynamic relations it is shown that the magnetic moment of a system at T = 0°K is independent of temperature: $\left(\frac{\partial M}{\partial T}\right)_{H=0}$. Since further application of external magnetic field H on a paramagnet does not alter the order of the system, and only produces precession of spins in the direction of field H, from discontinuation of thermal motion at absolute zero it follows that the magnetic moment is independent of the field: $\frac{\partial M}{\partial H}=\chi=0$ at T = 0°K. From here, it follows that at T = 0°K the susceptibility of paramagnets is equal to zero. It is noted that the statements made are not related to paramagnetism of a degenerated electronic gas in

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metals which is independent of temperature. T. Rebane

SUB CODE: EM, TD ENCL: 00

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

VYDRIN, Vladimir Nikolayevich, doktor tekhn. nauk; SITNIKOV, Leonid Leonidovich, inzh.; KORNILOV, Petr Vasil'yevich, inzh.; SVET, Ye.B., red.

[Strength of rolling-mill rolls] Stoikost' prokatnykh valkov. Cheliabinsk, Cheliabinskoe knizhnoe izd-vo, 1964. 70 p. (MIRA 17:8)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

MATVEYEV, Yu.M., doktor tekhn. nauk; VYDRIN, V.N., doktor tekhn. nauk; FINKEL'SHTEYN, Ya.S., kand. tekhn. nauk; KAUFMAN, M.M., kand. tekhn. nauk; GLEYBERG, A.Z., kand. tekhn. nauk; NOVIKOV, A.G., inzh.; SITNIKOV, L.L., inzh.; NODEV, E.O., inzh.; STOLETNIY, M.F., inzh.; STERN, V.A., inzh.; FRIDMAN, D.S., inzh.

Operating conditions and wear of mandrels on the continuous billet mill of a 30-102 pipe rolling unit. Stal' 25 no.10: 930-934 O '65. (MIRA 18:11)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, L. P.

USSR/Bibliography - Book review

Card 1/1 : Pub. 71 - 16/17

Authors : Sitnikov, L. P.

Title : Bibliography (Valuable book)

Periodical : Mech. trud. rab. 5, page 47, July 1954

Abstract : A review of A. V. Lepskiy's book on, "Mechanized Unloading of Lumber (Wood Materials) from Rolling Stock". The book consists of five chapters dealing with methods of transporting lumber materials and equipment used for various loading and unloading operations.

Institution : .....

Submitted : .....

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

VASIL'YEV, Kirill Vasil'yevich; SHAPIRO, Il'ya Samoylovich; CHERNYAK, V.S., nauchnyy red.; SITNIKOV, L.P., red.; GOROKHOV, Yu.N., tekhn.red.

[Electric-arc cutting of metals] Dugovaia elektricheskaia rezka metallov. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1958. 64 p. (MIRA 12:1)

(Electric metal cutting)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

LAGUNOV, G.A., inzh.; SITNIKOV, L.P., red.; KURILKO, T.P., tekhn. red.

[Collection of inventions; the asbestos-cement and roofing materials industries] Sbornik izobretenii; asbestotsementnaia promyshlennost' i promyshlennost' miagkoi krovli. Moskva, Informatsionno-izdatel'skii otdel, 1959. 79 p. (MIRA 15:1)

1. Russia (1923- U.S.S.R.) Komitet po delam izobretenii i otkrytii. (Roofing) (Asbestos cement)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SHTEYNBERG, A.S., inzh.; SITNIKOV, L.P., red.

[Collection of inventions; concrete and reinforced concrete] Sbornik izobretenii; beton i zhelezobeton. Moskva, Informatsionno-izd. otdel, 1960. 155 p. (MIRA 14:11)

1. Russia (1923- U.S.S.R.) Komitet po delam izobreteniy i otkrytiy. (Concrete) (Concrete reinforcement)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

MUSIN, S.P., inzh.; SITNIKOV, L.P., red.; SOSINA, A.L., tekhn.red.

[Collection of inventions; manufacture of forging and sheet metal working machinery and press-working operations] Sbornik izobretenii; kuznechno-pressovoe mashinostroenie i shtampovochnye raboty. Moskva, TSentr.biuro tekhn.informatsii, 1961. 126 p. (MIRA 15:2)

1. Russia (1923- U.S.S.R.) Komitet po delam izobreteniy i otkrytiy.
(Bibliography--Forging machinery)
(Bibliography--Sheet metal working machinery)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

GORODETSKIY, Yu.B., inzh.; SITNIKOV, L.P., red.; SOSINA, A.L., tekhn. red.

[Collection of inventions; building materials industry] Sbornik izobretenii; promyshlennost' stroitel'nykh materialov. Moskva, TSentr. biuro tekhn. informatsii, 1961. 264 p. (MIRA 14:10)

1. Russia (1923- U.S.S.R.) Komitet po delam izobreteniy i otkrytiy. (Building materials industry—Technological innovations)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

NOVOZHILOV, A.G., inzh.; ABRAMOVICH, I.I., inzh.; SITNIKOV, L.P., red.; SOSINA, A.L., tekhn. red.

[Collection of inventions; mechanization of loading and unloading operations] Sbornik izobretenii; mekhanizatsiia pogruzochno-razgruzochnykh rabot. Moskva, TSentr. biuro tekhn. informatsii, 1961. 378 p. (MIRA 15:3)

1. Russia (1923- U.S.S.R.) Komitet po delam izobretenii i otkrytii.
(Loading and unloading--Technological innovations)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

MARGOLIN, L.V., inzh.; SITNIKOV, L.P., red.; KUDRYAVITSKAYA, A.A., tekhn. red.

[Collection of inventions; hoisting and transporting machinery for agriculture]Sbornik izobretenii; pod"emno-transportnye sredstva dlia sel'skogo khoziaistva. Moskva, TSentr. biuro tekhn.informatsii, 1962. 67 p. (MIRA 16:2)

1. Russia (1923- U.S.S.R.)Komitet po delam izobreteniy i otkrytiy.

(Agricultural machinery)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

CHERNYAYEV, I.V., inzh.; SITNIKOV, L.P., red.; KURILKO, T.P., tekhn. red.

[Collection of Soviet inventions; power engineering in agriculture] Sbornik otechestvennykh izobretenii; energetika sel'skogo khoziaistva. Moskva, TSentr. biuro tekhn. informatsii, 1962. 71 p. (MIRA 16:7)

1. Russia (1923- U.S.S.R.) Komitet po delam izobreteniy i otkrytiy.
(Agricultural machinery) (Electricity in agriculture)
(Technological innovations)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SYSOYEV, P.V., inzh., **red.**; **CHIKHACHEV, N.A.**, inzh., red.; KRASHENINNIKOVA, G.V., inzh., nauchnyy red.; PROSKURYAKOV, A.V., inzh., red.; UTKIN, A.V., inzh., red.; SUKHAREVA, R.A., red.; SITNIKOV, L.P., red.; KUDRYAVITSKAYA, A.A., tekhn. red.

[The established classes of patent licenses and certificates granted to Soviet inventors; an index divided into subclasses, groups, and subgroups]Ukazatel' klassov avtorskikh svidetel'stv i patentov, vydavaemykh v SSSR, s podrazdeleniem ikh na podklassy, gruppy i podgruppy. Moskva, TSentr. biuro tekhn. informatsii, 1962. 820 p. (MIRA 15:11)

1. Russia (1923- U.S.S.R.)Komitet po delam izobreteniy i otkrytiy.

(Patent licenses)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

99736

S/120/62/000/001/031/061
E192/E382

74340

AUTHORS: Baglay, R.D. and Sitnikov, L.S.

TITLE: Silicon Zener diodes under energy-balance operating conditions

PERIODICAL: Pribory i tekhnika eksperimenta, no. 1, 1962, 132 - 133

TEXT: Silicon Zener diodes can easily be temperature-compensated, in which case their stability can be as high as 0.004% for the temperature range from 10 - 50 °C (Ref. 1 - J.A. Chandler - Electronic Engng., 1960, no. 2, 78). However, these diodes, when used as reference-voltage sources under pulsed conditions, suffer from the disadvantage that a comparatively large thermal voltage drift occurs during the first few minutes after switching-on. It is suggested that this difficulty can be overcome by feeding a suitable current into the diode in the forward direction during the off-period. The current should be such that the power dissipated in the diode when operating as a reference-voltage source and when conducting

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S/120/62/000/001/031/061
E192/E382

Silicon Zener diodes ....

in the forward direction should be equal. It was found experimentally that by employing this method the thermal drift could be reduced to 100 μV. Diodes operated in this manner can be used in digital automatic compensators and for generating rectangular pulses of high-amplitude stability. There are 3 figures.

ASSOCIATION: Institut avtomatiki i elektrometrii SO AN SSSR (Institute of Automatics and Electrometry of the SO AS USSR)

SUBMITTED: June 5, 1961

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

SITNIKOV, L.S.; UTYAKOV, L.L.

Some possibilities for creating systems with many stable states. Trudy Inst. avtom. i elektrometr. SO AN SSSR no.7:32-41 '64. (MIRA 18:1)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 37682-65

ACCESSION NR: AT5008588 S/3005/64/000/007/0032/0041

4
B+1

AUTHOR: Sitnikov, L.S.; Utyakov, L.L.

TITLE: Some possible structures of systems with several stable states

SOURCE: AN SSSR. Sibirskoye otdeleniye. Institut avtomatiki i elektrometrii. Trudy, no. 7, 1964. Elektricheskiye tsepi i elementy izmeritel'nykh informatsionnykh sistem (Electric circuits and elements of measuring information systems), 32-41

TOPIC TAGS: scaling circuit, multiply stable circuit, stable state, positive feedback, quadrupole circuit

ABSTRACT: In the past, the construction of devices with several stable states was based on consecutive joining of binary triggering elements. Consequently, such circuits were characterized by a large number of tubes and transistors. The present paper explores the feasibility of systems in which the number of stable states does not depend on the number of tubes or transistors. Such circuits are possible if one utilizes nonlinear elements having several decreasing segments along their respective volt-current characteristics; with n such segments with negative slopes one can establish n + 1 stable states. In practice, one has merely, by means of positive feedback, to complete the loops of quadrupole circuits whose amplitude characteristics consists of several alternating segments with

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L 37682-65

ACCESSION NR: AT5008588

amplification factors larger and smaller than one, respectively. The authors describe several such circuits with three or more stable equilibria based on the potential trigger principle and with anode-grid couplings. Fig. 1 of the Enclosure illustrates the case with three stable states. Orig. art. has: 1 formula, 10 figures, and 3 tables.

ASSOCIATION: Institut avtomatiki i elektrometrii, Sibirskoye otdeleniye AN SSSR (Institute of Automation and Electrometry, Siberian Division, AN SSSR)

SUBMITTED: 00Oct61 ENCL: 01 SUB CODE: EC, IE

NO REF SOV: 003 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

ACCESSION NR: AP4045914 S/0119/64/000/009/0001/0003

AUTHOR: Sitnikov, L. S. (Engineer); Utyakov, L. L. (Engineer)

TITLE: Frequency characteristics used for designing multistable systems

SOURCE: Priborostroyeniye, no. 9, 1964, 1-3

TOPIC TAGS: computer, computer circuitry, computer switching, automatic control, automatic control design, automatic control system, automatic control theory

ABSTRACT: A cascade of four units 1—2—3—4 is considered as a multistable system suitable for use in automatic-control and computers; 1 — a voltage-to-frequency converter; 2 — a frequency-to-voltage converter, i.e., a quadripole with a specified comb-type amplitude-frequency characteristic; 3 — a detector with a smoothing filter whose output d-c voltage is proportional to the input-voltage amplitude; 4 — a d-c amplifier. The amplitude characteristic

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ACCESSION NR: AP4045914

$U_{out} = \varphi(U_{in})$ consists of alternating segments having gains $k > 1$ and $k < 1$; the system is provided with a positive-feedback loop. The number of stable states is independent of the number of the components used; it is determined only by the tuning frequency band of the oscillator, the system gain, and the filter characteristic. The theory was verified by an electronic circuit, containing 2 tubes and 1 transistor, which had 6 stable states. Orig. art. has: 5 figures, 6 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: DP, IE NO REF SOV: 000 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

VISHNEVSKIY, A.P.; SITNIKOV, L.S.; UTYAKOV, L.L.

Frequency triggers. Trudy Inst. avtom. i elektrometr. SO AN SSSR no.9:80-87 '64. (MIRA 17:11)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 41184-65

ACCESSION NR: AP4044343 S/0286/64/000/013/0081/0081

AUTHOR: Vishnevskiy, A. P.; Krichevskaya, V. L.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: An accumulating impulse counter. Class 42, No. 163810

SOURCE: Byulleten' izobreteniy i tovarny*kh znakov, no. 13, 1964, 81

TOPIC TAGS: impulse counter, capacitance, spectrotron

ABSTRACT: This Author Certificate presents a capacitive accumulating impulse counter (see Fig. 1 of the Enclosure), utilizing a spectrotron as an element for fixing the position of the circuit. This feature enlarges the frequency range of the impulse count and maintains sustained stability in counting infrequent and random impulses. Orig. art. has: 1 figure.

ASSOCIATION: Institut matematiki i vy*chislitel'ny*y tsentr Sibirskogo otdeleniya AN SSSR (Institute of Mathematics and Computer Center, Siberian Division, AN SSSR)

SUBMITTED: 20Mar63 ENCL: 01

SUB CODE: EC NO REF SOV: 000 OTHER: 000

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L 41184-65
ACCESSION NR: AP4044343

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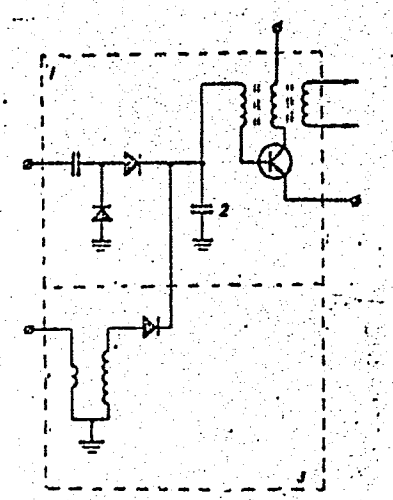

Fig. 1. 1- counter; 2- capacitance; 3- spectrotron.

Card 2/2

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L 21089-65 EWT(1)/EEC(b)-2/EED-2/EWA(h) Peb ASD(a)-5/AFMD(p)/AFETR/AFTC(b)/RAEM(d)/RAEM(i)/ESD(c)/ESD(dp)

ACCESSION NR: AP5001988 S/0020/64/159/006/1280/1283

AUTHOR: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: Synthesis of elements with many stable states on the basis of a nonlinear two-port with nonmonotonic response curve

SOURCE: AN SSSR. Doklady, v. 159, no. 6, 1964, 1280-1283

TOPIC TAGS: network synthesis, circuit theory, computer component, multiple state circuit

ABSTRACT: The author first shows qualitatively that the system shown in Fig. 1 of the enclosure and consisting of a nonlinear two-port (φ) and a linear feedback network (β), will have a stable state whenever the plot of the nonlinear two-port crosses the feedback line with a slope smaller than the slope of the line. Since elements with many (more than 2) stable states would be quite useful for computer memory applications, but simple nonlinear two-port networks with sawtooth-like or staircase-like characteristics (which would provide the required crossing of the feedback line) are not readily available, the author outlines briefly a meth-

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L 21089-65

ACCESSION NR: AP5001988

od of synthesizing such a network. An example of such a system, with its block and schematic diagrams and amplitude characteristic, is shown in Fig. 2. The most important advantage of this approach, over the customary method of cascading binary units, is that the number of stable states can be increased within a certain range without the use of additional equipment. Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: Institut matematiki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Mathematics, Siberian Branch, Academy of Sciences, SSSR)

SUBMITTED: 10May64 ENCL: 02

SUB CODE: EC, DP NR REF SOV: 001 OTHER: 000

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ACCESSION NR: AP5001988

ENCLOSURE: 01

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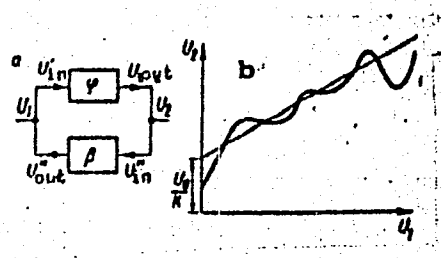

Fig. 1. a - general block diagram of element with many stable states based a nonlinear two-port; b - graphic solution of the system of equations describing the block diagram.

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ACCESSION NR: AP5001988

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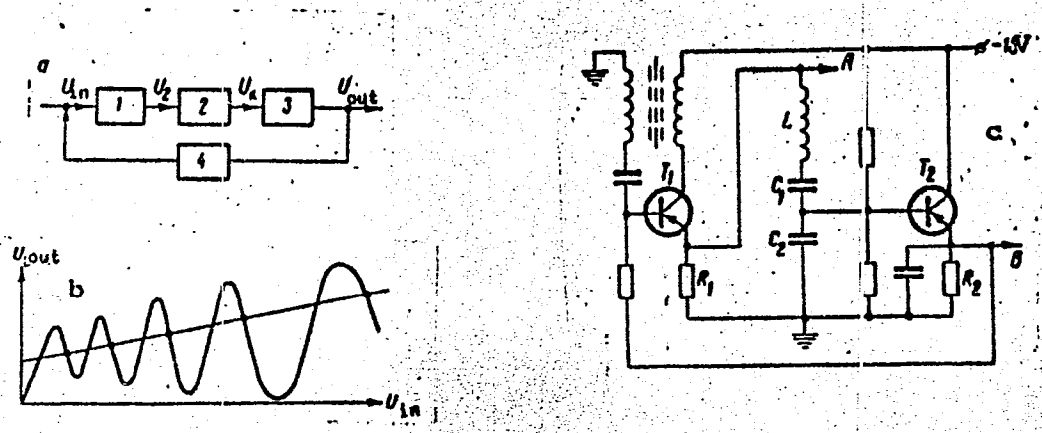

Fig. 3. System with several stable states: a - block diagram, b - amplitude characteristic, 3- schematic diagram

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42028-65 EWT(1)/EEC(b)-2/EWA(h) Pm-4/Pn-4/Pac-4/Pi-4/Peb/Pj-4 JM

UR/0286/65/000/007/0130/0131

ACCESSION NR: AP5010946

AUTHORS: Sigorskiy, V. P.; Fomin, K. G.; Sitnikov, L. S.; Utyakov, L. L.

40
B

TITLE: Multistable unit. Class 42, No. 169876

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 130-131

TOPIC TAGS: klystron 25

ABSTRACT: This Author Certificate presents a multistable unit. To increase the response rate with amplitude state indication, it is made of a reflex klystron whose cavity is connected through a pickup loop to a rectifier head (see Fig. 1 on the Enclosure). The rectifier head is connected to a wide-band matching two-terminal pair network whose output is connected between the repeller plate and cathode of the klystron. Orig. art. has: 1 diagram.

ASSOCIATION: none

SUB CODE: EC

SUBMITTED: 14Jan63

ENCL: 01

NO REF SOV: 000

OTHER: 000

Card 1/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42028-65

ACCESSION NR: AP5010946 ENCLOSURE: 01

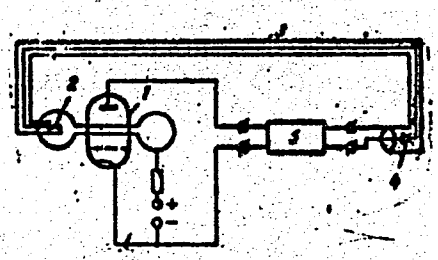

Fig. 1. Multistable unit. 1 - reflex klystron; 2 - pickup loop; 3 - cable; 4 - rectifier head; 5 - matching two-terminal pair network

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42042-65 EWT(1)/EWA(h) Peb GG

ACCESSION NR: AP5010948 UR/0286/65/000/007/0131/0132

AUTHOR: Boyko, A. N.; Sigorskiy, V. P., Sitnikov, L. S.; Utyskov, L. L.

TITLE: Reversible counter. Class 42, No. 169879

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 131-132

TOPIC TAGS: reversible counter, counter, pulse counter

ABSTRACT: The proposed reversible counter utilizes a high-stability pulse-phase element. To improve stability, the counter is constructed as shown in Fig. 1 of Enclosure. Orig. art. has: 1 figure. [DW]

ASSOCIATION: Institut matematiki SO AN SSSR (Institute of Mathematics, SO AN SSSR)

SUBMITTED: 04Jun64 ENCL: 01 SUB CODE: EC

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42042-65

ACCESSION NR: AP5010948

ENCLOSURE: 01

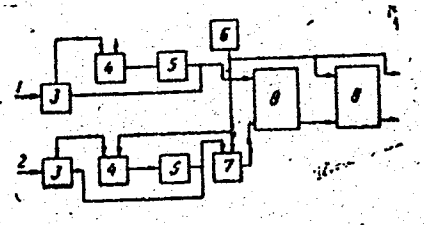

Fig. 1. Reversible counter

1 - Direct-count pulse source; 2 - reverse-count pulse source; 3 - trigger; 4 - AND gate; 5 - shaper; 6 - generator of high-repetition pulses; 7 - anticoincidence circuit; 8 - high-stability pulse-phase element.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42030-65 EWT(1)/EWA(h) Peb

ACCESSION NR: AP5010956 UR/0286/65/000/007/0134/0134

AUTHORS: Boyko, A. N.; Gorodetskiy, V. V.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

13
B

TITLE: Summator. Class 42, No. 169887

15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 134

TOPIC TAGS: summator

ABSTRACT: This Author Certificate presents a summator containing chronotrons, logic "AND" and "OR" circuits, and a transfer shaper circuit. To sum numbers the digital orders of which are represented in the time-pulse form with an arbitrary numerical base, the chronotron storing the digital order of the first term is connected to the chronotron storing the second term and also to the "OR" circuit summing the length of the first term with the unit transfer length (see Fig. 1 on the Enclosure). The output of the "OR" circuit is connected to the "OR" circuit summing the length of the terms and transfer and to the "AND" circuit separating the difference of the sum and the numerical base. The latter two circuits are also connected to the output of the chronotron storing the second term. The output of the circuit summing the length of the terms and transfer is connected to the logic transfer shaper circuit and to the decoupling "OR" circuit whose second input is connected to the "AND"

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L 42030-65

ACCESSION NR: AP5010956

circuit. The output of the "OR" circuit is connected to the chronotron storing the sum. Orig. art. has: 1 diagram.

ASSOCIATION: none

SUBMITTED: 14Jan63 ENCL: 01 SUB CODE: DP

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 42035-65 EWT(1)/EWA(h) Peb

UR/0285/65/000/007/0136/0136

ACCESSION NR: AP5010960

AUTHORS: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: Pulse counter with variable scaling factor. Class 42, No. 169893

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 136

TOPIC TAGS: pulse counter

ABSTRACT: This Author Certificate presents a pulse counter with a variable scaling factor, which contains a multistable unit, its triggering circuit, and a selection circuit. To obtain a variable scaling factor with presetting of the instant of the scaling change and of the initial phase while using a phase-pulse multistable unit, the output of the multistable unit is connected to the first input of the phase selection circuit. The second input of the phase selection circuit is connected to the source of pulses determining the instant of the scaling factor change. The third input is connected to the source of pulses setting the initial phase. The output of the phase selection circuit is connected to the recording input of the multistable element of a given stage and to the counter input of the unit of the following stage. To simplify the counter, the phase selection circuit is made of a core with a rectangular hysteresis loop. The core has four coils; the first two

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ACCESSION NR: AP5010960

input coils are connected in the same way, the third input coil is connected in opposition to the first two, and the fourth coil is the output coil.

ASSOCIATION: Institut matematiki, SO AN SSSR (Institute of Mathematics, SO AN SSSR)

SUBMITTED: 01Jun64 ENCL: 00 SUB CODE: EC

NO REF SOV: 000 OTHER: 000

Card 2/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001550910014-5

L 49263-65

ACCESSION NR: AP5008392 S/0108/64/019/012/0003/0016

4
B

AUTHOR: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: General principles for materialization and application of multistable elements

SOURCE: Radiotekhnika, v. 19, no. 12, 1964, 3-16

TOPIC TAGS: multistable element

ABSTRACT: The principles of operation and chief characteristics are considered of these multistable elements: frequency-harmonic type, nonautonomous frequency-harmonic, pulse-duration, and pulse-phase. The multistable elements are likely to be used in nonbinary scalers, digital-analog and analog-digital converters, d-c voltage quantizers and storages, decimal computers. These characteristic features of the multistable elements are noted: (1) The number of stable states is independent of the circuit complexity and is determined only by its

Card 1/2

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