constants $C>0$, $q>0$ (depending only on $a(x)$) such that for every solution of

$$\int_0^1 a(x)f(x+t)dx = \varphi(t)$$

there holds the estimation

$$\max_{x\in[0,t]} \left| \int_0^x f(s)ds \right| \leq C\, e^{q|t|} \left(\int_0^1 |f(s)|\, ds + \max_{x\in[0,\tau]} |\varphi(x)| \right).$$

Here

$$\tau = \begin{cases} t & \text{for } t<0 \\ 0 & \text{for } 0\leq t\leq 1 \\ t-1 & \text{for } t>1 \end{cases}.$$

For $m>0$ the existence theorem demands the satisfaction of further assumptions which are given. The solution of a homogeneous regular equation of positive rank is developed into a generalized Fourier series. The proof bases on the properties of the introduced characteristic numbers.

LYUBICH, Yu I.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/1 PG - 419
AUTHOR LJUBIČ Ju.I.
TITLE On the fundamental solutions of linear partial differential equations of elliptic type.
PERIODICAL Mat. Sbornik, n. Ser. 39, 23-36 (1956)
reviewed 12/1956

The author proves some theorems on the existence of the fundamental solution (in the large) for the equation $-\sum_{i=1}^{n} \partial^2 u/\partial x_i^2 + c(x)\, u = 0$, $n=2,3$. These theorems mostly are special cases of the well known theorems (compare e.g. F.John, Proc. of the symp. on spectral theory..., Oklahoma-Sillwoter (1951) 113-175). Finally the author proves the equivalence of the existence in spherical regions of the fundamental solution of the equation

$$-\sum_{i=1}^{3} \frac{\partial^2 u}{\partial x_i^2} + cu = \lambda u, \qquad -\infty < \lambda < \infty$$

with the assertion of Courant's theorem on the decrease of eigenvalues with the increase of the region.

AUTHOR: LYUBICH, YU. I. PA - 2908

TITLE: Some TAUBER's Theorems for Generalized FOURIER-Transformations. (Nekotoryye Tauberovy teoremy dlya obobshchennykh preobrazovaniy Fur'ye, Russian)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 1, pp 32 - 35 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: The following problem arises: Should parameters be introduced in the case of kernels $T(N,\lambda)$ of the general type (which occur in the integral $\int_{-\infty}^{\infty} T(N,\lambda)d\alpha(\lambda)$, $(N>0)$) in relation to which it would be possible to speak of a critical value? The critical value sorts out that method from the scale of the single-type summation-methods, which corresponds as closely as possible to the divergence velocity of the integral $\int_{-\infty}^{+\infty} d\alpha(\lambda)$. The maximum number k of derivatives of the kernel inrelation to λ serves as such a parameter and the last of these derivatives has a limited variation.

In the case of the transition to non-integer n (if BOCHNER-STJELTJES-transformations of the $[n+2]$-th order are considered), it is natural to introduce derivatives of a non-integer order. The results found by the author generalize several results found earlier. The

Card 1/2

Some TAUBER's Theorems for Generalized FOURIER-Transformations.

difficulties encountered here depend on the non-local character of the differentiation of a non-integer order and on the assymmetry of the differentiation with respect to a change of sign of the argument. The author confines his investigations, for the sake of simplicity, to formulating kernels of the type $T(N,\lambda) \neq T(N\lambda)$, where $T(\lambda)$ denotes a finite function. Two hypotheses are given for $T(\lambda)$.

Finally, three theorems are written down and proved. With the help of these theorems it is possible to compute the critical value of the parameter k. (No illustration).

ASSOCIATION: Polytechnical Institute Charkow
PRESENTED BY: S.N.BERNSHTEYN, Member of the Academy
SUBMITTED: 5.10.1956
AVAILABLE: Library of Congress

Card 2/2

16(1)

AUTHOR: Lyubich, Yu.I. SOV/140-59-4-13/26

TITLE: On Eigen- and Adjoint Functions of the Differential Operator

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959, Nr 4, pp 94 - 103 (USSR)

ABSTRACT: Let $\sigma(x)$ be of bounded variation on $[-\pi, \pi]$ and is assumed to grow at the ends of $[-\pi, \pi]$. Let D_σ be the differential operator $D_\sigma f(x) = i f'(x)$, generated in $C(-\pi, \pi)$ by the boundary condition

$$(1) \qquad \int_{-\pi}^{\pi} f(x)\, d\sigma(x) = 0$$

The eigenvalues are determined from $S(\lambda) \equiv \int_{-\pi}^{\pi} e^{-i\lambda x}\, d\sigma(x) = 0$

The eigenfunction $e^{-i\lambda_n x}$ and the adjoint functions

$x e^{-i\lambda_n x}, \ldots, x^{\delta_n - 1} e^{-i\lambda_n x}$ correspond to a τ_n-fold, $\tau > 1$,

Card 1/4

On Eigen- and Adjoint Functions of the Differential Operator 307/140-59-4-13/26

eigenvalue λ_n. Because of (1) the system E_{σ} of the eigen- and adjoint function of D_{σ} is not complete in the space $C(-\tilde{\pi}, \tilde{\pi})$. Let E'_{σ} be the orthogonal complement of E_{σ} in the space $V(-\tilde{\pi}, \tilde{\pi})$ of the linear functionals on $C(-\tilde{\pi}, \tilde{\pi})$. def E_{σ} = dim E'_{σ} is denoted as the defect of E_{σ}. In order that $\tau(x) \in V(-\tilde{\pi}, \tilde{\pi})$ belongs to E'_{σ}, it is necessary and sufficient that all the roots of $S(\lambda) = 0$ are also roots of $T(\lambda) = \int_{-\tilde{\pi}}^{\tilde{\pi}} e^{-i\lambda x} d\tau(x) = 0$ and that they occur in $T(\lambda)$ with at least the same multiplicities as in $S(\lambda)$. Let Q_{σ} be the linear manifold of those quotients $Q(\lambda) = T(\lambda) : S(\lambda)$, which are entire functions. Let $Q(\lambda) \in Q_{\sigma}$ and $Q(\lambda) = \sum_{0}^{N} q_k \lambda^k$, $N \leq \infty$;

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the magnitude $\nu_\sigma = 1 + \max_{Q(\lambda)\in Q_\sigma} N$ is denoted as the order of Q_σ.

Theorem : The defect of the system E_σ is equal to the order of Q_σ .

Theorem : In order that def $E_\sigma = \delta$, $1 < \delta < \infty$ holds it is necessary and sufficient :

1.) $\sigma(x)$ possesses an absolutely continuous derivative of the order $\delta - 2$ and $\sigma^{(\delta-1)}(x)$ is of bounded variation.

2.) If $\delta > 2$, then it is $\sigma^{(k)}(\pm\pi) = 0$, $k=1,\ldots,\delta-2$.

3.) If $\tilde{\sigma}^{(\delta-1)}(x)$ is a function of bounded variation which is equal to $\sigma^{(\delta-1)}(x)$ in those points of $(-\pi,\pi)$, where $\sigma^{(\delta-1)}(x)$ exists, and which vanishes for $x = \pm\pi$, then it is def $E_{\tilde{\sigma}^{(\delta-1)}} = 1$.

Theorem : If for certain $p \geq 0$, $q \geq 0$ there exist the limits

On Eigen- and Adjoint Functions of the Differential Operator SOV/140-59-4-13/26

$$L = \lim_{h \to o} \frac{\sigma(\tilde{\pi}) - \sigma(\tilde{\pi}-h)}{h^p}, \quad l = \lim_{h \to o} \frac{\sigma(-\tilde{\pi} + h) - \sigma(-\tilde{\pi})}{h^q}$$

and if these limits are different from zero, then it is

$$\text{def } E_\sigma \leq \min \left\{ [p] + 1 , [q] + 1 \right\}.$$

B.Ya. Levin is mentioned in the paper.
There are 3 references, 1 of which is Soviet, 1 German, and 1 American.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

SUBMITTED: May 8, 1958

Card 4/4

LYUBICH, Yu.I.

Inequalities between the degrees of an linear operator. Izv. AN SSSR. Ser. mat. 24 no. 6:825-864 N-D '60. (MIRA 14:1)

1. Predstavleno akademikom A.N. Kolmogorovym.
(Operators (Mathematics))

LYUBICH, Yu.I.

Theorem of the uniqueness of the solution of an abstract Cauchy problem. Usp. mat. nauk 16 no.5:181-182 S-O '61. (MIRA 14:9)

(Differential equations, Partial)

68595

~~16(1)~~ 16,3400 16.4600 S/020/60/130/05/004/061

AUTHOR: Lyubich, Yu.I.

TITLE: Conditions for the Uniqueness of the Solution to Cauchy's Abstract Problem

PERIODICAL: Doklady Akademii nauk SSSR,1960,Vol 130,Nr 5,pp 969-972 (USSR)

ABSTRACT: A vector function $x(t)$ $(t \geqslant 0)$ is sought in the Banach space which satisfies the equation

$$(1) \quad \frac{dx(t)}{dt} = Ax(t) \quad (t>0)$$

and the initial condition $x(0) = x_0$, where A is a linear operator.

$x(t)$ $(t \geqslant 0)$ is called weak (strong) solution of the problem (1)-(2), if 1.) it is weakly (strongly) absolutely continuous and almost everywhere on $t>0$ weakly (strongly) differentiable, 2.) it satisfies (1) almost everywhere, 3.) it is weakly (strongly) continuous for $t = 0$, 4.) it satisfies (2).

Theorem 1: If on a ray L of the positive semiaxis the spectrum of the operator A is absent, and if the resolvent R_λ of A satisfies the condition

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Conditions for the Uniqueness of the Solution to Cauchy's Abstract Problem

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$$(3) \qquad \sigma = \overline{\lim_{\lambda \to +\infty}} \frac{\ln \| R_\lambda \|}{\lambda} < \infty ,$$

then (1) - (2) cannot possess two different weak solutions.
Theorem 2: Let $\varrho(\lambda)$ $(\lambda > 0)$ be a positive continuous function, for $\lambda \to +\infty$ let $\frac{\ln \varrho(\lambda)}{\lambda} \to +\infty$. Then there exists a Hilbert space and there a linear operator A, such that :
a.) the positive semiaxis possesses no spectrum of A and it is

$$(7) \qquad \| R_\lambda \| \leqslant \varrho(\lambda)$$

for sufficiently large $\lambda > 0$,
b.) the problem (1) - (2) possesses a nontrivial strong solution with $x_0 = 0$. - There are 3 references, 1 of which is Soviet, 1 Dutch, and 1 German.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: October 12,1959, by S.N. Bernshteyn, Academician
SUBMITTED: October 11,1959

68795
~~16(1)~~ 16.4600 S/020/60/131/01/004/060

AUTHORS: Lyubich, Yu.I., Matsayev, V.I.

TITLE: On the Spectral Theory of Linear Operators in Banach Space

PERIODICAL: Doklady Akademii nauk SSSR,1960,Vol 131,Nr 1,pp 21-23 (USSR)

ABSTRACT: A linear operator A in a Banach space is called S-operator, if 1.) its spectrum lies on the real axis, 2.) to every finite interval Δ of the real axis there corresponds a subspace $L(\Delta)$ invariant under A which has the properties : a.) A is everywhere defined and bounded in $L(\Delta)$ b.) the spectrum of the part of A induced on $L(\Delta)$ consists of the intersection of the spectrum of A with Δ and possibly of the ends of Δ c.) every invariant subspace, on which A is everywhere defined and bounded and possesses a part of Δ as the spectrum, lies in $L(\Delta)$; 3.) the system of the invariant subspaces $L(\Delta)$ which corresponds to an arbitrary covering of the real axis by finite intervals is complete.
A is called locally correct, if 1.) A is a closed operator with a dense domain of definition D_A ; 2.) the Cauchy problem

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On the Spectral Theory of Linear Operators in Banach Space

$i\frac{dx(t)}{dt} = Ax(t)$ $(-\infty < t < \infty)$, $x(0) = x$ possesses for every $x \in D_A$ a unique solution $s(t) = U_t x$ in the class of strongly differentiable vector functions ; 3.) the operator U_t is uniformly bounded in every finite t-interval.

Theorem 1 : If A is locally correct and if

$$(1) \quad \int_{-\infty}^{\infty} \frac{\ln \| U_t \|}{1 + t^2} dt$$

converges, then A is an S-operator.

Theorem 2 : Let the measurable locally bounded function $\alpha(t) \geq 1$ $(-\infty < t < \infty)$ satisfy the condition $\alpha(t+s) \leq \alpha(t)\alpha(s)$ $(-\infty < t, s < \infty)$. If here it is

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On the Spectral Theory of Linear Operators in Banach Space

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S/020/60/131/01/004/060

$\int_{-\infty}^{\infty} \frac{\ln \alpha(t)}{1+t^2} dt = \infty$, then it exists a Hilbert space and on it a locally correct operator A with a real spectrum which is no S-operator, such that it holds $\| U_t \| \leq \alpha(t) \quad (-\infty < t < \infty)$.

Theorem 3 : Let A be a closed operator with a real spectrum which is defined on a dense domain. If it is

(3) $\int_{\sigma} \ln \ln M(\delta) d\delta < \infty$,

then A is an S-operator. Here it is $M(\delta) = \sup_{|\mathrm{Im}\,\lambda| \geq \delta} \| R_\lambda \|$,

where R_λ is the operator resolvent.

V.A. Marchenko, O.I. Inozemtseva, and L.I. Ronkin are mentioned.

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On the Spectral Theory of Linear Operators in Banach Space

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There are 9 references, 6 of which are Soviet, 2 French, and 1 American.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: November 16,1959, by V.I. Smirnov, Academician

SUBMITTED: November 13,1959

Card 4/4

S/020/60/132/03/18/066

AUTHOR: Lyubich, Yu.I.

TITLE: Almost Periodic Functions in the Spectral Analysis of Operators

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 3, pp. 518-520

TEXT: Let A be a completely continuous linear operator in the weakly complete Banach space (compare (Ref. 2)), especially in the reflexive Banach space, where $\sup_{-\infty<t<\infty} \| e^{iAt} \| < \infty$. At the example of the operator A the author demonstrates the general scheme for the application of harmonic analysis to the spectral theory of operators ; the present paper completes (Ref. 1) Thus several spectral properties can be obtained, e.g. it can be shown that the system of eigenvectors of A is complete
There are 4 references : 2 Soviet, 1 American and 1 Polish.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo (Khar'kov State University imeni A.M. Gor'kiy)

PRESENTED: January 28, 1960, by V.I. Smirnov, Academician

SUBMITTED: January 26, 1960

Card 1/1

S/044/62/000/003/012/092
C111/C222

AUTHOR: Lyubich, Yu. I.

TITLE: Some theorems of Tauberian type for generalized Fourier transforms

PERIODICAL: Referativnyy zhurnal, Matematika, no. 3, 1962, 11-12, abstract 3B54. ("Zap. Matem. otd. fiz.-matem. fak. Khar'kovsk. un-ta i Khar'kovsk. matem. o-va", 1960, 26, ser. 4, 105-142)

TEXT: Let $\alpha(\lambda)$ $(-\infty < \lambda < \infty)$ be a function which is of bounded variation on every finite interval and fulfills the condition

$$\overline{\lim_{a \to \infty}} |a|^{-n} \operatorname*{var}_{a}^{a+r} \{\alpha(\mu)\} < \infty .$$

Let $F_h^{(\infty)}$ $(h > 0)$ be the set of all infinitely often differentiable functions which are equal to zero for $|x| > R$. The following question arose in papers by V. A. Marchenko and B. M. Levitan on the spectral theory of differential operators:

Let there exist for $\alpha(\lambda)$ such a $h > 0$, such a function $G(x)$ summable on

Card 1/3

Some theorems of Tauberian type ...

every finite interval and such a number $m(0 \leq m \leq n)$ that

$$\int_{-\infty}^{\infty} E_f(\lambda)\, d\alpha(\lambda) = \int_{-\infty}^{\infty} f^{(m)}(x) G(-x)\, dx$$

where $E_f(\lambda)$ is the Fourier transform of $f(x)$. What is the asymptotic behavior of $\alpha(\lambda)$ when $|\lambda| \to \infty$, i. e., the behavior of the integral

$$\int_{-N}^{N} d\alpha(\lambda)$$

for $N \to \infty$? Because this integral has in general no limit, it is replaced by the more general expression

$$\int_{-\infty}^{\infty} T(N, \lambda)\, d\alpha(\lambda)$$

with a certain kernel $T(N, \lambda)$. B. M. Levitan examined the case of the Riesz kernel

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S/044/62/000/003/012/092
C111/C222

Some theorems of Tauberian type ...

$$T(N,\lambda) = \begin{cases} \left(1 - \frac{\lambda^2}{N^2}\right)^k, & |\lambda| < N \quad (k \geq 0) \\ 0, & |\lambda| \geq N \end{cases}$$

and V. A. Marchenko examined the case of the general kernel. The author generalizes the V. A. Marchenko results for non-integral m and N. Additional difficulties result thereby, which are caused by the non-local character of the fractional differentials.

[Abstracter's note: Complete translation. The name of the reviewer is B. M. Levitan.]

Card 3/3

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S/042/62/017/001/003/005
B112/B108

AUTHOR: Lyubich, Yu. I.

TITLE: Remark on the throughput of a noise-free discrete link

PERIODICAL: Uspekhi matematicheskikh nauk, v. 17, no. 1 (103), 1962, 191-198

TEXT: A problem of information theory is solved with the following algebraic theorem: If the coefficients $\alpha_{ki}^{(s)}$ of a system of linear homogeneous finite-difference equations

$$\varphi_k(t) = \sum_{i=1}^{\mu} \sum_{s=1}^{\nu} \alpha_{ki}^{(s)} \varphi_i(t-s) \qquad (k = 1,2,\ldots,\mu;\ t = \nu, \nu+1,\ldots)$$

are nonnegative and if at least one coefficient in each equation is positive, the following statements will be valid: 1. There is at least one positive root of the characteristic equation

$$\det\left(\sum_{s=1}^{\nu} \alpha_{ki}^{(s)} \lambda^{-s} - \delta_{ki}\right) = 0$$

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S/042/62/017/001/003/005
B112/B108

Remark on the throughput of...

2. The greatest positive root r of the characteristic equation has the greatest absolute value among all the roots. 3. Let h be the number of roots of the characteristic equation which lie on the circle $|\lambda| = r$. If the functions $\varphi_k(t)$ are nonnegative and if there are numbers

$t_k \geqslant \max(h-1, \nu-1)$ $(k = 1,2,\ldots,\mu)$ for which $\varphi_k(t) > 0$, then

$$\lim_{t\to\infty} \left(\log \sum_{\tau=0}^{t} \sum_{k=1}^{\mu} \varphi_k(\tau)/t\right)$$

exists and is equal to $\log^+ r = \max(\log r, 0)$. There are 6 references: 1 Soviet and 5 non-Soviet. The reference to the English-language publication reads as follows: C. E. Shannon, A mathematical theory of communication, Bell Syst. Techn. Journ. 27 (1948), 379-423. F. P. Gantmakher (Teoriya matrits, M., Gostekhizdat, 1953) is mentioned.

SUBMITTED: March 14, 1960

Card 2/2

LYUBICH, Yu.I.

Remark on the capacity of a discrete channel with no noise. Usp. mat.nauk 17 no.1:191-198 Ja-F '62. (MIRA 15:3)
(Information theory)

LYUBICH, Yu.I.; MATSAYEV, V.I. (Khar'kov)

Operators with separable spectrum. Mat. sbor. 56 no.4:433-468 Ap '62. (MIRA 15:7)

(Calculus of operations)
(Transformations (Mathematics))

LYUBICH, Yu.I. (Khar'kov)

Existence of fundamental solutions of linear elliptic equations of the second order "on a wider scale." Mat.sbor. 57 no.1:45-58 My '62. (MIRA 16:5)
(Differential equations, Partial) (Existence theorems)

LYUBICH, Yu.I.

Conditions for the completeness of a system of eigenvectors of a correct operator. Usp.mat.nauk 18 no.1:165-171 Ja-F '63. (MIRA 16:2)

(Operators (Mathematics)) (Vector analysis)

LYUBICH, Yu. I.

Density conditions for an initial manifold in the abstract Cauchy problem. Dokl. AN SSSR 155 no. 2:262-265 Mr '64. (MIRA 17:5)

1. Khar'kovskiy gosudarstvennyy universitet im. ... M. Gor'kogo. Predstavleno akademikom S. N. Bernshteynom.

LYUBICH, Yu.I.

Generalization of the localization principle. Dop.zap.KHGU 115:127-129 '61. (MIRA 17:5)

LYUBICH, Yu.I.

Operator norms of matrices. Usp. mat. nauk 18 no.4:161-164 Jl-Ag '63.
(MIRA 16:9)

ACCESSION NR: AP4029379 S/0199/64/005/002/0337/0355

AUTHOR: Lyubich, Yu. I.

TITLE: Estimates for the optimal determination of interminate autonomic automata

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 5, no. 2, 1964, 337-355

TOPIC TAGS: automaton theory, automaton, turning machine, Boolean matrix, autonomic automaton, automaton decomposition

ABSTRACT: An interminate autonomic automaton U with states σ_1 σ_2, . . . σ_n is a many-valued mapping of a set S of states into itself:

$$\sigma_i \to S_i; \quad S_i \subset S \quad (i = 1, 2, \ldots, n). \tag{1}$$

The map (1) canonically extends to the system Σ of all subsets of the set S:

$$M \to M' = \bigcup_{\sigma_i \in M} S_i (M \in \Sigma). \tag{2}$$

The representation (2) is already a determinate automatic automaton $\tilde{U}$ with set of states Σ. The transition from U to $\tilde{U}$ is naturally called a determination of the automaton U.

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ACCESSION NR: AP4029379

However the determination is not, in general, optimal in the sense that it has superfluous states. Assume that in U there is chosen an initial state σ_1. Then for an optimal determination of U, it will prove necessary to delete all those states of $\widetilde{U}$ which are not accessible from the initial state $\{\sigma_1\}$. Let the number of states of the resulting automaton be devoted d(U). The present paper proves the estimate

$$d(\mathfrak{U}) < f(n), \tag{3}$$

where f(n) is a certain arithmetic function satisfying

$$\lim_{n\to\infty} \frac{\ln f(n)}{n} = 0. \tag{4}$$

Orig. art. has: 70 formulas.

ASSOCIATION: none

SUBMITTED: 16Feb63 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: MM NO REF SOV: 005 OTHER: 007

Card 2/2

ACCESSION NR: AP4010747 S/0020/64/154/001/0041/0044

AUTHOR: Lyubich, Yu. I.

TITLE: Solvability conditions for an abstract Cauchy problem

SOURCE: AN SSSR. Doklady*, v. 154, no. 1, 1964, 41-44

TOPIC TAGS: Cauchy problem, abstract Cauchy problem, Banach space, Laplace transform, finite interval, linear operator differential equation

ABSTRACT: The differential equation

$$\frac{dx(t)}{dt} = Ax(t) \quad (0 \leqslant t < T; T \leqslant \infty) \tag{1}$$

with a linear operator A in the Banach space is examined, and the question is posed: for which of vectors x_0 is there a solution to equation (1) which will satisfy the initial condition

$$x(0) = x_0. \tag{2}$$

Card 1/3

ACCESSION NR: AP4010747

The classical Laplace transform was generalized in order to use it in the finite time interval (0,T) as well as in the infinite interval (0, ∞) without restricting growth. Let $f(\lambda)$ be a locally integrable vector function, defined for all sufficiently large $\lambda > 0$, as, for instance, $\lambda \geq \lambda_f$. It is assumed that the function $f(\lambda)$ belongs to the class Λ_T^f $(0 < T \leq \infty)$ if there exists such a vector function $\tilde{f}(\tau,t)$ $(0 \leq \tau \leq t, 0 < t < T)$ integrable in τ, so that for each $t \in (0,T)$ there is the representation

$$f(\lambda) = \int_0 \tilde{f}(\tau, t)\, e^{-\lambda\tau}\, d\tau + \varepsilon(\lambda, t) \tag{3}$$

with the last term $\varepsilon(\lambda,t)$ satisfying the condition

$$\overline{\lim_{\lambda \to +\infty}} \lambda^{-1} \ln \| \varepsilon(\lambda, t) \| \leqslant -t. \tag{4}$$

For the given function $f(\lambda) \in \Lambda_T$ the local original Laplacian $\tilde{f}(\tau,t)$ is determined uniquely and does not depend upon the parameter t. If the vector x_0 is such that $R\lambda x_0 \in \Lambda_T$, then the prob-

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ACCESSION NR: AP4010747

lem (1)-(2) has a smooth solution. Orig. art. has: 10 equations.

ASSOCIATION: Khar'kovskiy gosudarstvenny*y universitet im. A.M. Gor'kogo (Khar'kov State University)

SUBMITTED: 17Jul63	DATE ACQ: 10Feb64	ENCL: 00
SUB CODE: MM	NO REF SOV: 003	OTHER: 003

Card 3/3

LYUBICH, Yu.I.

Estimates of the number of states arising in determining an indeterminate autonomous automation. Dokl. AN SSSR 155 no.1: 41-43 Mr '64. (MIRA 17:4)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo. Predstavleno akademikom A.N.Kolmogorovym.

LYUBICH, Yu.I.

Periodicity properties of events represented in finite automata. Ukr.mat.zhur. 16 no. 3:396-402 '64. (MIRA 17:7)

LYUBICH, Yu.I.

Remarks on K. Berahle's problem. Mat. zhur. 5 no.1 [illegible]
Jl-Ag '64. (MIRA 17:8)

L 24249-65 EWT(d) IJP(c)
ACCESSION NR: AP4022950 S/0020/64/155/001/0041/0043

AUTHOR: Lyubich, Yu. I.

TITLE: Estimates of the number of states appearing during determination of undetermined autonomous automata

SOURCE: AN SSSR, Doklady*, v. 155, no. 1, 1964, 41-43

TOPIC TAGS: control theory, automatic control, autonomous control device, autonomous automaton, switching theory, switching circuit, finite automaton

ABSTRACT: Let $\mathfrak{A}$ be an undetermined autonomous automaton with states $\sigma_1, \sigma_2, \ldots, \sigma_n$, i.e., an multiple-values mapping of a set S of states into itself:

$$\sigma_i \to S_i, \quad S_i \subset S \quad (i = 1, 2, \ldots, n). \qquad (1)$$

One of the states, say σ_1, is fixed as an initial state. The mapping (1) immediately extends to the system Σ of all subsets of the set S:

$$M \to M' = \bigcup_{\sigma_i \in M} S_i \quad (M \in \Sigma). \qquad (2)$$

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Restriction of the mapping (2) to a smallest invariant subsystem $\Sigma_0 \subset \Sigma$ that is invariant under this mapping and contains the "initial" set $\{\sigma_1\}$ leads to some determined autonomous automaton $\mathfrak{A}_0$. It is natural to call the transition from $\mathfrak{A}$ to $\mathfrak{A}_0$ determination of the automaton (for the initial automaton $\mathfrak{A}$). The author proves a number of propositions about the number of states $d(\mathfrak{A})$ in the automaton $\mathfrak{A}_0$ including Theorem 1: If $\mathfrak{A}$ is a primitive automaton, then

$$d(\mathfrak{A}) \leqslant n^2 - 2n + 3$$

(this theorem is a direct consequence of a result of H. Wielandt): Theorem 2: if $\mathfrak{A}$ is an imprimitive automaton with index of imprimitivity h, then

$$d(\mathfrak{A}) \leqslant \frac{1}{h}(n^2 - 2nh + 4h^2),$$

and Theorem 3: for any automaton

$$d(\mathfrak{A}) < m(h_1, h_2, \ldots, h_r) + \sum_{k=2}^{r} m(h_1, h_2, \ldots, h_k) + \sum_{k=1}^{r} \frac{1}{h_k}(\nu_k^2 - 2\nu_k h_k + 4h_k^2),$$

where $\nu_1, \nu_2, \ldots, \nu_r$ are the number of states in the indecomposable components

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ACCESSION NR: AP4022950

of the automaton $\mathcal{A}$, $h_1, h_2, \ldots, h_r$ are their indices of imprimitivity, and $m(h_i, h_j)$ denotes the least common multiple. Orig. art. has: 17 equations

ASSOCIATION: Kharkovskiy gosudarstvenny*y universitet im. A. M. Gor'kogo (Khar'kov State University)

SUBMITTED: 14Nov63 ENCL: 00 SUB CODE: IE, MA

NR REF SOV: 005 OTHER: 005

Card 3/3

LYUBICH, Yu.I.

General theorems on quadratic relaxation. Dokl. AN [illegible] 161 no.6:
1274-1277 Ap '65. (MIRA 18:5)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo
Submitted October 20, 1964.

LYUBICH, Yu.I.; [illegible] B.N.

Estimating [illegible] ne-letter alphabet.
Sib. mat. [illegible] Ju-F '62.

(MIRA 18:4)

LYUBICH, Yu.I. (Khar'kov)

Algorithm for calculating the spectral radius of an arb trary matrix. Ukr. mat. zhur. 17 no.3:128-135 '65.

(MIRA 18:6)

LYUBICH, Yu.I.

A class of operators in Banach space. Usp. mat. nauk 20 no.6: 131-133 N-D '65. (MIRA 18:12)

1. Submitted Feb. 7, 1964.

LYUBICH, Yu.I.; TKACHENKO, V.A.

Uniqueness and approximation theorems for a local Laplace transformation. Dokl. AN SSSR 164 no.2:273-276 S '65. (MIRA 18:9)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo i Khar'kovskiy politekhnicheskiy institut im. V.I. Lenina.
Submitted February 16, 1965.

LYUBICHEVA, [illegible] (Leningrad, K-6A, [illegible] prospekt, 1, [illegible] 106, kv.135); UVAROV, B.S.

Anesthesia in special examination of the heart and major vessels. Grud. khir. 5 no.5:81-86 S-O '63. (MIRA 17:1)

1. Iz kafedry anesteziologii i klinicheskoy [illegible] universitetskogo usovershenstvovaniya vrachey No.1 (nachal'nik - deystvitel'nyy chlen AMN SSSR prof. P.A. Kupriyanov [deceased]) i yenno-meditsinskoy ordena Lenina akademii imeni Kirova.

SHANIN, Yu.N.; UVAROV, B.S.; MESHCHERYAKOV, N.A.; STASYUNAS, V.P.; KARIMOVA T.V.; KIVIK, A.A.; KROKHALEV, Yu.S.; LIVANOVA, T.B.; LOPATIN, V.A.; LYUBICHEVA, Z.L.; SIPCHENKO, V.I.

Characteristics of the anesthesia and work of the anesthesiologist in surgery with artificial blood circulation. Grud.khir. 5, no.1:116-121 Ja-F'63. (MIRA 16:7)

1. Iz kafedry anesteziologii (nachal'nik - deystvitel'nyy chlen AMN SSSR prof. P.A.Kupriyanov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.
(SURGERY, OPERATIVE) (BLOOD--CIRCULATION, ARTIFICIAL)

BOYKOV, G.A.; UVAROV, B.S.; FYAYT, L.A.; LYUBICHEVA, Z.L.

Characteristics of general anesthesia in bronchgraphy in young children. Khirurgiia 37 no.4:27-32 '61. (MIRA 14:4)

1. Iz kliniki khirurgii usovershenstvovaniya vrachey i kafedry anesteziologii (nach. - prof. P.A. Kupriyanov) Voyenno-meditsinskoyordena Lenina akademii imeni S.M. Kirova.
(ANESTHESIA) (BRONCHI--RADIOGRAPHY)

LYUBIMETS, G.

All places on register. Grazhd. av. 22 no. 11:20-21 N'65.
(MIRA 18:12)

1. Pomoshchnik nachal'nika aeroporta po perevozkam, Simferopol'.

BILETSKIY, S.I., nauchn. sotr.; ZANOSOVA, G.Ye., nauchn. sotr.; VINICHENKO, G.S., nauchn. sotr.; LYUBIMIRSKAYA, F.B., nauchn. sotr.; TVOROGOVA, M.S., nauchn. red.

[Heat treatment of parts in furnaces with a vibrating hearth; a survey of foreign technology] Termicheskaia obrabotka detalei v pechakh s vibriruiushchim podom; obzor zarubezhnoi tekhniki. Moskva, 1962. 44 p. (MIRA 17:3)

1. Moscow. TSentral'nyy institut nauchno-tekhnicheskoy informatsii mashinostroyeniya. 2. TSentral'nyy institut nauchno-tekhnicheskoy informatsii mashinostroyeniya, Moskva (for all except Tvorogova).

KOTLYAREVSKIY, L.I.; NEGOVSKIY, V.A.; ITAL'YANTSEVA, T.Ya.; LYUBIMKINA, K.N.

Some mechanisms of the activity of the higher sections of the central nervous system in dogs after heavy exsanguination. Trudy Inst. vys. nerv. deiat. Ser. patofiziol. no.9:73-82 '61. (MIRA 15:4)
(RESUSCITATION) (CONDITIONED RESPONSE)

KOTLYAREVSKIY, L.I.; LYUBIMKINA, K.N.

Changes in the conditioned reflex activity of dogs caused by chronic whole-body irradiation with the maximum dose of X rays. Trudy Inst. vys. nerv. deiat. Ser. patofiziol. no.9:192-197 '61. (MIRA 15:4)

(X RAYS--PHYSIOLOGICAL EFFECT) (CONDITIONED RESPONSE)

LYUBIMKOV, L N

25(7) PHASE I BOOK EXPLOITATION SOV/3203

Turetskiy, Iosif Yudelevich, Leonid Nikolayevich Lyubimkov, and Boris Vasil'yevich Chernov

Vosstanovleniye tekhnologicheskoy tochnosti zubofrezernykh stankov (Restoring the Accuracy of Gear-milling Machine Tools) Moscow, Mashgiz, 1957. 115 p. (Series: Bibliotechka zuboreza-novatora, vyp. 7). Errata slip inserted. 10,000 copies printed.

N. I.

Gen. Ed.:/Kolchin, Doctor of Technical Sciences, Professor; Reviewer: S. G. Printsental', Engineer; Ed.: N. I. Shavlyuga, Candidate of Technical Sciences, Docent; Editorial Board: N. I. Kolchin, I. Yu. Turetskiy, Candidate of Technical Sciences, and N. I. Shavlyuga; Chief Ed. (Leningrad Division, Mashgiz): S. A. Bol'shakov, Engineer; Ed. of Publishing House: V. P. Vasil'yeva; Tech. Ed.: R. Pol'skaya.

PURPOSE: This booklet is intended for skilled operators and setters of gear-milling machinery and foremen and process engineers in gear manufacture.

COVERAGE: The booklet deals with standards for accuracy in gear cutting, methods of overhauling precision gear-milling tools, and production of precision worm gears. Also described are means of increasing kinematic accuracy in gear-milling machines by means of corrective devices and typical processes of

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producing worms and worm gears for indexing heads. No personalities are mentioned. There are 17 references, all Soviet.

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AVAILABLE: Library of Congress (TJ184.B5)

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TURETSKIY, I.Yu.; LYUBIMKOV, L.N.; CHERNOV, B.V.; YELESINA, O.G., inzh., retsenzent; KOLCHINA, N.I., zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof., red.; MAYDEL'MAN, E.D., inzh., red.; ONISHCHENKO, R.N., red. izd-va; BARDINA, A.A., tekhn. red.

[Manufacture of heavily-loaded high-speed gears]Izgotovlenie tiazhelonagruzhennykh skorostnykh zubchatykh peredach. 2., perer. izd. Pod obshchei red. N.I.Kolchina. Moskva, Mashgiz, 1962. 134 p. (Bibliotechka zuboreza, no.9) (MIRA 15:11)
(Gear cutting)

TURETSKIY, I.Yu.; LYUBIMKOV, L.N.; CHERNOV, B.V.; KOLCHIN, N.I., zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof., red.; MAYDEL'MAN, E.D., inzh., retsenzent; VEYTS, V.L., kand. tekhn. nauk, red.; ONISHCHENKO, R.N., red.izd-va; BARDINA, A.A., tekhn. red.

[Recovering the machining precision of gear-cutting machines] Vosstanovlenie tekhnologicheskoi tochnosti zuboreznykh stankov. Pod obshchei red. N.I.Kolchina. 2. perer. izd. Moskva, Mashgiz, 1962. 91 p. (Bibliotechka zuboreza, no.10) (MIRA 16:3)
(Gear-cutting machines--Maintenance and repair)

LYUBIMKOV, LEONID NIKOLAYEVICH

TURETSKIY, Iosif Yudelevich, kandidat tekhnicheskikh nauk; LYUBIMKOV, Leonid Nikolayevich; CHERNOV, Boris Vasil'yevich; KOLCHIN, N.I., professor, doktor tekhnicheskikh nauk, redaktor; SHAVLYUGA, N.I., dotsent, kandidat tekhnicheskikh nauk, redaktor vypuska; GOFMAN, Ye.K., redaktor izdatel'stva; ANDOZHSKIY, V.D., kandidat tekhnicheskikh nauk, dotsent, retsenzent; POL'SKAYA, R.G., tekhnicheskiy redaktor.

[Making of very precise gearing] Izgotovlenie osobo tochnykh zubchatykh peredach. Pod obshchei red.N.I.Kolchina. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1957. 179 p. (Bibliotechka zuboreza-novatora, no.6) (MLRA 10:5)

(Gearing)

LYUBIMOV, A.A.

Reconditioning half-clutches in transmissions of blooming mill manipulators. Sbor.rats.predl.vnedr.v proizv. no.5:21 '60.
(MIRA 14:8)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Rolling mills--Maintenance and repair)

MIRKOVICH, G.M.; LYUBIKOV, A.A.; POLEZHAYEVA, N.P.; PALEY, L.G., inzh., retsenzent; KUTENKOVA, G.M., tekhn.red.

[Standardizing technological processes in piece and small lot production experience of the Ural Machinery Plant] Tipizatsiia tekhnologicheskikh protsessov v usloviiakh individual'nogo i melkoseriinogo proizvodstva; iz opyta Uralmashzavoda. Sverdlovsk, TSentr.biuro tekhn.informatsii, 1959. 38 p. (MIRA 14:4)

1. Russia (1917- R.S.F.S.R.) Sverdlovskiy ekonomicheskiy administrativnyy rayon. Sovet narodnogo khozyaystva. (Sverdlovsk--Machinery industry)

LYUBIMOV, A.A.

Coke consumption in the U.S.S.R. Koks i khim. no.11:63-64 '62.
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1. Gosudarstvennyy komitet Soveta Ministrov SSSR po koordinatsii nauchno-issledovatel'skikh rabot.
(Coke industry)

LYUBIMOV, A.A.; BONDARENKO, V.M.; GERCHULA[illegible] L.B.; PAL[illegible]CHINSKIY, G.V.

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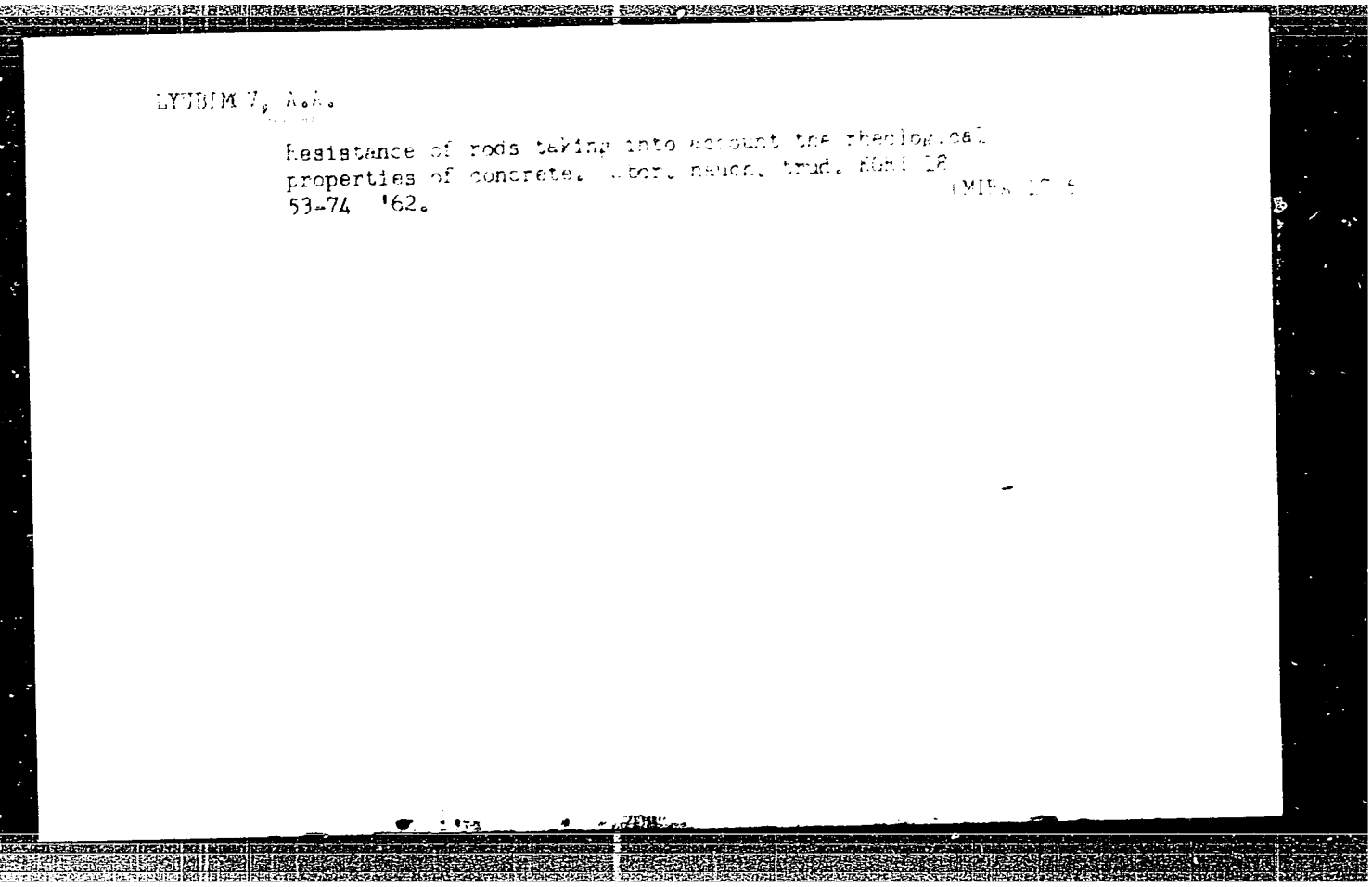
18:29-44 '62. (MIRA [illegible])



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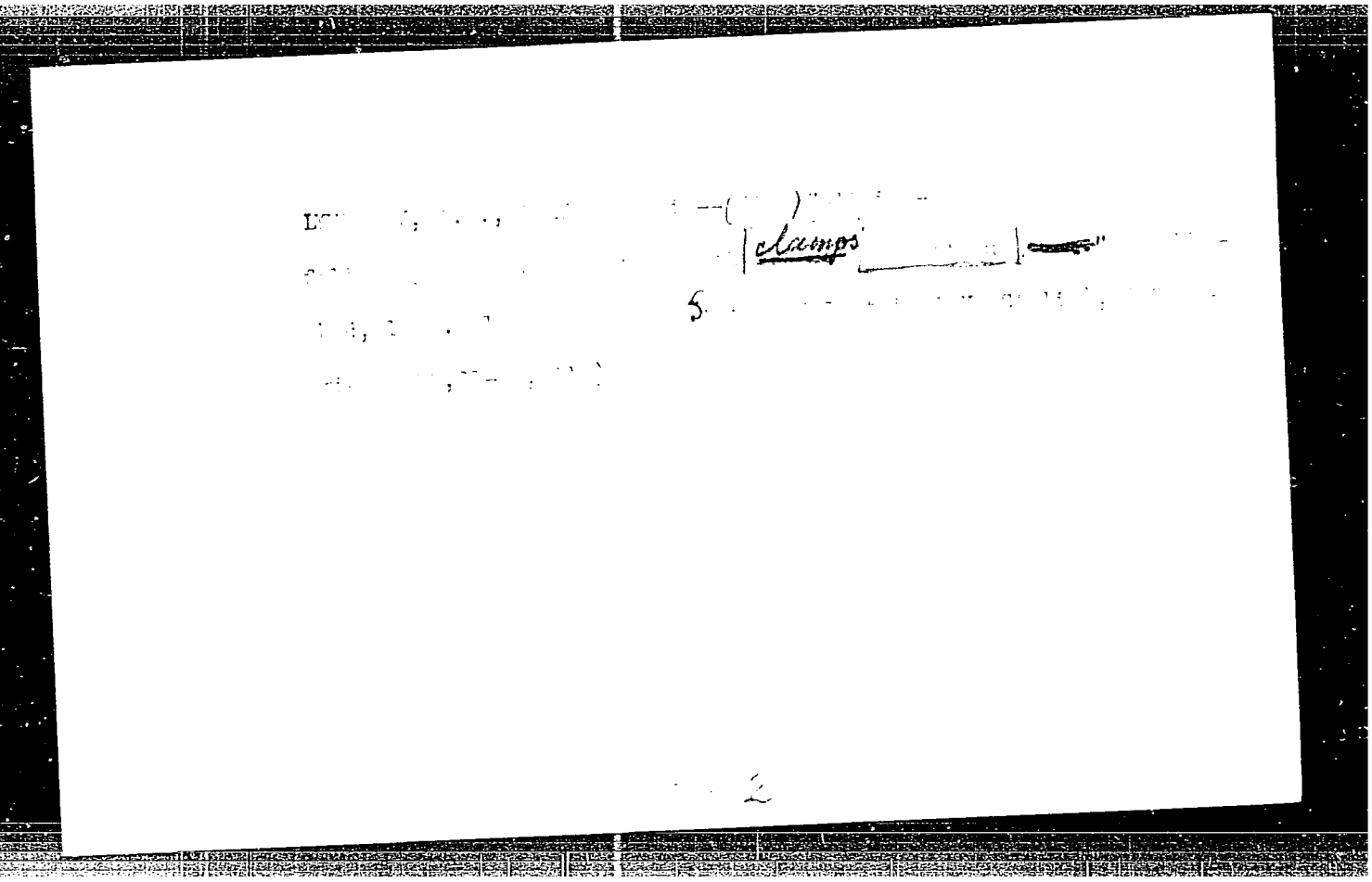

LYUBIMOV, A.A., zasluzhennyy vrach RSFSR

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1. Iz Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No. 1.
(TRACHOMA,
*pannus, surg.)

LYUBIMOV, A.A.

Free skin graft following radical surgery for breast cancer. Zdrav. Turk. 3 no.4:29 Jl-Ag '59. (MIRA 13:2)
(BREAST--CANCER) (SKIN GRAFTING)

LYUBIMOV, A.A., kand.med.nauk

Importance of gastroscopy in diagnosing stomach disease. Zdrav. Turk. 5 no.3:46 My-Je '61. (MIRA 14:10)

1. Iz kafedry gospital'noy khirurgii (zav. - chlen-korrespondent AMN SSSR prof. I.F.Berezin) Turkmenskogo gosudarstvennogo meditsinskogo instituta imeni I.V.Stalina.
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LYUBIMOV, A.G.

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1. Nachal'nik teplovoznogo otdela sluzhby lokomotivnogo khozyaystva Ordzhonikidzevskoy dorogi.
(Diesel locomotives)

PAUTIN, N.V., inzh.; LYUBIMOV, A.G., inzh.

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LYUBIMOV, A.G., priyemshchi teplovozov

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(Diesel locomotives -Equipment and supplies)

SOLOV'YEV, Nikolay Konstantinovich; LYUBIMOV, A.I., inzhener, nauchnyy redaktor; KARPOV, V.V., redaktor izdatel'stva; PUL'KINA, Ye.A., tekhnicheskiy redaktor

[Manhole covers made of reinforced concrete instead of castiron] Zhelezobetonnye liuki vzamen chugunnykh. Leningrad, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 26 p. (MLRA 10:8)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela tresta No.105 Glavleningradstroya (for Lyubimov)
(Manholes)

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[Calculations for grain harvesting machines] Raschet zerno-uborochnykh mashin. Pod red. K.G.Kolganova. Izd.2., perer. Moskva, Mashgiz, 1961. 214 p. (MIRA 15:7)

1. Kafedra sel'skokhozyaystvennykh mashin Chelyabinskogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva (for Terskov).

(Grain--Harvesting)

LYUBIMOV, A.I.

Assault on the Swedish fortress Nyenskans, April 25 (May 6), 1703. Sbor.dokl.Voen.ist.sek. no.3:91-97 '60. (MIRA 15:9)
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Requirements of industry as to the quality of mineral raw materials. Handbook for geologists-- Moskva, Gos. izd-vo geologicheskoi lit-ry Komiteta po delam geologii pri SNK SSSR; No. 11, Barite and witherite, 1946.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

LUBIMOV, A.

USSR/Nuclear Physics - Cosmic Radiation
Nuclear Physics - Particles

Nov/Dec 46

"Measurements of Cosmic Ray Intensity at 3,860 and 5,000 Meters Above Sea Level," A. Azimov, V. Veksler, G. Zhdanov, A. Lubimov, Lebedev Phys Inst, Acad Sci USSR, 4 pp

"Journal of Physics USSR" Vol X, No 6

Describes results of measurements of soft and hard components by means of counter telescope and compares them with similar data of other authors. Infers presence of nonequilibrium soft component and production of mesons at altitudes in question. Received, 14 May 1946.

PA 54T75

LUBIMOV, A.

USSR/Nuclear Physics - Cosmic Radiation
Nuclear Physics - Equipment

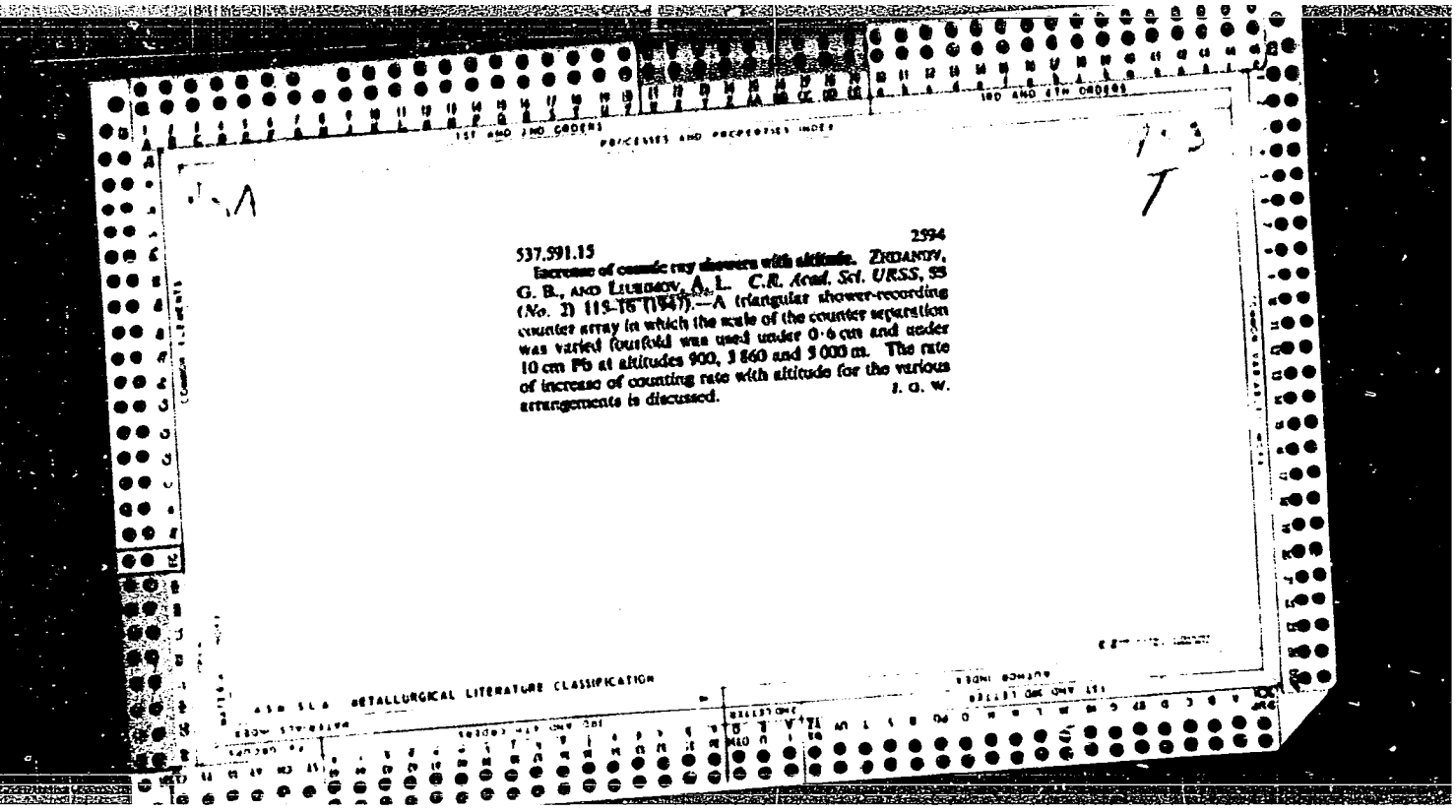
Nov/Dec 46

"The Measurements of the Intensity of the Cosmic Radiation by the Telescope Method," S. Azimov, V. Vekaler, N. Dobrotin, G. Zhdanov, A. Lubimov, Lebedev Phys Inst, Acad Sci USSR, 7 pp

"Journal of Physcis USSR" Vol X, No 6

Demonstrates two factors, scattering in counter walls and side showers, which influence measurements of soft components; in hard and soft components intensity measurements by different "telescopes." Formulates requirements for correct measurements in use of telescope method. Received, 26 Apr 1946.

PA 64174



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Increase of cosmic ray showers with altitude. ZHDANOV, G. B., AND LEIKOV, A. L. *C.R. Acad. Sci. URSS*, 55 (No. 2) 115-16 (1947).—A triangular shower-recording counter array in which the scale of the counter separation was varied fourfold was used under 0·6 cm and under 10 cm Pb at altitudes 900, 3 860 and 5 000 m. The rate of increase of counting rate with altitude for the various arrangements is discussed. J. G. W.

AZIMOV, S.A.; VEKSLER, V.I.; DOBROTIN, N.A.; ZHDANOV, G.B.; LYUBIMOV, A.L.

On the measurements of the intensity of the cosmic radiation by the telescope method. Zhur.eksp.i teor.fiz. 17 no.1:79-91 '47. (MLRA 6:7)

1. Fizicheskiy institut im.P.N.Lebedeva Akademii Nauk SSSR.
(Cosmic rays)

AZIMOV, S.A.; VEKSLER, V.I.; ZHDANOV, G.B.; LYUBIMOV, A.L.

Measurements of cosmic rays intensity at 3860 and 5000 m above sea level. Zhur.eksp. i teor.fiz. 17 no.1:87-91 '47. (MLRA 6:7)

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(Cosmic rays)

LYUBIMOV, A. L. PA 20T50

USSR/Physics Jan 1947
Cosmic Radiation
Radiation, Corpuscular

"Increase of the Cosmic-ray Shower with Height," G. B. Zhdanov, A. L. Lyubimov, 4 pp

"Dok Ak Nauk SSSR" Vol LV, No 2

Presented by S. I. Vavilov, published 28 Jul 1946. by P. N. Lebedeva of the Physics Institute, Academy of Sciences of the USSR. In 1945 the Pamir Expedition of the Physics Institute carried out a count on the variation of cosmic ray showers with increasing altitudes. Two types of measuring apparatus were used - one containing a 6-millimeter, the other a 10-millimeter lead coat. Calculations were made at 900, 3860, and 5,000 meters above sea level.

PA 11/49T91

LYUBIMOV, A. L.

USSR/Nuclear Physics - Cosmic Radiation Aug 48
Nuclear Physics - Radiation, Corpuscular

"Cosmic Ray Showers Which Occur in Thick Lead Plates," L. N. Korablev, A. L. Lyubimov, A. V. Miller, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXI, No 4

Interim report on 1947 Pamir expedition. Data indicate that the "local penetrating showers," studied by many authorities with counters, are the penetrating part of more complicated "special" showers. Submitted 9 Jun 48.

11/49T91

[illegible], A. L. [illegible]

Birger, M. G., Veksler, V. I., Goroshin, N. A., Zatsepin, G. T., Kurnosova, L. B., Linnimov, A. L., Rozental, I. A., and Eidus, L. Kh. P. 32

The main results of a series of experiments (in which electron nuclear showers were discovered and investigated) which the authors have been working on for a number of years are presented. The electron nuclear showers originated at nuclear interactions of very high energies (from 10^9 eV and above) and also from the nuclear-cascade process in cosmic rays. These two phenomena make it possible to explain basically the whole picture of processes occurring in cosmic rays.

The P. N. Lebedev Inst. of Physics, Acad. of Sci., USSR
May 23, 1949

SO: Journal of Experimental and Theoretical Physics, (USSR) 19, No. 9 (1949)

P& 3/50T74

USSR/Nuclear Physics - Cosmic Rays 11 Sep 49
Hodoscope

"Study of Special Showers of Cosmic Rays With the Aid of a Hodoscope," L. N. Korablev, A. L. Lyubimov A. T. Nevrayev, Phys Inst imeni P. N. Lebedev, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 2

Used a hodoscope consisting of 176 counters, each connected to a neon lamp by a special circuit. Position of neon lamps on special panel corresponded to position of counters in the unit. Used no vacuum tubes, their function being fulfilled by neon lamps. Results are preliminary, since

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USSR/Nuclear Physics - Cosmic Rays (Contd) 11 Sep 49

work with this unit is being continued. Submitted by Acad D. V. Skobel'tsyn 15 Jul 49.

3/50T74

USSR/Nuclear Physics - Showers 1 Nov 50
Cosmic Rays

"Decay of Particles Generating the Electron-Nuclear Showers," M. I. Podgoretskiy, A. L. Lyubimov, M. N. Shcherbakova, L. Kh. Eydus, Phys Inst imeni Lebedev, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXV, No 1, pp 15-17

Authors assisted by Prof N. A. Dobrotin, G. B. Zhdanov, L. Rozental', and L. V. Kurnosova. Discusses compensation expt conducted, in 1947-1949 in the Pamirs, on presence of unstable particles composing component that generates subject electron-nuclear

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USSR/Nuclear Physics - Showers (Contd) 1 Nov 50

showers. Describes particular arrangements of lead shields and counters employed; also triple and quadruple coincidences obtained. Submitted 6 Sep 50 by Acad D. V. Skobel'tsyn.

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LYUBIMOV, A. L.

IA 242T97

USSR/Nuclear Physics - Nucleons Dec 52

"Scattering and Absorption of High-Energy Nucleons," V. I. G Idansky, A. L. Lyubimov and B. V. Medvedev

"Uspekhi Fiz Nauk" Vol 48, No 4, pp 531-584

Review recent literature and data on the scattering and absorption of nucleons, accelerated to several hundreds of Mev. Also discuss data on cosmic rays. Review will be continued in next issue. 86 references are appended, including 10 Soviet (A. Akhiyezer,

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I. Pomeranchuk; D. I. Blokhintsev; I. Shmushkevich; V. Ya. Faynberg, Ye. L. Feynberg; V. I. Gol'danskiy; P. A. Cherenkov (1934-1938); I. Ye. Tamm and I. M. Frank (1940); V. L. Ginzburg (1940); A. A. Sokolov (1940)).

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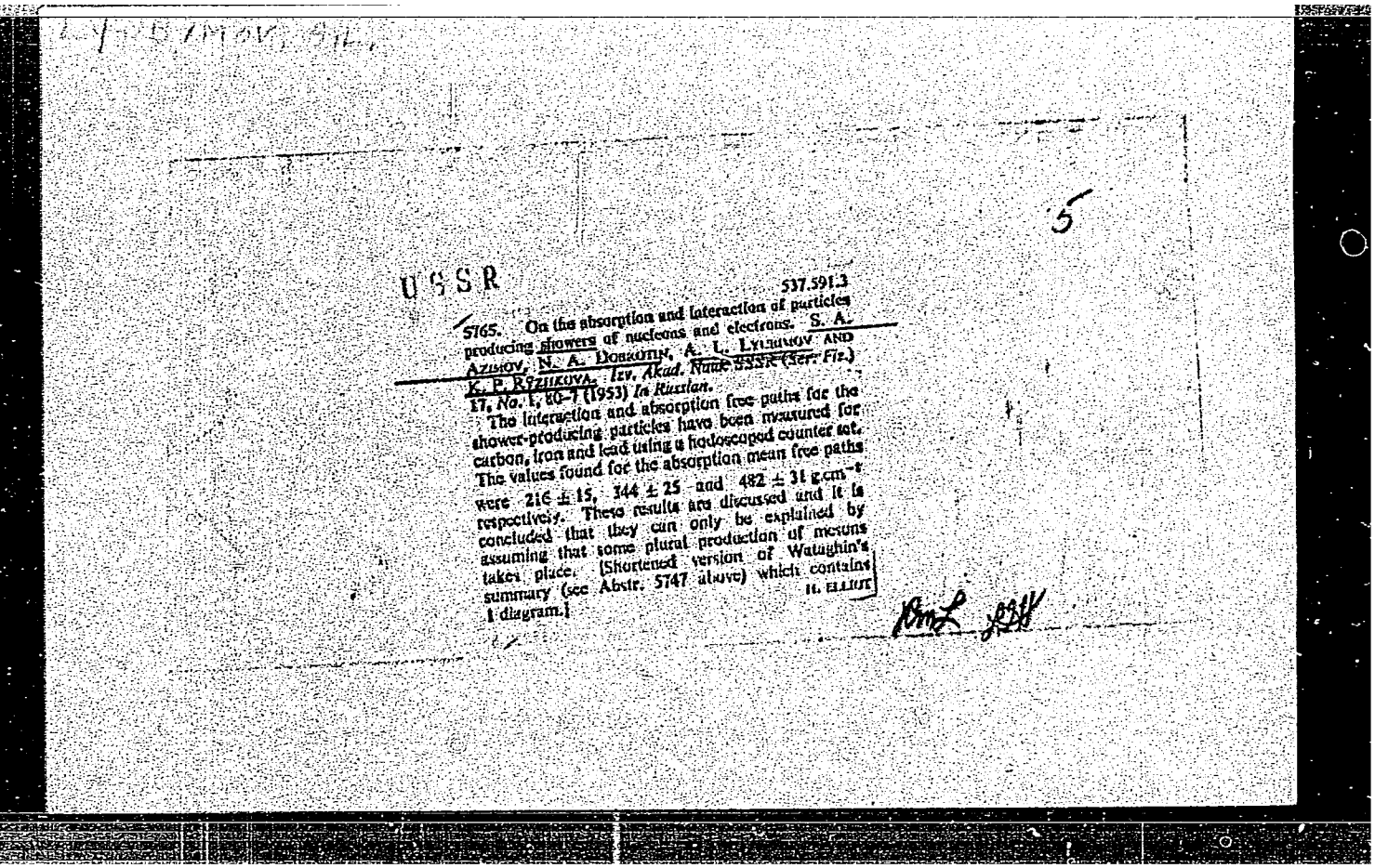
LYUBIMOV, A. L.



USSR 537.591.3

5765. On the absorption and interaction of particles producing showers of nucleons and electrons. S. A. AZIMOV, N. A. DOBROTIN, A. L. LYUBIMOV AND K. P. RZHIKOVA. *Izv. Akad. Nauk SSSR (Ser. Fiz.)* 17, No. 1, 60–7 (1953) *In Russian.*

The interaction and absorption free paths for the shower-producing particles have been measured for carbon, iron and lead using a fiadoscoped counter set. The values found for the absorption mean free paths were 216 ± 15, 344 ± 25 and 482 ± 31 g.cm^{-2} respectively. These results are discussed and it is concluded that they can only be explained by assuming that some plural production of mesons takes place. (Shortened version of Watughin's summary (see Abstr. 5747 above) which contains 1 diagram.)

H. ELLIOT

LYUBIMOV, A.L.

(3)

Mec. Eng. Geophy.

Nuclear Science Abst.
Vol. 8 No. 3
Feb. 15, 1954
Physics

935
Scattering and Absorption of High-Energy Nucleons. V. I. Goldanskii, A. L. Lyubimov, and B. V. Medvedev. Uspekhi Fiz. Nauk 49, 3-47 (1953) Jan. (In Russian)
A review is presented of the present knowledge of nuclear cross sections for high-energy neutrons and for elastic scattering and inelastic collisions. A theoretical consideration of interaction of nucleons with nuclei and absorption of nucleons and their connection with cosmic rays is given. 67 references. (J.S.R.)

LYUBIMOV, A. L. Nov 53

USSR/Nuclear Physics - Cosmic Rays' Origin

"The Origin of Cosmic Rays and Radio-Astronomy," V. L. Ginzburg

Usp Fiz Nauk, Vol 51, No 3, pp 343-392

A review of current literature, Western and Soviet, on the subjects: cosmic radio-emanation and electron component of cosmic rays; movement of charged particles in interstellar space; the statistic mechanism governing the acceleration of particles in interstellar space and in the shells of stars; theory of the solar origin of cosmic rays; the theory that supernovae and novae are the probable sources of cosmic rays. Cites 30 Western and 25 Soviet references: Ya. P. Terletskiy, G. G. Getmantsev, I. S. Shklovskiy, L. A. Artsimovich, I. Ya. Pomeranchuk, V. V. Vladimirskiy, A. A. Sokolov, I. M. Frank, S. B. Pikel'ner, I. M. Gordon, (DAN USSR, No 3, 1953), V. I. Gol'danskiy, A. L. Lyubimov, B. V. Medvedev, A. A. Logunov, L. E. Gurevich, and S. Z. Belen'kiy.

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LYUBIMOV, A.L.

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Nuclear Phenomena

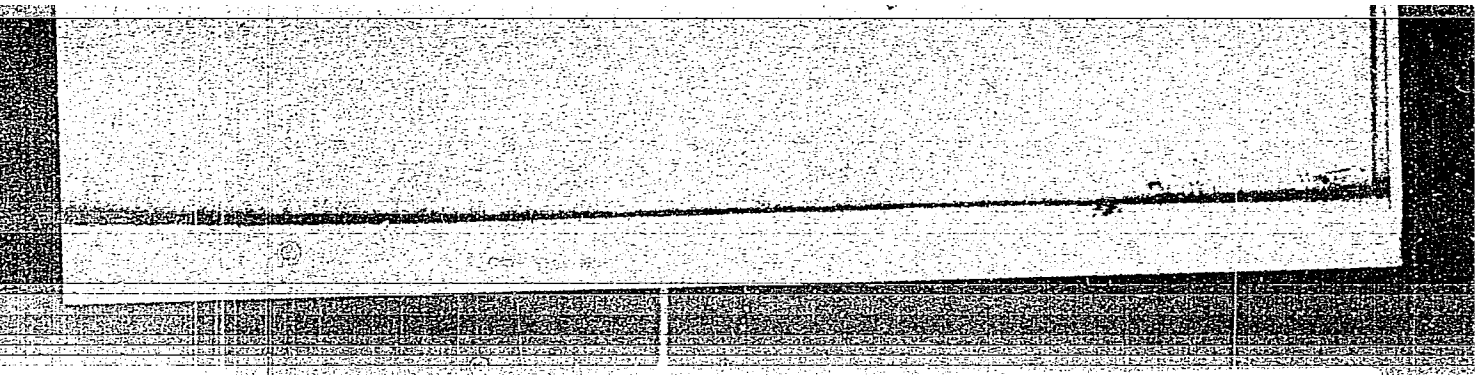
6-16-54

Absorption of cosmic-ray particles which generate electron-nuclear showers. S. A. Azimov, A. L. Lyubimov, and K. P. Ryzhkove. *Doklady Akad. Nauk S.S.S.R.* 90, 51–4 (1953); cf. *C.A.* 45, 2791i.—Cosmic rays were studied by means of an app. consisting of a row of counters (I), a sheet of absorber P, a 50-cm.-thick layer of Pb (to eliminate the transition d. effect), and a 2nd block of Pb contg. an assemblage of counters of which every other one was connected in parallel to form group II, while the remainder were connected in parallel to form group III. Neighboring counters of groups II and III were sepd. by 4 cm. Pb or more. The counters were arranged to register only when all 3 groups were excited simultaneously. Only electron-nuclear showers generated in the absorber by particles having energies of 10,000 m.e.v. or more were registered. The no. of showers observed per hr., the no. of counters of groups II and III excited, the av. absorption value λ_p, and λ_p/λ_s are tabulated for the absorbers C (graphite) (152 g./sq. cm.), Fe (252 g./sq. cm.), Pb (365 g./sq. cm.), and Pb (160 g./sq. cm.), λ_s being the av. free value corresponding to the geometrical nuclear cross section. It was concluded that the transitional d. effect was absent. Disintegrating particles were present among the exciting rays. Absorption in Pb was less than in an equal mass of C. Amts. of C, Fe, and Pb contg. equiv. nos. of shower-generating particles (λ_s) showed the same degree of absorption. The value of λ_s/λ_s was about 3 for C, Fe, and Pb. J. W. L., Jr.

LYUBIMOV, A. L.

Dissertation: "The Investigation of an Electron Nuclear Shower With a Geiger-Mueller Counter." Cand Phys-Math Sci, Physics Inst imeni P. N. Lebedev, Acad Sci USSR, 21 Jun 54. (Vechernyaya Moskva, Moscow, 10 Jun 54)

SO: SUM 318, 23 Dec 1954



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9, 4220 (2503,3203,1071)

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1960, No. 24, p. 7, # 5.11913

AUTHORS: Afonskaya, M.N., Gabyshev, V.G., Dunayev, S.A., Zusmanovskiy, S.A., Lyubimov, M.L., Mishkin, A.G., Shchelkunov, G.P.

TITLE: Klystron Amplifier for the 10-cm-Range of 20 Mw Output per Pulse

PERIODICAL: Tr. Konferentsii po elektronike SVCh, 1957, Moscow-Leningrad, Gosenergoizdat, 1959, pp. 58-79

TEXT: A pulse klystron with constant pumping out was developed. The dismountable design makes it possible to replace quickly the cathode in case of failure. The klystron optics ensures a current passage of 96-98%. The contactless capacitive re-tuning of the klystron makes it possible to attain continuity and absence of sparking. A lead sheath protects from the hard X-ray radiation which is caused by the electrons accelerated by the pulse voltage of 200 kv. There are 4 references. R.V.B.

Translator's note: This is the full translation of the original Russian abstract.

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