FADDEYEV, D.K.

Ob uravnenii $ax^4-BY^4=6$; 6=1,2,4,8, L., Uchen. zap. ped, in-ta, 28 (1939), 141, 146.

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

FADDEYEV D.K.

O plotnostyakh tselykh tochek chisto veshchestvennykh oblastey 4-go poryadka s razlichnymi gruppami Galua. IAN, ser. Matem., 4 (1940), 133.

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

FADDEYEV, D. K.

Construction of Fields of Algebraical Numbers Whose Galois Group is a Group of Quaternion Units, Doklady AN SSSR, 47, No. 6, 1945.

Leningrad Branch, Mathematics Inst. im V. A. Steklov, AS USSR

Presented: 1944

On a Problem of Analytical Geometry, Doklady AN SSSR, 47, No. 8, 1945.

FA 49T43

USSR/Mathematics - Operational Theory
Mathematics - Algebra, Complex

Oct 1947

"Factor Systems in Abelev's Groups With Operators," D. K. Faddeyev, Leningrad Dept, Math Inst imeni V. A. Steklov, Acad Sci USSR, 3¼ pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVIII, No 3

Discusses various variations of the basic problem. Explains the k-factor-system if A is the additively recorded Abelev group and F the group whose elements are the operators of A. Also discusses the variation where b is some additively recorded Abelev group and F is some group. Explains the variation where b is the Abelev group with F the operative

49T43

USSR/Mathematics - Operational Theory (Contd)

Oct 1947

group and A the supplementary subgroup. Submitted by Academician I. M. Vinogradov, 28 Apr 1947.

49T43

FADDEYEV, D. K.

PA 38T64

USSR/Mathematics - Series Nov 1947

"Structure of the $p^n q$ Series Group," D. K. Faddeyev, Leningrad Branch, Mathematical Institute imeni V. A. Steklov, Academy of Sciences of the USSR, 2 pp

"Dok Ak Nauk" Vol LVIII, No 4

Discusses following theorem: If the $p^n q$ series group has neither a normal denominator of the p^n series, nor a normal denominator of the q series, then p, q fulfill the requirements: $q \equiv 1(p), p_{(p,f)} \leqslant n-1$, where f is the smallest of the positive numbers so that $p^f \equiv 1(q)$. It is evident that only the final values for the simple numbers p,q, will fulfill the conditions for the given n, so that even the group of

[redacted] 38T64

USSR/Mathematics - Series (Contd) Nov 1947

the $p^n q$ series, which does not have strong normal denominators, will conform only to the final number where n is fixed. Submitted by Academician I. M. Vinogradov 28 Apr 1947.

[redacted] 38T64

FADDEYEV, D. K.

PA38T68

USSR/Mathematics - Matrices
Mathematics - Equations
Nov 1947

"Characteristic Equations of Rational Symmetrical Matrices," D. K. Faddeyev, Leningrad Branch, Mathematics Institute imeni V. A. Steklov, Academy of Sciences of the USSR, 2 pp

"Dok Ak Nauk" Vol LVIII, No 5

Several theories have been submitted with regard to the requirements of a rational coefficient to be characteristic for equations of rational symmetrical matrices. Author discusses yet another theory, which is a fairly broad conception, yet is limited enough so that it can be utilized for equations of the

[redacted] 38T68

USSR/Mathematics - Matrices (Contd) Nov 1947

seventh order. States his theorem and gives its proof (Q.E.D.). Submitted by Academician I. M. Vinogradov, 28 Apr 1947.

[redacted] 38T68

USSR/Mathematics - Academy of Sciences Nov/Dec 50

"Boris Nikolayevich Delone," D. K. Faddeyev

"Uspekh Matemat Nauk" Vol V, No 6(40), pp 159-163

Biography of great Russian mathematician who celebrated his 60th birthday 15 Mar 50. Prof Delone is Corr Mem Acad Sci USSR. He studied at Kiev U 1908 - 1913. Much of his work has been in the theory of Galois groups. Delone teaches mathematical analysis, analytical geometry,

170T62

USSR/Mathematics - Academy of Sciences (Contd) Nov/Dec 50

non-Euclidean geometry, Galois theory, mathematical crystallography, theory of computing machines, etc., at the Moscow and Leningrad Universities. He is an Alpinist.

170T62

FA 170T62

1. FADDEYEV, D. K.

2. USSR (600)

4. Science

7. Algebra. Textbook for teachers of seventh grade. Pt. I. Leningrad, Uchpedgiz, 1951

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

APPROVED FOR RELEASE: Thursday, July 27, 2000 CIA-RDP86-00513R00041232(

FADDEYEV, D.K.

Faddeev, D. K. **Simple algebras over a field of algebraic functions of one variable.** Trudy Mat. Inst. Steklov., v. 38, pp. 321–344. Izdat. Akad. Nauk SSSR, Moscow, 1951. (Russian) 20 rubles.

The constant field k_0 for the algebraic functions is always an algebraic number field. The problem is to classify simple algebras over $k = k_0(x, y)$, where x is an indeterminate and y is algebraic over $k_0(x)$. Any simple algebra over k_0 can be lifted up to one over k; the result is called a numerical algebra. The principle of classification is the following: two algebras over k are similar in the wide sense if one is similar in the ordinary sense to the product of the other by a numerical algebra.

After some expository material, the author takes up the local theory. Let A be a central division algebra over the field $k_0(\pi)$ of formal power series in π. The center Z of the inertial algebra turns out to be cyclic over k_0. If Π is an element of minimal positive value in A, then the inner automorphism by Π induces an automorphism ζ of Z. The "cyclic pair" (Z, ζ) is shown to be a complete set of invariants for A under similarity in the wide sense. The theory extends to the simple case.

Let now A be a global central simple algebra. For every divisor p of k we have a local algebra A_p over the local field k_p, which is a field of power series over the inertial field k_1 of p. The algebra A_p has as its invariant the cyclic pair defined above, and these cyclic pairs satisfy a product formula

$$\prod_p N_{k_1/k_0}(Z_p, \zeta_p) = 1.$$

The definition of the norm and product of cyclic pairs is too lengthy to reproduce here; it uses Galois theory, character groups and the transfer (Verlagerung) of a group into a subgroup. Finally, k is specialized to the field $k_0(x)$ of rational functions, and it is shown that the local invariants of A characterize A up to similarity in the wide sense. Moreover there exists an algebra for any set of invariants satisfying the product formula. *I. Kaplansky.*

Source: Mathematical Reviews, Vol 13 No. 10

FADDEYEV, D.K.

3

Mathematical Reviews
Vol. 14 No. 11
December, 1953
Algebra.

8-10-54

*Faddeev, D. K., i Sominskiĭ, I. S. Sbornik zadač po vysšeĭ algebre. [Collection of problems on higher algebra.] 3d ed. Gosudarstv. Izdat. Tehn.-Teor. Lit., Moscow-Leningrad, 1952. 308 pp. 7.20 rubles.

Part 1, Problems: I) Complex numbers; II) Computation of determinants; III) Systems of linear equations; IV) Matrices; V) Polynomials and rational functions of one variable; VI) Symmetric functions; VII) Linear algebra. Part 2, Hints. Part 3, Answers and solutions.

Table of Contents.

FADDEYEV, D. K.

Faddeev, D. K. **On the theory of homology in groups.** Izvestiya Akad. Nauk SSSR. Ser. Mat. 16, 17–22 (1952). (Russian)

The author studies a relation between the cohomology groups of a group G, and those of a subgroup H. Let G operate on the right of the additive group A, and let i be the additive group of functions from the set $\{\rho\}$ of right cosets of H in G to A, with G operating by $f^x(\rho) = [f(\rho x^{-1})]^x$. Theorem: $H_n(G, i) \approx H_n(H, A)$. The isomorphism is derived from the chain map η (the y_i run through H; $\rho_0 = H$): $\eta F(y_1, \cdots, y_n) = F(y_1, \cdots, y_n)(\rho_0)$. The proof utilizes a number of other groups: $C_n(G, H, A)$ is the group of H-homogeneous cochains (on G with values in A):

$$f(x_1 y, \cdots, x_n y) = f^y(x_1, \cdots, x_n)$$

for $y \in H$; there is an explicit isomorphism between $C_n(G, i)$ (non-homogeneous cochains) and $C_{n+1}(G, H, A)$, commuting with coboundary. It remains to prove that

$$H_{n+1}(G, H, A) \approx H_{n+1}(H, H, A),$$

the isomorphism induced by restriction of the functions to H. This is shown by induction: an important role is played by the theorem that for $n \geqq 2$ all $H_n(G, H, b) = 0$, where b is the group of all functions from H to A, with H operating by $f^{y_1}(y) = [f(yy_1^{-1})]^{y_1}$. Reviewer's note: An interpretation of the author's result can be obtained by noting that the Eilenberg-MacLane space of H is a covering space of that of G.

H. Samelson (Ann Arbor, Mich.).

Source: Mathematical Reviews, Vol 13 No. 9

FADDEYEV, D. K., Prof.

Chebyshev, P. L.

"New collection of L. L. Chebyshev's writings." Vest. AN SSSR, 22, No. 5, 1952.

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

FADDEYEV, D.K.

3000

Faddeev, D. K. On a theorem of the theory of homologies in groups. Doklady Akad. Nauk SSSR (N.S.) 92, 703–705 (1953). (Russian)

If $\mathfrak{H}$ is a subgroup of finite index v of a group $\mathfrak{G}$, if a is a $\mathfrak{G}$-module in which division by v is always possible and unique, then the cohomology module $H^n(\mathfrak{G}, a)$ is isomorphic with a direct summand of $H^n(\mathfrak{H}, a)$. *E. R. Kolchin.*

RDW

FADDEYEV, D.K.; SOMINSKIY, I.S.; BARKOVSKIY, I.V., redaktor; MAKRUSHIN, V.A., tekhnicheskiy redaktor

[Algebra. Pt.2. Manual for secondary school teachers] Algebra. Chast' II. Posobie dlia uchitelei srednei shkoly. Leningrad, Gos. uchebno-pedagog. izd-vo Ministerstva prosveshcheniia RSFSR, 1954. 286 p. (MLRA 8:3)

(Algebra--Study and teaching)

Dmitriy Konstantinovich
FADDEYEV, D.K.; SOMINSKIY, I.S.

[Collection of problems in higher algebra] Sbornik zadach po vysshei algebre. Izd. 5-e, stereotipnoe. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1954. 308 p. (MLRA 7:8)
(Algebra--Problems, exercises, etc.)

FADDEYEV, D.K.

1/2

USSR

Faddeev, D. K. On a hypothesis of Hasse. Doklady Akad. Nauk SSSR (N.S.) 94, 1013–1016 (1954). (Russian) 12

Soit k/k_0 une extension galoisienne finie, dont Γ soit le groupe de Galois. G étant un groupe donné d'avance, dont Γ est une image homomorphe, et φ étant un homomorphisme prescrit de G sur Γ, il se pose la question de la possibilité de l'immersion de k/k_0 dans une algèbre galoisienne (au sens de Hasse) L/k de groupe G, cette immersion étant telle que l'application canonique de G sur le groupe de Galois de k/k_0 coïncide avec φ. L'auteur avait donné, dans un travail antérieur [Mat. Sbornik N.S. 15(57), 243–284 (1944); ces Rev. 6, 200], ensemble avec B. Delaunay, la condition nécessaire que voici de cette immersibilité, appelée "condition de cohérence": g étant le noyau de φ, considérons G comme un groupe d'opérateurs de l'anneau de groupe $g \cdot k$ de g sur k, en posant, pour tout $\sigma \in G$, $\sigma \cdot a = a^{\varphi(\sigma)}$ si $a \in k$ et en posant $\sigma \cdot \tau = \sigma^{-1}\tau\sigma$ quand $\tau \in g$. Alors la condition de cohérence consiste en l'existence de 1-cochaine de G à coefficients dans le demigroupe multiplicatif de $g \cdot k$, qui soit un cocycle et dont la restriction à g soit x^{-1}.

2/2 D.K. FADDEEV

Hasse, dans un cas plus général, a également donné une condition nécessaire d'une telle immersibilité, qui se trouve être équivalente, dans le cas considéré, à la condition précédente. Il a émis l'hypothèse que cette condition nécessaire d'immersibilité est aussi suffisante. L'auteur montre, par un contre-exemple, qui ne fait intervenir que les composées des extensions quadratiques, qu'il n'en est rien.

M. Krasner (Paris).

FADDEYEV, D.K.

An arithmetic formula. Usp.mat.nauk. 10 no.1:169-171 '55
(Fields, Algebraic) (MLRA 8:6)

FADDEYEV, D. K.

Faddeev, D. K. On homology theory for finite groups of operators. Izv. Akad. Nauk SSSR. Ser. Mat. 19, 193–200 (1955). (Russian)

I - F/W

Let G be a group, H a subgroup, A a G-module. For any integer $n \geq 0$ the elements $f \in C^n(G, A)$ which, in their homogeneous form, depend only on the right cosets of G mod H in which the arguments lie, form a subgroup $C_\flat^n(G, H, A)$ of $C^n(G, A)$; by definition $Z_\flat^n(G, H, A) = Z^n(G, A) \cap C_\flat^n(G, H, A)$, $B_\flat^n(G, H, A) = \delta C_\flat^{n-1}(G, H, A)$ and $H_\flat^n(G, H, A) = Z_\flat^n(G, H, A)/B_\flat^n(G, H, A)$. If H is normal in G then $H_\flat^n(G, H, A) \approx H^n(G/H, A^H)$. [These definitions and remark, but not the notation, are much as in Adamson, Proc. Glasgow Math. Assoc. 2, 66–76 (1954) [MR 16, 442] where with the added hypothesis that H is of finite index in G the definitions are extended to permit negative n.] Now let G have order hk, H have order h, h and k being relatively prime; because $hkH^n(G, A) = 0$, there is a unique direct decomposition $H^n(G, A) = H_\flat^n(G, A) + H_\iota^n(G, A)$, where $kH_\flat^n(G, A) = 0$ and $hH_\iota^n(G, A) = 0$. The main result (Theorem 1) asserts that λ: $H_\flat^n(G, H, A) \approx H_\flat^n(G, A)$ and ι: $H_\iota^n(G, A) \approx H_\iota^n(H, A)$, where λ and ι are lift and restriction homomorphisms, and $H_\flat^n(H, A)$ is a certain direct summand of $H^n(H, A)$. As a corollary one

(over)

Faddeev, D.K.

has (Theorem 2), for any finite group G, $H^n_*(G, A) \approx \sum H_*^n(S_p, A)$ (direct sum), where p runs over the set of primes dividing the order of G, and S_p is a p-Sylow subgroup of G. The special case of Theorem 1 in which H is normal in G was given by Hochschild and Serre [Trans. Amer. Math. Soc. 74, 110-134 (1953); MR 14, 619]. *E. R. Kolchin* (New York, N.Y.).

2/2

FADDEYEV, D.K.

1

Faddeev, D. K. On the concept of norm of a simple central algebra. Dokl. Akad. Nauk SSSR (N.S.) 105 (1955), 662–663. (Russian)

Let k_0 be a field, k_1 a finite separable extension of k_0, $\mathfrak{a}$ a central simple algebra over k_1. M. Kneser [Arch. Math. 4 (1953), 97–99; MR 14, 1058] defined the norm $N_{k_1/k_0}(\mathfrak{a})$; it is a central simple algebra over k_0. After observing (Th. 1) that $N_{k_2/k_0}(\mathfrak{a}) = N_{k_1/k_0}(N_{k_2/k_1}(\mathfrak{a}))$, the author shows (Th. 2) that if, for any extension K of k_0, one writes $K \cdot k_1 = \sum K_i$ (direct sum of fields) and $\mathfrak{a}_K = \sum \mathfrak{a}_i$ (direct sum, $\mathfrak{a}_i$ central simple over K_i), then $(N_{k_1/k_0}(\mathfrak{a}))_K \approx \prod N_{K_i/K}(\mathfrak{a}_i)$. Next, assuming that k_0 is a $\mathfrak{p}$-adic field and $\mathfrak{p}_1$ is a place of k_1 over $\mathfrak{p}$, he proves (Th. 3) that passing to the norm leaves invariant the invariant of $\mathfrak{a}$ at $\mathfrak{p}_1$, i.e. $(\mathfrak{a}/\mathfrak{p}_1) = (N_{k_1/k_0}(\mathfrak{a})/\mathfrak{p})$. This permits him to prove (Th. 4) that if k_0 is an algebraic number field of finite degree with place $\mathfrak{p}$ and $\mathfrak{p}_1, \cdots, \mathfrak{p}_r$ are the places of k_1 into which $\mathfrak{p}$ factors, then $(N_{k_1/k_0}(\mathfrak{a})/\mathfrak{p}) = \sum (\mathfrak{a}/\mathfrak{p}_i)$.

E. R. Kolchin (New York, N.Y.).

Leningrad State Univ.

Faddeyev, D.K.

44-1-140

TRANSLATION FROM: Referativnyy zhurnal, Matematika, 1957, Nr 1, p 17, (USSR)

AUTHOR: Borevich, Z.I., Faddeyev, D.K.

TITLE: On the Theory of Holmology in Groups (K teorii gomologiy v gruppakh)

PERIODICAL: Tr. 3-go Vses. matem. s"yezda, 2, Moscow, AN SSSR, 1956, p 111

ABSTRACT: Bibliographic entry

Card 1/1

DEY

SUBJECT USSR/MATHEMATICS/Theory of probability CARD 1/2 PG - 705
AUTHOR FADDEEV D.K.
TITLE On the notion of the entropy of a finite scheme of probability.
PERIODICAL Uspechi mat.Nauk 11, 1, 227-231 (1956)
reviewed 4/1957

The entropy $H(p_1,p_2,\dots,p_n)$ of the probability distribution $(p_1,p_2,\dots,p_n)$ (where n is an arbitrary integer ≥ 2, $p_k \geq 0$ and $\sum_{k=1}^{n} p_k = 1$) is characterized by the following three axioms: 1) $H(p,1-p)$ is a continuous function of p $(0 \leq p \leq 1)$ and is positive at least in one point. 2) $H(p_1,p_2,\dots,p_n)$ is a symmetric function of its variables. 3) for $n \geq 2$ holds

$$H(p_1,p_2,\dots,p_{n+1}) = H(p_1,p_2,\dots,p_{n-1},p_n+p_{n+1}) + (p_n+p_{n+1})H(p,1-p) ,$$

where $p = \frac{p_n}{p_n+p_{n+1}}$. This system of axioms is simpler than that given recently by A.Ja.Khintchine (Uspechi mat.Nauk 8, 3-55 (1953)). The main point of the proof is that it is shown, that the only solutions of the functional equation

SUBJECT USSR/MATHEMATICS/Theory of probability CARD 1/2 PG - 705
AUTHOR FADDEEV D.K.
TITLE On the notion of the entropy of a finite scheme of probability.
PERIODICAL Uspechi mat.Nauk 11, 1, 227-231 (1956)
reviewed 4/1957

The entropy $H(p_1,p_2,\dots,p_n)$ of the probability distribution $(p_1,p_2,\dots,p_n)$ (where n is an arbitrary integer $\geqslant 2$, $p_k \geqslant 0$ and $\sum_{k=1}^{n} p_k = 1$) is characterized by the following three axioms: 1) $H(p,1-p)$ is a continuous function of p $(0 \leqslant p \leqslant 1)$ and is positive at least in one point. 2) $H(p_1,p_2,\dots,p_n)$ is a symmetric function of its variables. 3) for $n \geqslant 2$ holds

$$H(p_1,p_2,\dots,p_{n+1}) = H(p_1,p_2,\dots,p_{n-1},p_n+p_{n+1}) + (p_n+p_{n+1})H(p,1-p) ,$$

where $p = \frac{p_n}{p_n+p_{n+1}}$. This system of axioms is simpler than that given recently by A.Ja.Khintchine (Uspechi mat.Nauk 8, 3-55 (1953)). The main point of the proof is that it is shown, that the only solutions of the functional equation

KANTOROVICH, L.V.; FADDEYEV, D.K.

Isidor Pavlovich Natanson; on the occasion of the 50th anniversary of his birth. Usp.mat.nauk 11 no.4:193-196 Jl-Ag '56.
(Natanson, Isidor Pavlovich, 1906-) (MLRA 9:11)
(Bibliography--Mathematics)

FADDEYEV, D.K.

Borevič, Z. I. and Faddeev, D. K. Theory of homology in groups. I. Vestnik Leningrad. Univ. 11 (1956), no. 7, 3-39. (Russian)

This paper is expository and treats the following subjects (along with full proofs): Classical definitions of cohomology (homology) of groups. Resolutions, independence of the cohomology (homology) groups of the specific resolution used. Cohomology sequence for finite groups, relations between the cohomology of a finite group and its Sylow subgroups. Reduction theorems (see, e.g., Borevič, Dokl. Akad. Nauk SSSR (N.S.) 104 (1955), 5-8; MR 17, 583).

W. T. van Est (Utrecht).

Math

FADDEYEV, D.K.

The theory of algebras over a field of algebraic functions of one variable (with summary in English). Vest. LGU 12 no.7:45-51 '57.
(Algebra) (Groups, Theory of) (MLRA 10:6)

SOV/140-58-5-11/14

AUTHOR: Faddeyev, D.K.

TITLE: On the Question Concerning the Upper Relaxation for the Solution of Systems of Linear Equations (K voprosu o verkhney relaksatsii pri reshenii sistem lineynykh uravneniy)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 5, pp 122-125 (USSR)

ABSTRACT: Let the approximate solution $x^{(k)}=(x_1^{(k)},\dots,x_n^{(k)})$ of the system Ax=b be sought according to the formula

$$(1)\quad a_{ii}x_i^{(k)}= a_{ii}x_i^{(k-1)}+q(b_i-a_{i1}x_1^{(k)}-\dots-a_{i,i-1}x_{i-1}^{(k)}-a_{ii}x_i^{(k-1)}-\dots-a_{in}x_n^{(k-1)}).$$

For matrices of second order Ostrovski [Ref 1] showed that for certain $q>1$ the velocity of convergence of (1) is higher than for $q=1$. The author states the same fact for matrices of third order.
There is 1 American reference.

Card 1/2

On the Question Concerning the Upper Relaxation for the Solution of Systems of Linear Equations SOV/140-58-5-11/14

ASSOCIATION: LOMI AN SSSR imeni V.A.Steklova (LOMI, AS USSR, imeni V.A.Steklov)

Card 2/2

AUTHOR: FADDEYEV, D.K. 43-7-15/18

TITLE: On Some Polynomial Sequences Which can be Applied for the Construction of the Iteration Processes for the Solution of Linear Algebraic Systems of Equations (O nekotorykh posledovatel'nostyakh polinomov, poleznykh dlya iteratsionnykh metodov resheniya sistem lineynykh algebraicheskikh uravneniy)

PERIODICAL: Vestnik Leningradskogo Universiteta, Seriya Matematiki, Mekhaniki i Astronomii, 1958, Nr 7 (2), pp 155-159 (USSR)

ABSTRACT: 1. Let the polynomial sequence $\{f_n(t)\}$ be defined by the formulas:

$$f_o(t) = 1, \quad f_1(t) = t, \quad f_n(t) = (1+\alpha_n)tf_{n-1}(t) - \alpha_n f_{n-2}(t), \quad n \geqslant 2.$$

Theorem: $f_n(0, \alpha_2, \ldots, \alpha_m, 0, \alpha_{m+2}, \ldots, \alpha_n, t) =$

$$= f_m(0, \alpha_2, \ldots, \alpha_m; t) \cdot f_{n-m}(0, \alpha_{m+2}, \ldots, \alpha_n, t).$$

Theorem: If $-1 \leqslant \alpha_i \leqslant +1$ for $i = 2, 3, \ldots n$ is valid, then $|f_n(0, \alpha_2, \ldots, \alpha_n, t)| \leqslant 1$ for $|t| \leqslant 1$.

Card 1/2 Theorem: If for $n \geqslant 2$ there holds $0 \leqslant \alpha_n \leqslant \alpha < 1$, then the sequence

On Some Polynomial Sequences Which can be Applied for the Construction of the Iteration Processes for the Solution of Linear Algebraic Systems of Equations 43-7-15/18

$\{f_n(t)\}$ tends uniformly to zero as $n \to \infty$ on every interval $-a \leq t \leq a$, $a < 1$.

2. For the solution of the linear system of equations $X = BX + F$ the author proposes the iteration process

$$X_n = (1+\alpha_n)(BX_{n-1}+F) - \alpha_n X_{n-2}, \quad n \geqslant 2, \quad X_1 = BX_o + F$$

which for a suitable choice of the α_i shows a better convergence than the usual one $X_n = BX_{n-1}+F$. If $Y_n = X^*-X_n$ denotes the error vector, then there follows $Y_n = (1+\alpha_n)BY_{n-1} - \alpha_n Y_{n-2}$, i.e. $Y_n = f_n(B)Y_o$, where $f_n(t) = f_n(0, \alpha_2, \ldots, \alpha_n, t)$ are the polynomials considered in the first part.

It is shown that several well-known iteration processes are special cases of this general scheme.

3 Soviet and 1 foreign references are quoted.

SUBMITTED: 13 January 1957

AVAILABLE: Library of Congress

Card 2/2

1. Polynomials 2. Linear equations 3. Mathematics Theory

APPROVED FOR RELEASE: Thursday, July 27, 2000 CIA-RDP86-00513R00041232(

book is divided into two main parts. The first part contains summaries of the papers presented by Soviet scientists at the Conference that were not included in the first two volumes. The second part contains the text of reports submitted to the editor by non-Soviet scientists. In those cases when the non-Soviet scientist did not submit a copy of his paper to the editor, the title of the paper is cited and, if the paper was printed in a previous volume, reference is made to the appropriate volume. The papers, both Soviet and non-Soviet, cover various topics in number theory, algebra, differential and integral equations, function theory, functional analysis, probability theory, topology, mathematical problems of mechanics and physics, computational mathematics, mathematical logic and the foundations of mathematics, and the history of mathematics.

TABLE OF CONTENTS:

BRIEF CONTENTS OF REPORTS OF THE SECTIONS

FADDEYEV, D. K.

16(1) PHASE I BOOK EXPLOITATION SOV/2217

Akademiya nauk SSSR. Matematicheskiy institut imeni V. A. Steklova

Raboty po priblizhennomu analizu (Works on Approximate Analysis) Moscow, AN SSSR, 1959. 391 p. (Its: Trudy, tom. 53) Errata slip inserted. 2,200 copies printed.

Ed.: L. V. Kantorovich, Corresponding Member, USSR Academy of Sciences, Professor; Resp. Ed.: I. G. Petrovskiy, Academician; Deputy Resp. Ed.: S. M. Nikol'skiy, Professor; Ed of Publishing House: N. K. Laychik; Tech. Ed.: R. A. Arons.

PURPOSE: This book is intended for professional mathematicians interested in approximation methods.

COVERAGE: The book contains a collection of works in the field of approximate computations completed at the Leningrad Branch of the Mathematics Institute imeni V. A. Steklov of the Academy of Sciences, USSR, from 1953 to 1958. All the works contained in this book are published in full for the first time. The theoretical study of approximation methods conceptually related to the application of methods of functional analysis has a significant place in the book. In addition, the book contains groups of works on the following subjects: 1) approximate methods of solving the boundary value problems of mathematical physics, 2) numerical methods in the theory of functions, 3) numerical methods of linear algebra, and 4) numerical computation of an indefinite integral. The editor thanks the following people: V. I. Krylov, V. N. Faddeyeva, and V. P. Il'in, scientific workers at the Institute, for editing the articles; Ye. A. Meynik, T. P. Akimova, K. Ya. Alfer'yeva and G. A. Gaber, workers at the Institute's laboratory, for computing the tables; Professor S. M. Lozinskiy for his critical review of many of the works; A. A. Borodnitsinyy and his colleagues for reviewing the works published; Professors D. K. Faddeyev and Yu. Ye. Alenitsyn for final review of the book.

AVAILABLE: Library of Congress

(1)

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16(1)

SOV/43-59-7-8/17

AUTHORS: Borevich, Z. I., and Faddeyev, D. K.

TITLE: Homology Theory in Groups. II. On Projective Resolvents of Finite Groups (Teoriya gomologiy v gruppakh. II. O proyektivnykh rezol'ventakh konechnykh grupp)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 7(2), pp 72-87 (USSR)

ABSTRACT: The present paper is a continuation of [Ref 2]. Let G be a finite group, K be a commutative ring with unit element, O = K[G] group ring of G over K. The authors consider only so-called admissible O-modules (A is admissible if it is a free K-module of finite rank). Two admissible O-modules are called equivalent, A ∼ B, if there exist projective admissible O-modules P and Q so that $(A \dotplus P) \cong (B \dotplus Q)$. Let $\Phi : 0 \xleftarrow{\partial} K \xleftarrow{\partial} \Phi_0 \xleftarrow{\partial} \Phi_1 \xleftarrow{\partial} \dots \xleftarrow{\partial} \Phi_n \xleftarrow{\partial} \dots$ be a projective resolvent of G over K and $\Omega_n = \Omega_n(\Phi) = \partial \Phi_n$.
Let the ring K have the property: If a free K-module of finite rank is represented as the sum $M \dotplus N$ of K-modules, where M is a free K-module, then also N is a free K-module. Under this assumption it is shown: The O-modules $\Omega_n(\Phi)$ and $\Omega_n(\Phi')$ are equivalent if Φ and Φ' denote two arbitrary resolvents. Let

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Homology Theory in Groups. II. On Projective Resolvents of Finite Groups SOV/43-59-7-8/17

now G be a p-group and K be a complete local ring with the residue class field of characteristic p. Then there exists a minimal ϕ for which all O-modules $\Omega_n(\phi)$ up to isomorphisms are determined uniquely and are indecomposable. If G is neither cyclic nor a generalized quaternion group, then these $\Omega_n(\phi)$ all are different. If K is the galois field GF(p), then for the minimal ϕ of a p-group G there holds the isomorphism

$$H^n(G,K) \cong \mathrm{Hom}\,(\Omega_n/I\Omega_n, K) \cong \Omega^g_{n+1},$$

where I is the ideal of the group ring O generated by $\sigma - 1\,(\sigma \in G)$. 12 theorems and 17 lemmas are formulated altogether. There are 7 references, 1 of which is Soviet, and 6 American.

SUBMITTED: July 1, 1958

Card 2/2

FADDEYEV, D.K.; SHMIDT, R.A.

Conditions of field imbedding in the case of a cyclic normal divisor of the eighth order. Vest. LGU 14 no.19:36-42 '59. (MIRA 12:9)

(Galois theory)

BASHMAKOV, M.I.; FADDEYEV, D.K.

Simultaneous representation of zero by a pair of quadratic quaternary forms. Vest. LGU 14 no.19:43-46 '59. (MIRA 12:9)

(Forms (Mathematics))

ALEKSANDROV, A.D.; AKILOV, G.P.; ASHNEVITS, I.Ya.; VALLANDER, S.V.; VLADIMIROV, D.A.; VULIKH, B.Z.; GABURIN, M.K.; KANTOROVICH, L.V.; KOLBINA, L.I.; LOZINSKIY, S.M.; LADYZHENSKAYA, O.A.; LINNIK, Yu.V.; LEBEDEV, N.A.; MIKHLIN, S.G.; MAKAROV, B.M.; NATANSON, I.P.; NIKITIN, A.A.; POLYAKHOV, N.N.; PINSKER, A.G., SMIRNOV, V.I.; SAFRONOVA, G.P.; SMOLITSKIY, Kh.L.; FADDEYEV, D.K.

Grigorii Mikhailovich Fikhtengol'ts; obituary. Vest. LGU 14 no.19: 158-159 '59. (MIRA 12:9)
(Fikhtengol'ts, Grigorii Mikhailovich, 1888-1959)

16(1)

AUTHORS: Faddeyev, D.K., and Shmidt, R.A. SOV/43-59-19-3/14

TITLE: Conditions of Field Plunging in Case of a Cyclic Normal Subgroup of the Eighth Order

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 19(4), pp 36-42 (USSR)

ABSTRACT: Given a field k_o with the characteristic $\neq 2$ and its normal algebraic extension k with the Galois group F. Furthermore a group G and its homomorphic mapping onto F, where the kernel of homomorphy N is a cyclic group of eighth order. The authors investigate the plunging of field k into the field K with the group G over k_o for which the natural homomorphism of the group of K onto the group of k is identical with the given homomorphism of G onto F. The necessary conditions are given in [Ref 1,2]. The authors obtain an additional condition which, together with those ones formulated in [Ref 1,2], is necessary and sufficient for the desired imbedding.
There are 4 references, 2 of which are Soviet, 1 German, and 1 Japanese.

SUBMITTED: July 1, 1958

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16(1)

AUTHORS: Bashmakov, M.I., and Faddeyev, D.K. SOV/43-59-19-4/14

TITLE: On the Simultaneous Representation of Zero by a Pair of Quadratic Forms of Four Variables

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 19(4), pp 43-46 (USSR)

ABSTRACT: Theorem: Let

$$(1) \begin{cases} F_1 = a_1x_1^2+a_2x_2^2+a_3x_3^2+a_4x_4^2 = 0 \\ F_2 = b_1x_1^2+b_2x_2^2+b_3x_3^2+b_4x_4^2 = 0 \end{cases}$$

be a curve of genus 1 in the projective space over the field k_o, the characteristic of which is different from 2 and 3. In order that on (1) there exist a rational point it is necessary and sufficient that on the surface

$$(2) \quad (a_1+b_1t)x_1^2+(a_2+b_2t)x_2^2+(a_3+b_3t)x_3^2+(a_4+b_4t)x_4^2 = 0$$

in the projective space over the field $K_o = k_o(t,s)$ there exist a rational point; here t is transcendent over k_o and

$$s^2 = (a_1+b_1t)(a_2+b_2t)(a_3+b_3t)(a_4+b_4t).$$

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On the Simultaneous Representation of Zero by a Pair of Quadratic Forms of Four Variables SOV/43-59-19-4/14

A rational point on an algebraic manifold in the projective space over the field is a point the coordinates of which belong to this field.
The authors mention I.R.Shafarevich.
There are 2 Soviet references.

SUBMITTED: July 1, 1958

Card 2/2

FADDEYEV, D.K.

Stipulating properties of matrices. Trudy mat. inst. 53:387-391 '59. (MIRA 12:9)

(Matrices)

16(1)

AUTHORS: Faddeyev, D.K., Skopin, A.I. SOV/20-127-3-13/71

TITLE: On the Proof of a Theorem of Kawada

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 529-530 (USSR)

ABSTRACT: The group of a normal algebraic p-extension k of the local field k_o of degree n_o over R_p is representable as a factor group S/H, where S is a free group with $\nu = n_o + 2$ generators and H normal subgroup of S. If all fields k are contained in a fixed extension of K, then the k and the normal subgroups H stand in a one-to-one relation. It is proved that to the fields k there correspond exactly those H which contain a fixed word from S for a fixed K. This statement gives a simpler proof of the result of Kawada [Ref 1].
There are 4 references, 1 of which is Soviet, 1 Japanese, and 2 German.

PRESENTED: April 11, 1959, by I.M. Vinogradov, Academician
SUBMITTED: April 9, 1959

Card 1/1

APPROVED FOR RELEASE: Thursday, July 27, 2000 CIA-RDP86-00513R00041232(

FADEYEV, D. K.

16(0)

PHASE I BOOK EXPLOITATION SOV/3177

Matematika v SSSR za sorok let, 1917-1957. tom 1: Obzornyye stat'i (Mathematics in the USSR for Forty Years, 1917-1957) Vol 1: Review Articles) Moscow, Fizmatgiz, 1959. 1002 p. 5,500 copies printed.

Eds: A. G. Kurosh, (Chief Ed.), V. I. Bityutskov, V. G. Boltyanskiy, Ye. B. Dynkin, G. Ye. Shilova, and A. P. Yushkevich; Ed. (Inside book): A. P. Lapko; Tech. Ed.: S. N. Akhlamov.

PURPOSE: This book is intended for mathematicians and historians of mathematics interested in Soviet contributions to the field.

COVERAGE: This book is Volume I of a major 2-volume work on the history of Soviet mathematics. Volume I surveys the chief contributions made by Soviet mathematicians during the period 1917-1957; Volume II will contain a bibliography of major works since 1917 and biographic sketches of some of the leading mathematicians. This work follows the tradition set by two earlier works: Matematika v SSSR za pyatnadtsat' let (Mathematics in the USSR for 15 Years) and Matematika v SSSR za tridtsat' let (Mathematics in the USSR for 30 Years). The book is divided into the major divisions of the field, i.e., algebra, topology, theory of probabilities, functional analysis, etc., and contributions and outstanding problems in each discussed. A listing of some 1400 Soviet mathematicians is included with references to their contributions in the field.

FADDEYEV, Dmitriy Konstantinovich; SOMINSKIY, Il'ya Samuilovich; GORYACHAYA, M.M., red.; MURASHOVA, N.Ya., tekhn. red.

[Algebra for self-instruction] Algebra dlia samoobrazovaniia. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1960. 529 p. (MIRA 14:5)

(Algebra)

PHASE I BOOK EXPLOITATION SOV/5002

Faddeyev, Dmitriy Konstantinovich, and Vera Nikolayevna Faddeyeva

Vychislitel'nyye metody lineynoy algebry (Computing Methods of Linear Algebra) Moscow, Fizmatgiz, 1960. 656 p. 10,150 copies printed.

Ed.: G. P. Akilov; Tech. Ed.: R. G. Pol'skaya.

PURPOSE: This book is intended for mathematicians.

COVERAGE: The book presents computation methods for solving basic problems in linear algebra, i.e., linear-equation systems, inversion matrices, and complete and partial eigenvalue problems. During recent years many numerical methods of solving such problems have been proposed. The authors find it necessary to systematize such methods and give their generalized exposition. Ch. I. is introductory. The remaining chapters cover material which was partly dealt with in the book by V. N. Faddeyeva, published in 1950 under the same title. A number of theorems, examples, tables, and diagrams are included. The authors thank I. A. Lifshits, R. S. Aleksandrova, V. N. Kublanovskaya, and G. P. Akilov for their assistance. There are 852 references: 126 Soviet, 468 English,

~~Card 1/9~~

GEL'FAND, I.M. (Moskva); DYUDENI, N.Ye. (SShA); KIRILLOV, A.A. (Moskva); PODSYPANIN, V. (Tula); TER-MKRTACHAN, M. (Yerevan); KUZ'MIN, Yu.I. (Moskva); VEYL', G. (SShA); FADDEYEV, D.K. (Leningrad); ARNOL'D, V.I. (Moskva); IVANOV, V.F. (San-Karlos, Kaliforniya, SShA); GRAYEV, M.I. (Moskva); LEBEDEV, N.A. (Leningrad); LOPSHITS, A.M. (Moskva); ZHITOMIRSKIY, Ya.I.; MITYAGIN, B.S. (Moskva); SKOPETS, Z.A. (Yaroslavl'); PUANKARE, A. (Frantsiya); GAVEL, V.V. (Brno, Chekhoslovakiya); SOLOMYAK, M.Z. (Leningrad); LEVIN, V.I. (Moskva); BARBAN, M.B. (Tashkent); FRIDMAN, L.M. (Tula)

Problems. Mat. pros. no.5:253-260 '60. (MIRA 13:12)
(Mathematics--Problems, exercises, etc.)

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AUTHORS: Borevich, Z. J., Faddeyev, D. K.

TITLE: Integral Representations of Quadratic Rings /16

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1960, Vol.19, No.4, pp.52-64

TEXT: Let K be a quadratic algebraic number field and L an m-dimensional linear space over K. L can be understood as linear space over the field of the rational numbers. Let $\{ l_1, \ldots, l_s \}$ (s = 2m) be an R-base of L. The set M of all linear combinations $a_1 l_1 + \ldots + a_s l_s$, where a_i are rational integers, is called a module in L. Let O be the ring of all integers of K. All numbers $\alpha \in K$, for which $\alpha M \subset M$, form a subring O_M (ring of the factors) of O. If a quadratic ring O_f $((O:O_f) = f)$ is contained in O_M, then M can be understood as O_f-module. M is called module in K, if m = 1.

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At first the authors collect some known properties (Ref.2) of the modules and prove three lemmata. Then they treat in § 4 the decomposition theorem. Let A be a module in K; let AM denote the module consisting of the elements αx, $\alpha \in A$, $x \in M$. The exponent

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of a finite abelian group is defined to be the least common multiple of the orders of its elements.

Lemma 4: If the exponent of the factor group OM/M is equal to f, then O_M is identical with O_f.

Lemma 5: Let M be a module in L. In L there exists a K-basis $u_1, \ldots, u_m$ so that the set A of all coefficients ξ_1 in the decompositions $x = \xi_1 u_1 + \ldots + \xi_m u_m$ ($\xi_1 \in K$) of the elements $x \in M$ is a module in K which belongs to the ring O_M.

Lemma 6: For every M in L it holds the decomposition into a direct sum of O_M - submodules: $M = Av \dotplus M_1$ ($v \in M$), where A is a module in K which belongs to O_M.

Theorem 1: Let L be a linear m-dimensional space over the quadratic field K and M a module in L with the corresponding ring $O_M = O_{f_1}$. Then it is

(3) $M = A_1 v_1 \dotplus \ldots \dotplus A_m v_m \quad (v_i \in L)$.

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Integral Representations of Quadratic Rings

where A_i is a module in K belonging to O_{f_i} $(i = 1, \ldots, m)$. Here it is

(4) $O_{f_1} \subset O_{f_2} \subset \ldots \subset O_{f_m}$.

(v_i can be chosen in M).

§ 5 Invariants. Lemma 7: Let $v_1, v_2 \in L$ be linearly independent over K. Let A_1, A_2 be modules in K which belong to the rings O_{f_1}, O_{f_2}. Then in L there exists u_1, u_2 such that

$A_1v_1 \dot{+} A_2v_2 = O_fu_1 + A_1A_2u_2$, where $O_f = O_{f_1} \cap O_{f_2}$.

For M let the decomposition

(6) $M = A_1v_1 \dot{+} \ldots \dot{+} A_mv_m$ $(v_i \in L)$

hold, where A_i are modules in K.

Lemma 8: The class C(M) of similar modules in K which contains the

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Integral Representations of Quadratic Rings

module $A = A_1 \cdot \cdot \cdot A_m$, only depends on M and not on the representation (6).

Theorem 2: Two O_f-modules M and M' in the linear space L over K are operationally isomorphic relative to O_f, if and only if C(M) and C(M') are identical and OM/M and OM'/M' are isomorphic.

Theorem 3: Let $O_f = \{1, f\omega\}$ be subring of the ring of all integral numbers of K. All classes of the operationally isomorphic torsionless O_f-modules with finitely many generators correspond one-to-one to the systems $(f_1, \ldots f_m; C)$, where f_i are natural numbers, whereby f_i divides f_{i-1} and f_1 divides f, while C is the class of similar modules in K which belongs to the ring O_{f_m}.

Let H(f,m) be the number of classes of the operationally isomorphic O_f-modules which can be embedded in an m-dimensional linear space over K. It is

$$H(f, m) = \sum_{d|f} H(d, m-1).$$

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§ 6: Let M be a module over O_f. M is called shortable, if from the isomorphism of $M \dot{+} M'$ and $M \dot{+} M''$, where M' and M" are O_f-modules, it follows the isomorphism of M' and M".

Theorem 4: In order that the O_f-module M be shortable, it is necessary and sufficient that the ring of the factors O_g of C(M) has the property: If A' and A" are modules in K, the rings of which contain the factors O_f, then the similarity of A' and A" follows from the similarity of $O_g A'$ and $O_g A''$.

§ 7. Consequence for integer matrices.

Theorem 5: Let $\varphi(t) = t^2 + at + b$ be an irreducible polynomial with rational integers a and b; let α be zero of φ ; K the quadratic field $R(\alpha)$ and $O_f = \{1, f\omega\}$, where $1, \omega$ is the fundamental base of K. Then the number of the classes of the unimodular equivalent integral matrices of order 2m, for which $\varphi(t)$ is a minimum polynomial, is equal to H(f,m) from § 5.

There are 2 German references.

Card 5/5

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16.1200
AUTHOR: Faddeyev, D. K.

TITLE: On the Construction of the Reduced Multiplicative Group of the Cyclic Extension of the Local Field 16

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya matematicheskaya, 1960, Vol. 24, No. 2, pp. 145-152

TEXT: Let 1 be an odd prime number, K a relative cyclic extension of degree $L = 1^m$ of the local field k_o, k_o a finite extension of the field of the 1 - adic numbers which contains the 1-th root of unity. The author investigates the structure of the group K^*/K^{*1} which is understood one time as a group of operators and the other time as a space with scalar multiplication with the aid of the norm remainder symbol. In theorem 1 it is stated that K^* possesses with respect to K^{*L1} an "almost normal" base whose elements depend on the fact whether K can be embedded in the cyclic field of degree L1 over k or not. Theorem 2 states that the base elements of the base exhibited in theorem 1 can be chosen of a special kind so that a part of the scalar products of the base elements is equal to zero.

PRESENTED: by I. M. Vinogradov, Academician
SUBMITTED: April 9, 1959

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16.1200

AUTHOR: Faddeyev, D.K.

TITLE: Group of Divisor Classes on the Curve $x^4 + y^4 = 1$

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4, pp. 776 - 777

TEXT: The author proves the finiteness of the group of the classes of rational divisors of zero degree for the field of the algebraic functions $k = R(x,y)$, $x^4 + y^4 = 1$, where R is the rational number field. Let S be the field of the complex numbers. The field $K = S(x,y)$, $x^4 + y^4 = 1$ has the genus $g = 3$. Among others K contains the following subfields: $K_1 = S(\xi, y)$, $\xi = x^2$, $\xi^2 = 1 - y^4$; $K_2 = S(x, \eta)$, $\eta = y^2$, $\eta^2 = 1 - x^4$; $K_3 = S(u,v)$, $u = \frac{x}{y}$, $v = \frac{1}{y^2}$, $v^2 = u^4 + 1$. All these K_i have the genus 1. Let ν_i be the mapping which assigns to every point $\mathfrak{p} \in C$ the points on C_i covered by $\mathfrak{p}$, where C, C_1, C_2, C_3 are the Riemannian surfaces of K, K_1, K_2, K_3. The ν_i can be extended in a natural way to the group of divisors, to the

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Group of Divisor Classes on the Curve $x^4+y^4 = 1$

group of the divisor classes etc. of K and give homomorphic mappings of these groups into the corresponding groups of the fields K_i. On the other hand the ν_i map the groups of the 1-chains, of the 1-cycles and of the 1-homologies of C to the corresponding groups of C_i. Let ν be the mapping of the Jacobian manifold J (i.e. of the group of the divisor classes of zero degree) of the field K into the direct product $J_1 \times J_2 \times J_3$ of the Jacobian manifolds of the K_i: $\nu(a) = \nu_1(a) \times \nu_2(a) \times \nu_3(a)$, $a \in J$. The author shows that ν maps J epimorphically onto $J_1 \times J_2 \times J_3$ and that the kernel is a group of order eight of the type (2,2,2).

Let now R be the field of rational numbers and $k = R(x,y)$, $x^4 + y^4 = 1$. The group of the classes of rational divisors of zero degree of k is mapped by ν into the direct product of these groups for the fields $k_1 = R(\xi, y)$, $k_2 = R(x, \eta)$, $k_3 = R(u,v)$. Since in fields with genus 1 the group of the rational divisor classes of zero degree is isomorphic to

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Group of Divisor Classes on the Curve $x^4+y^4 = 1$

the group of the rational points, on the curves $\xi^2 = 1 - y^4$, $v^2 = 1 + u^4$ there exist no nontrivial rational points and the kernel of ν is finite, from this it follows the finiteness of the group of the classes of rational divisors of zero degree on $x^4 + y^4 = 1$. It turns out that the order of the group is equal to 32.
Some conclusions, e.g. : There exist at most 32 integer rational divisors of second degree.
There are 2 references, all non-Soviet.

ASSOCIATION: Leningradskoye otdeleniye matematicheskogo instituta imeni V.A. Steklova Akademii nauk SSSR (Leningrad Branch of the Mathematical Institute imeni V.A. Steklov of the Academy of Sciences USSR)

PRESENTED: May 19, 1960, by I.M. Vinogradov, Academician

SUBMITTED: May 6, 1960

Card 3/3

FADDEYEV, Dmitriy Konstantinovich; SOMINSKIY, Il'ya Samuilovich; AKILOV, G.P., red.; LUK'YANOV, A.A., tekhn. red.

[Collection of problems in higher algebra] Sbornik zadach po vysshei algebre. Izd.7., ispr. Moskva, Gos. izd-vo fiziko-matem.lit-ry, 1961. 304 p. (MIRA 14:12)

(Algebra—Problems, excercises, etc.)

FADDEYEV, Dmitriy Konstantinovich; PETROVSKIY, I.G., akademik, otv.red. Prinimali uchastiye: SHAPIRO, A.P., student; TUSHKINA, T.A., studentka; BOROVSKIY, Yu.Ye., student; SMIRNOV, G.P. [deceased], student; KUTIKOV, L.B., student; IVANOV, F.A.; NIKOL'SKIY, S.M., prof., zamestitel' otv.rd.; SKOPIN, A.I., kand.fiz.-mat.nauk, red.izdaniya; BARKOVSKIY, I.V., red.izd-va; BOCHEVER, V.T., tekhn.red.

[Tables of the fundamental unitary representations of Fedorov groups] Tablitsy osnovnykh unitarnykh predstavlenii fedorovskikh grupp. Moskva, Izd-vo Akad.nauk SSSR, 1961. 173 p. (Akademiia nauk SSSR. Matematicheskii institut. Trudy , vol.56) (MIRA 14:4)

1. Leningradskiy gosudarstvennyy universitet, matematiko-mekhanicheskiy fakul'tet (for Shapiro, Tushkina, Borovskiy, Smirnov, Kutikov).
2. Leningradskoye otdeleniye Matematicheskogo instituta im. V.A. Steklova (for Ivanov).
(Crystallography—Tables, etc.) (Groups, Theory of)

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AUTHORS: Faddeyev, D. K., Faddeyeva, V. N.

TITLE: On ill-conditioned systems of linear equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 1, 1962, 37. abstract 1V171. ("Zh. vychisl. matem. i matem fiz ," 1961, 1, no. 3, 412-417)

TEXT: A method to solve the ill-conditioned system

$$Ax = f \qquad (1)$$

is considered. As a measure of conditioning, the author takes the so-called conditioning numbers: N-number $= \frac{1}{n} N(A)\, N(A^{-1})$, $N(A) = \sqrt{\mathrm{Sp}\, A'A}$; M-number $= \frac{1}{n} M(A)\, M(A^{-1})$, $M(A) = n \max_{ij} |a_{ij}|$; P-number $= \frac{\max|\lambda_i|}{\min|\lambda_i|}$, λ_i - eigenvalues of the matrix A; H-number $= \sqrt{\frac{\mu_1}{\mu_n}}$, μ_1 -- the largest, μ_n -- the smallest eigenvalue of A'A. The solution of (1) is based on the use of the connection between the eigenvectors of the

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On ill-conditioned systems of linear ... S/044/62/000/001/054/061
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matrices A'A and AA'. It is shown that the vectors $v_i = \frac{1}{\sqrt{\mu_i}} Au_i$ form a normed orthogonal system of eigenvectors of AA' when A is not singular and $u_1, \ldots, u_n$ denotes the normed orthogonal system of eigenvectors of A'A, belonging to the eigenvalues $\mu_1, \mu_2, \ldots, \mu_n$, respectively. The vector f is decomposed into the vectors $v_1, \ldots, v_n$: $f = \sum_{i=1}^{n} c_i v_i$ where $c_i = f(v_i)$. The solution to (1) is sought in the set-up $x = \sum_{i=1}^{n} d_i u_i$ where $d_i = \frac{c_i}{\sqrt{\mu_i}}$. Given as an example is the solution of an ill-conditioned system of third order with the symmetric matrix A. The author points out the good agreement of approximate solutions obtained by various methods. Assuming that the errors of the initial data are much smaller than the smallest eigenvalue of A'A, the influence of the inexact introduction of coefficients and free terms in (1) is clarified.

[Abstracter's note: Complete translation.]

Card 2/2

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(Probabilities)

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Invariants of divisor classes for $x^k(1-x) = y^l$ curves in an l-adic circular field. Trudy Mat.inst. 64:284-293 '61. (MIRA 15:3)

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FADDEYEV, D.K.

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1. Leningradskoye otdeleniye Matematicheskogo instituta imeni V.A. Steklova Akademii nauk SSSR. Predstavleno akademikom I.M. Vinogradovym.
(Algebra)

AKILOV, G.P.; VULIKH, B.Z.; GAVURIN, M.K.; ZALGALLER, V.A.; NATANSON, I.P.; PINSKER, A.G.; FADDEYEV, D.K.

Leonid Vital'evich Kantorovich; on his 50th birthday. Usp. mat.nauk 17 no.4:201-215 '62. (MIRA 15:8)
(Kantorovich, Leonid Vital'evich, 1912-)

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Aleksandr Danilovich Aleksandrov; on his 50th birthday. Vest. LGU 18 no.1:7-9 '63. (MIRA 16:1)

(Aleksandrov, Aleksandr Danilovich, 1912-)

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[Algebra for self-education] Algebra dlia samoobrazovaniia. Izd.2., ispr. Moskva, Izd-vo "Nauka," 1964. 529 p. (MIRA 17:7)

FADDEYEV, D.K.

Semigroup of kinds in the theory of integral representations.
Izv. AN SSSR. Ser. mat. 28 no.2:475-478 Mr-Ap '64. (MIRA 17:3)

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Representations of orders with a cyclic index. Trudy Mat. Inst. 80:51-65 '65. (MIRA 18:7)

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Moving-pictures in schools. Kinomekhanik no.10:11-12 O '53. (MLRA 6:10)
(Moving-pictures in education)

FADDEYEV, G.I.

Training of demonstrators of sound motion pictures. Fiz.v shkole 22 no.1:87-88 Ja-F '62. (MIRA 15:3)

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(Motion pictures, Talking)

FADDEYEV, I.P.

Physical representation of steam flow in the exhaust nozzle of a marine steam turbine. Nauch.-tekh. inform. biul. LPI no.10:25-29 '58. (MIRA 14:3)

(Marine gas turbines)

FADDEYEV, I. P., Cand Tech Sci -- (diss) "Effect of the humidity of steam on the economy of performance of a turbine stage." Leningrad, 1960. 18 pp; (Leningrad Ship-building Inst); 250 copies; price not given; (KL, 25-60, 135)

8(6)

S/143/60/000/02/008/018
D043/D002

AUTHOR: Faddeyev, I.P., Engineer

TITLE: The Efficiency Reduction of a Turbine Stage and the Increase of Flow Thru It When Working With Moist Steam

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1960, Nr 2, pp 61-67 (USSR)

ABSTRACT: Making reference to one of his previous papers [Ref 1], which deals with the diameter and the velocity of water drops in the axial clearance of a turbine stage, the author determined in this paper the theoretical efficiency reduction of a turbine stage operated with moist steam. As a result of theoretical conclusions, he gives a formula for calculating the efficiency drop when changing over from superheated to moist steam identical u/C_o:

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$$\Delta\eta = \eta^{neg}_{ol} - \eta^{bl}_{ol} = 2\frac{u}{C_0}\Big\{\Delta\varphi_c\sqrt{1-\rho}\cos\alpha_1 + \psi\cos\beta_2\Big|\sqrt{\rho + [\varphi_c^{neg}\sqrt{1-\rho}\cos(\beta_1-\alpha_1) - \frac{u}{C_0}\cos\beta_1]^2} - \sqrt{\rho + |\varphi_c^{bl}\sqrt{1-\rho}\cos(\beta_1-\alpha_1) - \frac{u}{C_0}\cos\beta_1]^2}\Big|\Big\} \quad (16)$$

where ψ - blade velocity factor; α_1, β_2 - effective angles of the flow outlet at the nozzles and working blades; $\eta^{neg}_{ol}, \eta^{bl}_{ol}$ - blade efficiency with superheated and moist steam, calculated according to G.S. Samoylovich and B.M. Troyanovskiy [Ref 3]; ρ - reaction

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of a stage, calculated according to V.V. Zvyagintsev's formula [Ref 4]; $\varphi_s^{n\psi}$ - velocity factor of the director; the value $(u/c_o)_o$ at which the reaction of a stage is equal to zero was determined according to a formula suggested by G.A. Zal'f. Calculations performed according to formula (16) coincide sufficiently with experimental data within the limits of dryness changes behind the nozzles from 0 to 0.94 in the u/C_o range of 0.35 to 0.55. The results of calculations $\Delta\eta = f(x)$ at u/C_o = constant coincide sufficiently in the indicated x range. For a stage working with atmospheric pressure behind it, there will be an efficiency reduction of 0,6% for each percent of in-

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The Efficiency Reduction of a Turbine Stage and the Increase of Flow Thru It When Working With Moist Steam

creased moisture when changing from superheated to moist steam. As the moisture increases, the flow of steam thru the stage will also increase. If the undercooling of steam is not taken into consideration, results will be obtained which are 1.5-2% lower than experimental data when calculating the flow thru a stage. The experiments were conducted with a large "NZL" steam turbine. The results were compared with similar investigations by Escher-Wyss. Reference is made to Ya.I. Shnee's book [Ref 2]. There are 3 graphs, and 6 references, 5 of which are Soviet and 1 Swiss.

ASSOCIATION: Leningradskiy politekhnicheskiy institut imeni M.I. Kalinina (Leningrad Polytechnic Institute imeni M. I. Kalinin)

SUBMITTED: October 26, 1959, by the Kafedra turbinostroyeniya (Department of Turbine Building)

Card 4/4

FADDEYEV, I.P., kand.tekhn.nauk

Velocity of a drop of condensate in the axial gap of a turbine stage.
Izv.vys.ucheb.zav.; energ. 4 no.4:75-79 Ap '61. (MIRA 14:5)

1. Leningradskiy politekhnicheskiy institut imeni M.I.Kalinina.
Predstavlena kafedroy turbinostroyeniya.
(Turbines)

27247
S/170/61/004/009/006/013
B104/B125

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26.5500

AUTHOR: Faddeyev, I. P.

TITLE: Determination of the velocity of a medium-size condensate drop in a flow of saturated vapor

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 9, 1961, 56-60

TEXT: The author calculates the loss in energy of a vapor flow, which is due to water drops carried along by it. The dependence of the drop velocity on the velocity of the vapor flow and on the vapor parameters is considered to be the most important problem. The equation

$$dS = \frac{10}{3} d_o \frac{\gamma_w}{\gamma_s} \frac{C_w dC_w}{C_{rel}^2 - \frac{100\,\mu g}{d_o \gamma_s} C_{rel}}$$

is derived for the path S, of a drop in the vapor flow. Here, $C_{rel} = C_s - C_w$; C_w denotes the velocity of the water drop; C_s is the vapor velocity; γ_w and γ_s denote the specific gravity of water and vapor, respectively; and μ is the dynamic viscosity coefficient of the vapor. This equation is usually solved on the assumption that the

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Determination of the velocity ...

drop size is independent of C_{rel}. The author derives two solutions, one of which holds for the case where the drop remains constant after having left the stator blade of a steam turbine. The solution takes into account the dependence of the drop size on C_{rel}. Calculations with the aid of these solutions, which were derived on the basis of papers by I. Freudenreich (v. 71, no. 20, 1927) and L. I. Dekhtyarev ("Sovetskoye kotloturbostroyeniyey, no. 4, 1938), for a pressure of 1.033 at and a temperature of 100°C, indicated that the approximate expressions derived by Freudenreich may be used for $C_w/C_s \leq 0.35$. At higher velocities there is a sharp contradiction between the results obtained from formulas by Freudenreich, Dekhtyarev, and the present author. Special experiments are needed for determining the actual velocities. There are 2 figures and 7 references: 6 Soviet and 1 non-Soviet.

ASSOCIATION: Politekhnicheskiy institut, g. Leningrad (Polytechnic Institute, Leningrad)

SUBMITTED: February 27, 1961

Card 2/2

KACHURINER, Yu.Ya., inzh.; FADDEYEV, I.P., kand.tekhn.nauk

Effect of steam moisture on the performance of the turbine stage.
Energomashinostroenie 7 no.8:5-8 Ag '61. (MIRA 14:10)
(Steam turbines)

FADDEYEV, I.P., kand.tekhn.nauk

Effect of humidity on the efficiency of a turbine stage. Izv. vys. ucheb. zav.; energ. 6 no.3:112-116 Mr '63. (MIRA 16:5)

1. Leningradskiy politekhnicheskiy institut imeni M.I.Kalinina. Predstavlena kafedroy turbinostroyeniya.
(Steam turbines)

KIRILLOV, I.I., doktor tekhn. nauk; NOSOVITSKIY, A.I., kand. tekhn. nauk; FADDEYEV, I.P., kand. tekhn. nauk

Effect of moisture on the efficiency of turbine stages. Teploenergetika 12 no.7:46-50 Jl '65. (MIRA 18:7)

1. Leningradskiy politekhnicheskiy institut.

IONOV, P.S.; DOMRACHEV, G.V., prof.; FADDEYEV, L.A.; BRANZBURG, A.Yu., red.; DEGLIN, M.A., tekhn.red.

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(Horses--Diseases and pests)

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"Electroheaters in Enteralgia catarrhalis."

SO: Veterinariia 24(5), 1947, p. 33

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So: Veterinariya; 24; 12; December 1947; Uncl.
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Moscow Veterinary Academy
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SO: Veterinariia 29(6), 1952, p. 53

APPROVED FOR RELEASE: Thursday, July 27, 2000 CIA-RDP86-00513R00041232(

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Use ef pretective inhibitien according te I.P.Pavlev's methed in veterinary medicine. Veterinariia 32 ne.9:50-53 S '55. (MLRA 8:12)

1.Meskevskaya veterinarnaya akademiya.
(VETERINARY MEDICINE) (INHIBITION)

FADDEYEV, L.A., prof., doktor.

Achievements in veterinary therapeutics during 40 years of Soviet regime. Veterinariia 34 no.11:51-56 N '57. (MIRA 10:12)

1. Moskovskaya veterinarnaya akademiya.
(Veterinary medicine)

FADEYEV, Leonid Aleksandrovich, prof., doktor veterin.nauk; SHAPOSHNIKOVA, A.N., red.; BALLOD, A.I., tekhn.red.; ZUBRILINA, Z.P., tekhn.red.

[Prescriptions in veterinary medicine] Retsepty veterinarnoi terapii. Izd.3., perer. i dop. Moskva, Gos.izd-vo sel'khoz. lit-ry, 1958. 151 p. (MIRA 12:4)
(Veterinary medicine--Formulae, receipts, prescriptions)

FADDEYEV, L.A., prof.; PANYSHEVA, L.V., dots.; POLYAKIN, V.V., assistent

Classification of diseases of the forestomachs in cattle. Veterinariia 36 no.2:67-70 F '59. (MIRA 12:2)

1. Moskovskaya veterinarnaya akademiya.
(Cattle--diseases and pests)

FADDEYEV, L.D.

Faddeev, L. D. Uniqueness of solution of the inverse scattering problem. Vestnik Leningrad. Univ. 11 (1956), no. 7, 126–130. (Russian)

The Schrödinger equation $\Delta u + k^2 u = q(x)u(x; k\cdot\nu)$ is considered for $u(x; k\cdot\nu) = e^{ik(x,\nu)} + v(x, k\cdot\nu)$, where ν is an arbitrary unit vector and $v = O(1/|x|)$. Moreover

$$v = f(n, \nu, k)e^{ik|x|}/|x| + o(1/|x|)$$

where $n = x/|x|$. It is assumed $f(n, \nu, k)$ is known. Inverting the Schrödinger equation one obtains, for $q(x) = O(|x|^{-2-\epsilon})$

$$u(x; k\nu) = e^{ik(x,\nu)} - \frac{1}{4\pi}\int \frac{e^{ik|x-y|}}{|x-y|} q(y)u(y; k\cdot\nu)\, dy$$

with further restriction on q this leads to

$$\lim_{k(n-\nu)=m;\, k\to\infty} f(n, \nu, k) = -\frac{1}{4\pi}\int q(y)e^{-i(m,y)}dy.$$

An iteration for the formula for u is also considered.

N. Levinson (Cambridge, Mass.).

Phys Math

FADDEYEV, L.D.

FADDEYEV, L.D.

Expansion of arbitrary functions into eigenfunctions of Schroedinger's operator (with summary in English). Vest. LGU 12 no.7:164-172 '57. (MLRA 10:6)

(Eigenfunctions) (Operators (Mathematics))