"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G.

Mihlin, S. G. On the algorithm of Schwarz. Doklady Akad. Nauk SSSR (N.S.) 77, 569–571 (1951). (Russian)
The alternating algorithm for the Dirichlet problem due to H. A. Schwarz is generalized to the equation mentioned in the preceding review. *W. Feller (Princeton, N. J.).*

Source: Mathematical Reviews, Vol 12 No. 1

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

Mihlin, S. G. On some estimates connected with Green's functions. Doklady Akad. Nauk SSSR (N.S.) 78, 443–446 (1951). (Russian)

Let $u(x_1, x_2)$ be a real-valued continuous function defined on the closed unit circle $x_1^2+x_2^2\leq 1$, which vanishes on the boundary $x_1^2+x_2^2=1$, and whose Laplacian $\partial^2u/\partial x_1^2+\partial^2u/\partial x_2^2$ is of integrable square on $x_1^2+x_2^2<1$. It is shown that there exists a real number C such that the inequality

$$\iint_{x_1^2+x_2^2<1}\left|\frac{\partial^k u}{\partial x_1\partial x_m}\right|^2 dx_1dx_2\leq C^2\iint_{x_1^2+x_2^2<1}\left|\frac{\partial^2 u}{\partial x_1^2}+\frac{\partial^2 u}{\partial x_2^2}\right|^2 dx_1dx_2,$$

where $k=1$ or 2 and $m=1$ or 2, holds for any such function u. The proof makes use of a formula of F. Tricomi [Math. Z. 27, 87–133 (1927)] for differentiating Cauchy principal value integrals and of a previous theorem of the author [C. R. (Doklady) Acad. Sci. URSS (N.S.) 15, 429–432 (1937); Uspehi Matem. Nauk 3, no. 3(25), 29–112 (1948); translated as Amer. Math. Soc. Translation no. 24 (1950); these Rev. 10, 305; 12, 107] concerning integrals of this same type.

J. B. Diaz (College Park, Md.).

Source: Mathematical Reviews, Vol 13 No 3

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

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MIKHLIN, ...

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BOOK

Author: MIKHLIN, S. G. Call No.: AF476493

Full Title: PROBLEM OF A MINIMUM OF THE QUADRATIC FUNCTIONAL

Transliterated Title: Problema minimuna kvadratichnogo funktsionala

PUBLISHING DATA

Originating Agency: Series "Sovremennyye problemy matematiki"

Publishing House: State Publishing House of Technical and Theoretical Literature

Date: 1952 No. pp.: 216 No. of copies: 5,000

Editorial Staff

Contributors: Gelfand, I. M. and Shapiro, Z. Ya.

PURPOSE: This book is intended for the young scientist who works in the field of mathematical physics.

TEXT DATA

Coverage: This book is a summary of the scientific research in the theory of a minimum of the quadratic functional in Hilbert's space, most of which has been done by such Russian scientists as Mikhlin, S. G., Sobolev, S. L., Vishnik, M. I., and Eydus, D. M. This book is divided into four chapters: Chapter I, Formulation and Solution of Variational Problems; Chapter II, Some Auxiliary Information; Chapter III, Applications

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

1. MIKHLIN, S. G.

2. USSR (600)

4. Science

7. Experimental methods in organic chemistry. Pt. 2. Pervod s nemetskogo. Moskva, 1952

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

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN S G

USSR (600)

Elastic Plates and Shells

Determination of the error in computing an elastic shell as a flat plate.
Prikl. mat. i mekh. 16 no 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

USSR/Physics - Elastic Shells 11 Jun 52

"Certain Theorems in the Theory of Operators and Their Application to the Theory of Elastic Shells," S. G. Mikhlin, Leningrad State U imeni Zhdanov

"Dok Ak Nauk SSSR" Vol LXXXIV, No 5, pp 909-912

Considers a Hilbert space H and a conjoint operator A pos in H. Constructs a new Hilbert space H_A as the set of regions D(A) in the metric $[u,v] = (Au,v)$, $/u/^2 = (Au,u)$; here certain of the ideal elements of space H_A can be identified with suitably chosen elements from H: If u_o is an ideal element of H_A a sequence u_n in D(A) exists such

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that $\lim /u_n - u_o/ = 0$ and $\lim /u_n - u_m/ = 0$ for $m,n \to \infty$, then we identify u_o with the limit toward which the sequence (u_n) tends in the metric of space H. Shows that such a law permits one to identify u_o with not more than one element of H. Submitted by Acad V. I. Smirnov 8 Apr 52.

223T94

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

Mikhlin, S. G. Concerning a theorem on boundedness of a singular integral operator. Uspehi Matem. Nauk (N.S.) 8, no. 1 (53), 213-217 (1953). (Russian)

In a previous expository work [1] [Uspehi Matem. Nauk (N.S.) 3, 3(25), 29-112 (1948); these Rev. 10, 305] the author made use of his earlier theorem, according to which a singular integral operator is bounded in L_2 if its symbol is bounded. The author renders greater precision to this theorem, important in view of some of its consequences. The notation is that from [1]. If the symbol of the simplest singular operator depends only on θ and is bounded, then the norm of the operator in $L_2(E_m)$ does not exceed the maximum of the modulus of the operator. Whence, if the symbol of the simplest singular operator is of the form $\sum a_n(M_0)\Phi_n(\theta)$ and the series $s = \sum \max|a_n(M_0)| \cdot \max|\Phi_n(\theta)|$ converges, then the operator is bounded in $L_2(E_m)$ and its norm is $\leqq s$. The operator (2) $Au = \int_{E_m} u(M_1) r^{-m} f(M_0, \theta) d\tau_1$ is bounded in $L_2(E_2)$ if the characteristic $f(M_0, \theta)$ has derivatives with respect to θ of order $\leqq 2m-3$, continuous in θ and bounded independently of M_0, and

$$\int_0^{\pi} \cdots \int_0^{\pi} \int_0^{2\pi} |\partial^{m-3} f/\partial\theta_1^{\beta_1} \cdots \partial\theta_{m-1}^{\beta_{m-1}}| d\theta_1 \cdots d\theta_{m-1} < C \text{ (constant)}$$

The two-dimensional singular integral operator is bounded in $L_2(E_2)$ if its characteristic satisfies

$$\int_0^{2\pi} |f(M_0, \theta)| d\theta \leqq C \text{ (constant)} .$$

W. J. Trjitzinsky (Urbana, Ill.)

Mathematical Reviews
Vol. 14 No. 8
Sept. 1953
Analysis

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MIKHLIN, S. G.

259T66

USSR/Mathematics - Functional Analysis 1 May 53

"Application of Functional Analysis to a Slanting Elastic Shell Having the Form of an Elliptic Paraboloid," V. S. Zhgenti, Gori State Pedagogic Inst im N. Baratashvili

DAN SSSR, Vol 90, No 1, pp 9-11

Solution by functional analysis of the eq of equilibrium of a slanting shell derived by S. G. Mikhlin (Priklad Matemat i Mekhan. 16, No 4, 417 (1952)). The solution consists of expressions that converge according to S. L. Sobolev's inclusion

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theorem of spaces (Nekotoryye Primeneniya Funktsional'nogo Analiza v Matematicheskoy Fizike, Some Applications of Functional Analysis to Mathematical Physics, Leningrad, 1950). Presented by Acad S. L. Sobolev 23 Feb 53.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

USSR.

Mikhlin, S. G. On applicability of a variational method to certain degenerate elliptic equations. Doklady Akad. Nauk SSSR (N.S.) 91, 723-726 (1953). (Russian)

Consider a plane open set Ω lying in the half-plane $y>0$, whose boundary consists of a finite closed interval $(a, b)=\Gamma'$ of the x-axis and of a curve Γ lying in $y>0$ save for its end-points at a and b. Let M_1 and M_2 be two sets of functions which are twice continuously differentiable on the closed set $\bar{\Omega}=\Omega+\Gamma+\Gamma'$ and vanish on Γ. The functions in M_1 also

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vanish on Γ' while those of M_2 have their y derivatives equal to zero on Γ'. Suppose the function $f(y)$ is continuous on the interval $0 \leq y \leq Y$, where Y is greater than or equal to the maximum ordinate of the points of the curve Γ; that $f(0)=0$; and $f(y)>0$ when $y>0$. The differential operator $-f(y)\partial^2 u/\partial x^2-\partial^2 u/\partial y^2$, considered over the sets of functions M_1 and M_2, produces two operators, which shall be denoted by A_1 and A_2, respectively. The first theorem states that A_1 and A_2 are both positive definite over the Hilbert space $L_2(\Omega)$ (i. e., there exist positive constants γ_i such that $\gamma_i(u, u) \leq (A_i u, u)$ for $i=1, 2$ and any u in $L_2(\Omega)$). This fact permits the application of variational methods [cf. Mihlin, Problem of the minimum of a quadratic functional, Gostehizdat, Moscow-Leningrad, 1952; these Rev. 16, 41] to the boundary-value problems consisting of the partial differential equation $-f(y)\partial^2 u/\partial x^2-\partial^2 u/\partial y^2=\varphi(x, y)$, with φ in $L_2(\Omega)$, subject to either the boundary conditions $u|_\Gamma=0$, $u|_{\Gamma'}=0$; or $u|_\Gamma=0$, $u_y|_{\Gamma'}=0$; and also to the corresponding boundary-value problems with the homogeneous equation and non-homogeneous boundary conditions. Further results concern the case when $f(y)=y^\alpha\omega(y)$, where $\omega(y) \geq k>0$ for $0 \leq y \leq Y$ and $\alpha>0$, and the differential operator is

$$-\frac{\partial^2 u}{\partial x^2}-\frac{\partial}{\partial y}\left(f(y)\frac{\partial u}{\partial y}\right).$$

J. B. Diaz (College Park, Md.).

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G. 11 Aug 53

USSR/Mathematics - Poisson Equation

"Integration of the Poisson Equation in an Infinite Region," S. G. Mikhlin

DAN SSSR, Vol 91, No 5, pp 1015-1017

Characterizes the eigen solutions from the integration of the Poisson eq $-\Delta u = f(x)$ (f in $L_2(O)$) in an infinite region O of the m-dimensional Euclidean space, for the boundary condition $u/S = 0$, where S the boundary of this region lies in a finite portion of the space. Presented by Acad V. I. Smirnov 29 May 53.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G.

USSR/Mathematics -Boundry-Value Problems

11 Sep 53

"Theory of General Boundry-Value Problems for Elliptical Differential Equations," M. Sh. Birman, Leningrad Mining Inst

DAN SSSR, Vol 92, No 2, pp 205-208

Discusses certain problems connected with M. I. Visik's theory of general boundry problems for elliptic differential eqs (M. I. Visik, Trudy Mosk Mat Ob-va (Works of Moscow Math Soc), 1, 1952). Limits the discussion just to the case of the self-adjoint differential operator which utilizes the important results of M. G. Kreyn (Matem Sbor (Math Symposium), 20(62), 3, 1947) in the investigation. Cites related work of S. G. Mikhlin (Problema Minimuma Kvadratichnogo Funktsionala, 1952). Presented by Acad V. I. Smirnov 10 Jul 53.

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MIKHLIN, S. G., Ed.

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Nekotoryye voprosy teorii rasprostraneniya voln v odnorodnykh i izotropnykh sredakh, organichennykh ploskostyami (Certain problems on the Theory of the Expansion of Waves in Uniform and Isotropic Environments of Limited Planes) Leningrad, Izd-vo Leningradskogo Universiteta, 1954.

222 p. (Leningrad. Universitet. Uchenyye Zapiski. Seriya Matematicheskikh Nauk, Vyp. 28)

At Head of Title: Dinamicheskiye Zadachi Teorii Uprugosti, 4.

Bibliography: p. 221.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

Degenerating elliptic equations. Vest.Len.un. 9 no.8:19-48 Ag '54.
(Differential equations, Partial)

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MIKHLIN, S.G.

USSR

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62

Mihlin, S. G. On the theory of degenerate elliptic equations. Doklady Akad. Nauk SSSR (N.S.) 94, 183–185 (1954). (Russian)

The author considers the differential equation

$$L(u) = -\sum_{i,k=1}^{m} \frac{\partial}{\partial x_i}\left(A_{ik}\frac{\partial u}{\partial x_k}\right) = f(x),$$

which is of elliptic type in a bounded domain Ω of Euclidean space; the coefficients A_{ik} are supposed sufficiently regular. Ω is supposed to be the sum of a finite number of star-shaped domains, to permit the applicability of the inclusion theorem of S. L. Sobolev [Some applications of functional analysis to mathematical physics, Izdat. Leningrad. Gos. Univ., 1950; these Rev. 14, 565]. The degeneracy of L consists in the existence of a proper subset of the boundary Γ of Ω such that on this subset some of the eigenvalues of the matrix $\|A_{ik}\|$ are zero. The present note is concerned with the formulation of spectral properties of the operator L under various boundary conditions and two types of degeneracy. Some of the results have already been announced for $m=2$ in the paper reviewed above. *J. B. Diaz.*

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G.

USSR/ Mathematics

Card 1/1 Pub. 127 - 2/13

Authors : Mikhlin, S. G.

Title : Composition of multi-dimensional singular integrals

Periodical : Vest. Len. un. Ser. mat. fiz. khim. 10/2, 25-41, Feb 1955

Abstract : Data are presented relating to the G. Giraud theorem for the case of singular integrals spread over an infinite Euclidean space of any given number of dimensions. The generalization of the theorem pertaining to the composition of singular integrals is supported by various equations. Six references: 3 USSR, 2 German and 1 French (1863-1948).

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

Mikhlin, S. G.

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1-F\W

Mihlin, S. G. On the theory of multidimensional singular integral equations. Vestnik Leningrad. Univ. 11 (1956) no. 1, 3–24. (Russian)

This paper is concerned with the singular operator A given by:

$$A\mu(x)=a(x)\mu(x)+\int_{E_m}\frac{f(x,\theta)}{r^m}\mu(y)dy,$$

where the x and y are vectors in euclidean m-spaces E_m, θ is the angle between x and $x-y$, r is the distance between x and y, and the integral is taken in the sense of a principal value. The author gives improved proofs of his previous results on the regularizability of A and on the behaviour of A as an operator on L_2.

In the concluding paragraphs the author makes some comments on a paper by Calderón and Zygmund; [Trans. Amer. Math. Soc. 78 (1955), 209–224; MR 16, 816]. Professor Zygmund informs me that there is actually an oversight on p. 213, line 12 of the paper, which is however not difficult to correct without changing the essential idea of the proof. The correction appears in Trans. Amer. Math. Soc. 84 (1957), 559–560 [MR 18, 894]. Meanwhile a completely different proof of a more general result was published by Calderón and him [Amer. J. Math. 78 (1956), 289–309, especially p. 290, Th. 2; MR 18, 894].

J. J. Kohn (Princeton, N. J.).

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

On Ritz's method. Dokl.AN SSSR 106 no.3:391-394 Ja '56.
(MLRA 9:6)
1.Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.
Predstavleno akademikom V.I.Smirnovym.
(Spaces, Generalized) (Operators (Mathematics)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

CARD 1/1 PG - 372

SUBJECT USSR/MATHEMATICS/Fourier series
AUTHOR MICHLIN S.G.
TITLE On the multiplicators of Fourier integrals.
PERIODICAL Doklady Akad. Nauk 109, 701-703 (1956)
reviewed 11/1956

The theorem of Marcinkiewicz (Studia Math. 8, (1939)) on the multiplicators of the Fourier series is formulated by the author also for complex functions and multiplicators. Besides an analogous theorem for Fourier integrals is proved: Let $\phi(x)$ be continuous in the whole E_m (at most with exception of the origin) and let its derivative $\partial^m \phi / \partial x_1 \cdots \partial x_m$ exist in every point, while all preceding derivatives are continuous. Besides let $|x|^k |D^k \phi| \leq M$ $k=0,1,2,\ldots m$ (D^k an arbitrary derivative of the mentioned ones, k its order). Then the operator

$$F(g) = \frac{1}{(2\pi)^{m/2}} \int_{E_m} e^{i(x,y)} \phi(y)\,dy \int_{E_m} e^{-i(y,z)} g(z)\,dz$$

is defined on a set which is dense in $L_p(E_m)$, $1 < p < \infty$. Furthermore the operator is bounded in this space and $\|F\| \leq A_{p,m} M$, where $A_{p,m}$ is a constant only depending on p and m. From this theorem the author concludes a new criterion for the boundedness of a singular integral operator in $L_p(E_m)$.

INSTITUTION: University, Leningrad.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

Integral Equations and Their Applications to Certain Problems in Mechanics, Mathematical Physics and Technology. [illegible] Translated from the Russian by A. H. Armstrong. (International Series of Monographs on Pure and Applied Mathematics, Vol. 4.) London, New York, Pergamon Press, 1957. 238 pp. $12.50.

This is the first English edition of a work that attempts a systematic treatment of the voluminous material concerning the numerous applications of integral equations. The first part of the book concerns itself with fundamental theory and methods of approximate solution; the second is devoted to practical applications, concentrating in the main on problems in the theory of elasticity and hydrodynamics.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G.

PHASE I BOOK EXPLOITATION 155

AUTHOR: Mikhlin, S. G.

TITLE: Variational Methods in Mathematical Physics (Variatsionnyye metody v matematicheskoy fizike)

PUB. DATA: Gosudarstvennoye izdatel'stvo tekhniko-teoreticheskoy literatury, Moscow, 1957, 476 pp., 6,000 copies

ORIG. AGENCY: None given

EDITORS: Akilov, G. P.; Tech. Ed.: Volchok, K. M.

PURPOSE: This book will be of interest to scientific workers in physics and engineering. The author's intention is to acquaint readers with "variational methods" as applied to mathematical physics, the theory of elasticity, fluid mechanics and to other fields of engineering.

COVERAGE: This book is a revision of the author's "Direct methods in mathematical physics" published in 1950. In this

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revision the author is primarily concerned with variational methods, namely, the energy method, the method of least squares, the method of orthogonal projections, the Treftz method and the method of Bubnov-Galerkin which is closely related to the energy method. One long chapter is devoted to methods of determining error bounds of approximate solutions arising in the energy method and in the other methods. This problem was only mentioned in the previous book but is treated here in the light of recent foreign and Soviet work. The numerical examples were reduced but those included carry calculation to the determination of error. One chapter presents the basic tasks of mathematical physics introducing the concepts "operator" and "functional" and analyzes the most common operators of mathematical physics. The theory of eigenvalues is investigated in connection with various problems. In addition to variational methods some finite difference methods are presented. Reference is made to V. I. Smirnov's "Course of Higher Mathematics" and the author thanks K.Ye. Chernin for making the new calculations in the book, and G. P. Akilov who reviewed the manuscript.

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[redacted]

Fourier's [illegible] ...ls and multiple singular integr[illegible] summary
[illegible] ...t. LGU 12 no.7:143-155 '57. [illegible] 10:6)
(Integrals)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

20-1-6/42

AUTHOR: MIKHLIN, S. G.

TITLE: Singular Integrals in the Spaces L_p (Singulyarnye integraly v prostranstvakh L_p)

PERIODICAL: Doklady Akad.Nauk SSSR, 1957, Vol.117, Nr 1, pp.28-31 (USSR)

ABSTRACT: In the present paper the author uses the notations from [Ref.1,2] which are not available for the reviewer, which renders difficult the understanding of the paper.

Theorem 1 : If the symbol $\phi(x,\theta)$ of the singular operator

$$Au = a(x)u(x) + \int_{E_m} \frac{f(x,\theta)}{r^m} u(y)dy$$

and the derivatives

$$\frac{\partial\phi}{\partial\vartheta_1}, \frac{\partial^2\phi}{\partial\vartheta_1\partial\vartheta_2}, \ldots, \frac{\partial^{m-2}\phi}{\partial\vartheta_1\ldots\partial\vartheta_{m-2}}$$

are continuous for fixed x and bounded independently of x and if the generalized derivative

$$\frac{\partial^{m-1}\phi}{\partial\vartheta_1\ldots\partial\vartheta_{m-2}\partial\vartheta_{m-1}}$$

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exists and satisfies the inequality

$$\int_0^1 \cdots \int_0^1 \left| \frac{\partial^{m-1} \psi}{\partial \xi_1 \cdots \partial \xi_{m-2} \partial \xi_{m-1}} \right|^{p'} d\xi_1 \cdots d\xi_{m-2} d\xi_{m-1} \leq C = \text{const}$$

where $1 < p' < \infty$, then A is bounded in $L_p(E_m)$ where $\frac{1}{p} + \frac{1}{p'} = 1$.

Theorem 2: Let the singular integral equation

$$A_1 u = a(x)u(x) + \int_{E_m} \frac{f(x,\theta)}{r^m} u(y)dy + Tu = g(x) \quad , \quad g(x) \in L_p(E_m)$$

be given. It is assumed that T is completely continuous in $L_p(E_m)$, that the symbol A_1 satisfies the conditions of theorem 1 and vanishes nowhere, that $a(x)$ and $f(x,\theta)$ satisfy the inequalities

$$|a(x)-a(y) \leq Mr^{\gamma}(1+|x|^2)^{m(\frac{1}{r}-\frac{1}{p})-\frac{\gamma}{2}}(1+|y|^2)^{m(\frac{1}{2}-\frac{1}{p'})-\frac{\gamma}{2}}$$

$$|f(x,\theta)-f(y,\theta) \leq Mr^{\gamma}(1+|x|^2)^{m(\frac{1}{2}-\frac{1}{p})-\frac{\gamma}{2}}(1+|y|^2)^{m(\frac{1}{2}-\frac{1}{p'})-\frac{\gamma}{2}},$$

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Singular Integrals in the Spaces L_p 20-1-6/42

where M and γ are constants, $M > 0$, $0 < \gamma < 1$.
Then A_1 is normally solvable in $L_p(E_m)$.

Theorem 3: The equation $A_1 u = 0$ has in $L_p(E_m)$ [illegible] the number of linearly independent solutions. The [illegible] of A_1 is equal to zero in $L_p \setminus E_m$.

4 Soviet and 1 foreign references are quoted.

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

PRESENTED: By V. I. Smirnov, Academician, May 20, 1957

SUBMITTED: May 15, 1957

AVAILABLE: Library of Congress

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

AUTHOR: Mikhlin, S.G. SOV/140-58-5-7/14

TITLE: Remarks on Coordinate Functions (Zamechaniya o koordinatnykh funktsiyakh)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1958, Nr 5, pp 91-94 (USSR)

ABSTRACT: Let A be a positive-definite operator (see [Ref 1]) in the Hilbert space H, and f an element of H. For the solution of the equation

(1) $Au = f$

according to the method of Ritz certain coordinate functions $\varphi_1, \varphi_2, \ldots, \varphi_n, \ldots$ are chosen and the approximative solution u_n is set up in the form $u_n = \sum_{k=1}^{n} a_k \varphi_k$, whereby the a_k are obtained from the linear algebraic system $\sum_{k=1}^{n} [\varphi_k, \varphi_j] a_k = (f, \varphi_j)$, $j=1,2,\ldots,n$. If the angle between φ_n and the hyperplane through $\varphi_1, \varphi_2, \ldots, \varphi_{n-1}$ is denoted by α_n, then for the de-

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terminant of the system it follows $D_n = \det \left\| [\varphi_k, \varphi_j] \right\|_{k,j=1}^{n} = \prod_{k=1}^{n} \sin^2 \alpha_k$. If $D = \lim_{n \to \infty} D_n$ is positive, then the exactness can be improved by increasing n (reliable system of the φ_i); if, however, it is D=0, then the system of the φ_i is unreliable, for large n the application of the method is doubtful. The convergence of $\sum_{k=1}^{\infty} \cos^2 \alpha_k$ is necessary and sufficient for the reliability. It is shown that an orthogonal normed system is reliable and therefore is more suitable for the application. An example is given.
There are 2 Soviet references.

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

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S/044/60/000/008/017/035
C111/C222

16.3500

AUTHOR: Mikhlin, S.G.

TITLE: On the solutions with a finite energy for elliptic differential equations

PERIODICAL: Referativnyy zhurnal. Matematika, no.8, 1960, 98, abstract no. 8923. Uch. zap. Leningr. gos. ped. in-ta im. A.I.Gertsena, 1958, 183, 5-21

TEXT: As it is well-known, the solution of the equation $Au = f$, $f \in H$ (H -- a certain Hilbert space, A -- a positive operator) is equivalent to the determination of the minimum of the functional $F(u) = (Au,u)-(u,f)-(f,u)$. In the region of definition $D(A)$ of the operator A, a new metric can be introduced: $(Au,v) = [u,v]$; $[u,u] = |u|$. By completing D_A in this metric one obtains the new Hilbert space H_A. If the functional (u,f) is bounded in H_A then there exists a $u_o \in H_A$ by which the functional $F(u)$ gets its minimum; in the present paper, such a u_o is called a solution with a finite energy. If A is no positive definite operator then in general $u_o \notin H$. As an example the author considers the problem

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89545

On the solutions with a finite... S/044/60/000/008/017/035
C111/C222

$$-\Delta u = f(x), \quad x \in \Omega; \quad u|_{\Gamma} = 0$$

(Ω is an infinite region of the m-dimensional Euclidean space bounded by the closed surface Γ). Here the space H_A is the set of functions $\{u\}$ satisfying the conditions: 1) $u \in W_2^{(1)}(\Omega')$, where Ω' is an arbitrary finite region; 2) grad $u \in L_2(\Omega)$; 3) $u|_{\Gamma} = 0$ in the sense of S.L.Sobolev or R.Courant. It is proved that if $f(x) = \operatorname{div} P$, $P \in L_2$, $\frac{\partial P}{\partial x_k} \in L_2$ then there exists the solution with a finite energy and has generalised second derivatives which are quadratically summable in every subregion of Ω. Furthermore it is shown how these results can be generalised to an equation with variable coefficients, to the Poisson equation with the boundary condition $\partial u/\partial \nu + \sigma u|_{\Gamma} = 0$, and to an elliptic equation with variable coefficients (in the finite region) which degenerates on the boundary.

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, Solomon Grigor'yevich; ZUBER, I.Ye., red.; POL'SKAYA, R.G., tekhn.red.

[Lectures on linear integral equations] Lektsii po lineinym integral'nym uravneniiam. Moskva, Gos.izd-vo fiziko-matem. lit-ry, 1959. 232 p. (MIRA 13:2)
(Integral equations)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. G.

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 1947-1957; 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.

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ALEKSANDROV, A.D.; AKILOV, G.P.; ASHKEVITS, 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)

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16(1)

AUTHOR: Mikhlin, S.G. SOV/20-125-4-12/74

TITLE: Two Theorems on Regular zers (Dve teoremy o regulyarizatorakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 4, pp 737-739 (USSR)

ABSTRACT: Let E_1 and E_2 be Banach spaces and $A \in (E_1 \to E_2)$ a closed operator. $B \in (E_2 \to E_1)$ is a regular zers of A if $BA = I + T$, where I is the unit operator in E_1 and T is a completely continuous operator in E_1. The regular zers is called equivalent if $Au = f$ and $BAu = Bf$ are equal for all $f \in E_2$. Let all considered operators be additive and homogeneous.

Theorem: If a closed operator A has a regularizers, then this operator is normally solvable.

Theorem: In order that a closed operator A has an equivalent regularizer it is necessary and sufficient that this operator is normally solvable and that its index is finite and non-negative.

There are 4 Soviet references.

PRESENTED: December 10, 1958, by V.I.Smirnov, Academician

SUBMITTED: December 9, 1958

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APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

16(1)

AUTHOR: Mikhlin, S.G. SOV/20-126-2-74/74

TITLE: Differentiation of Series in Terms of Spherical Functions

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 2, pp 278-279 (USSR)

ABSTRACT: Let S be the unit sphere in the Euclidean E_m. If x is a point of the E_m, then let $|x|=\varrho$, $x/\varrho = \theta$. Let Ω denote a spherical layer $\varrho_1<\varrho<\varrho_2$, $0<\varrho_1<1<\varrho_2$. Let every $f(\theta)$ defined on S be continued on Ω so that it does not depend on ϱ; let $f(\theta)\in W_p^{(e)}(S)$ denote that $f(\theta)\in W_p^{(e)}(\Omega)$. It is $f(\theta)\in L_p(S)$ then and only then if $f(\theta)\in L_p(\Omega)$.

Theorem: If $f(\theta)\in W_2^{(e)}(S)$, then the development of $f(\theta)$ in terms of spherical functions can be differentiated term by term l times with respect to the Cartesian coordinates of the point θ; the obtained series converge in the metric $L_2(S)$.

Theorem: If $f(\theta)\in W_2^{(e)}(S)$, $e\geq m-1$, then the series $f(\theta) = \sum_{n=0}^{\infty}\sum_{k=1}^{k_n} a_n^{(k)} Y_{n,m}^{(k)}(\theta)$ and the series obtained from it by term

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Differentiation of Series in Terms of Spherical Functions SOV/[illegible]

by term differentiation of the order $\leq l - m + 1$, converge absolutely and uniformly. Here $Y^{k}_{n,m}(\theta)$ are m-dimensional spherical functions of the order n normed orthogonally [illegible] and k_n is the number of linearly independent spherical [illegible] of the order n.

There are 5 references, 3 of which are Soviet, and 2 American.

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

PRESENTED: February 4, 1959, by V.I.Smirnov, Academician

SUBMITTED: January 24, 1959

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APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

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MIKHAILOV, S. G.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

201. [illegible] (Moscow): An experimental study of the load carrying capacity of thin-walled nickel tubes subjected to various combinations of tension, torsion, and internal pressure.

202. [illegible] (Leningrad): Variational methods in the theory of elasticity.

203. A. A. [illegible] (Moscow): The stability of motions of solids — Lagrange's theorem for solids and its inversion.

204. A. A. [illegible] (Moscow): Axisymmetric cyperonic flutter of a circular cylindrical shell.

205. [illegible] (Leningrad): On the uniqueness of the solution of the problem of large deflections of a circular plate under rotationally symmetric loading.

206. [illegible] (Tbilisi): The determination of the deformation of trusses without diagonals.

207. [illegible] (Kazan): A theory of moderately thick plates and shells.

208. A. G. [illegible] (Brovan): Some problems in the theory of unsure stability.

209. [illegible] (Tallin): Vibrations of an elastic circular cylindrical shell under concentrated impact loading.

210. [illegible] (Tallin): More accurate equations of motion for circular cylindrical shells.

211. V. A. [illegible] (Leningrad): Approximate treatment of cylindrical shells under concentrated loads.

212. [illegible] (Moscow): Redistribution of reactions at the edge of a simply supported rectangular plate under gradually increasing loading.

213. [illegible] (Warsaw): Some dynamical problems of thermo-elasticity.

214. [illegible] (Moscow): Investigation of the viscous behavior of elastic, visco-plastic materials in vibrations.

215. [illegible] (Odessa): Problems of the non-linear theory of elasticity.

216. [illegible] (Moscow): [illegible] variational method to the [illegible] structures.

217. [illegible] (Leningrad): Complete computation of a wave field in homogeneous elastic media with parallel plane boundaries.

218. [illegible] (Nagoia): The method of electroplating and its applications.

219. [illegible] (Warsaw): Two-dimensional problems in the theory of plasticity of non-homogeneous and anisotropic media.

220. [illegible] (Moscow): The state of stress in a deformed curved bar.

221. V. [illegible] (Leningrad): A membrane theory for a toroidal shell.

222. V. P. [illegible] (Moscow): Creep, elastic properties and anisotropy of plastic lubricants.

223. O. V. [illegible] (Kharkov): A practical method of designing reinforced concrete structures with reference to creep.

224. [illegible] (Riga): The problem of structural damping.

225. [illegible] (Moscow): An approximate method for solving elastic-plastic problems.

226. [illegible] (Moscow): Application of the theory of rigid, plastic solids to problems of metal forming.

227. [illegible] (Kiev): On the axisymmetric problem on the theory of elasticity.

228. [illegible] (Moscow): A method for studying the plane field of relative volume strains in soils.

229. [illegible] (Novosibirsk): The application of some new methods of the theory of integral equations to the solution of contact problems of the theory of elasticity.

230. V. A. [illegible] (Leningrad): Free and forced vibrations of frames taking into account shear deformations and energy dissipation.

231. [illegible] (Dnepropetrovsk): Investigation and calculation of internal friction in elastic members of vibrating machines.

232. [illegible] (Providence): An elementary discussion of definitions of stress rate.

233. [illegible] (Moscow): Photoelastic investigation of stresses in three-dimensional layered models.

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77809
SOV/42-15-1-16/27

AUTHOR: Mikhlin, S. G.

TITLE: On the Convergence of One Direct Method

PERIODICAL: Uspekhi matematicheskikh nauk, 1960, Vol 15, No 1, pp 221-223 (USSR)

ABSTRACT: Consider the equation:

$$Au = b - Bu, \qquad (1)$$

where A and B are some linear operators defined on a separable Hilbert space H, and assume that $D(A) \subset D(B)$. In solving (1) approximately, a method is used which is similar to the method of least squares; a sequence $\varphi_k \in D(A)$, $k = 1,2,\ldots$, is chosen and an approximate solution of the form:

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On the Convergence of One Direct Method

77809
SOV/42-15-1-10/27

$$u_n = \sum_{k=1}^{n} a_k \varphi_k \qquad (2)$$

is constructed where the a_k's are determined from:

$$(Lu_n, \psi_k) = (f, \psi_k) \qquad (k = 1, 2, \ldots, n) \qquad (3)$$

This method, among others, was used by G. A. Zhdanov (On the Convergence of a Modified Galerkin's Method, DAN 115, Nr 2 (1957) 223-226), and O. A. Ladyzhenskaya (Vest. LGU Nr 7, Series Math., Mechanics, and Astron., Vol 2 (1958) 60-69). The author proves two theorems from which the results given in the above references can be derived. Theorem 1: (1) Let Eq. (1) be solvable in a unique manner; (2) let the operator A^{-1} be bounded and defined in the space H; (3) let the operator $T = BA^{-1}$ be completely continuous in H; (4) let the system of

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elements $\{A\varphi_k\}$ be complete in H. Then, for sufficiently large n the system (3) is solvable in a unique manner and the following holds:

$$u_n \to u_0 \qquad (4)$$

$$Au_n \to f \qquad (5)$$

where u_0 is the solution of Eq. (1). Let H_1 be the Hilbert space with scalar product and norm defined by:

$$(u, v)_1 = (Au, Av), \quad \|u\|_1 = \|Au\|$$

respectively. Theorem 2: Let conditions (1) and (2) of Theorem 1 be satisfied and let the operator $T' = A^{-1}B$

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On the Convergence of One Direct Method 77809
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be completely continuous in H_1, and the system $\{\varphi_i\}$ is complete in H_1, then the assertions of Theorem 1 are valid. There are 3 Soviet references.

SUBMITTED: October 20, 1954

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APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

69980

S/020/60/131/05/08/069

18.4500

AUTHOR: Mikhlin, S.G.

TITLE: Remarks on the Solution of Singular Integral Equations of Many Dimensions

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 131, No. 5, pp. 1019-1021

TEXT: The present paper completes the earlier publications of the author (Ref.1,2). The author simplifies the conditions for the normal solvability and for the vanishing of the index of the singular equation

$$(1) \qquad a(x)u(x) + \int_{E_m} \frac{f(x,\theta)}{r^m} u(y)dy + Tu = g(x)$$

given in (Ref.1). The author gives a simpler but less general method than in (Ref.2) for the reduction of the equation (1) to an equation with a completely continuous operator.
There are 3 Soviet references.

PRESENTED: December 21, 1959, by V.I.Smirnov, Academician

SUBMITTED: December 18, 1959

Card 1/1

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

S/020/60/135/001/003/030
B112/B231

AUTHOR: Mikhlin, S. G.

TITLE: Stability of the Ritz method

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 135, no. 1, 1960, 16-19

TEXT: In writing the present work the author uses the terminology of his monography: Variatsionnyye metody v matematicheskoy fizike, 1957 (variational methods in mathematical physics). He investigates a certain "instability" of the Ritz method for the approximate solution of the operator equation: $Au = f$, with A being a positive definite operator having the Hilbert space H as a domain of definition. This instability consists in that the determination of the approximation coefficients becomes very inaccurate with increasing number of certain coordinate elements $\varphi_k \in H_A$ required for the approximation. As can be seen from a previously issued work (Izv. Vyssh. uch. zav., Matematika, No 5, 91 (1958)), the author has found a class of coordinate systems, for which the Ritz method is "stable". He referred to this kind of coordinate systems as "reliable" systems. In

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the present work, the author presents new theorems on reliable coordinate systems, particularly a considerable extension of the class of reliable systems: theorem 1: Any orthonormal system from H_B in H_A is necessarily reliable if A and B are two positive definite operators with general domains of definition and if the operator $T = A^{-1}(B - A)$ has a finite absolute norm in H_A. Further theorems refer to Ritz systems:

$$\sum_{k=1}^{\infty} [\varphi_k, \varphi_j]_A a_k = (f, \varphi_j) \quad j = 1, 2, \ldots,$$

all of them being based on reliable coordinate systems $\{\varphi_k\}$. Particularly theorem 5: The following holds true if the system $\{\varphi_k\}$ is highly minimal in H_A and if the computed values of $[\varphi_k, \varphi_j]_A$ and (f, φ_j) contain the errors $\gamma_{kj} = \gamma_{jk}$ and δ_j, respectively, with $a^{(n)}$ being the exact, and $a^{(n')}$ the approximate, solution according to Ritz of n-th order:

$$\|a^{(n)'} - a^{(n)}\| \leqslant \frac{\tilde{\lambda}^{-1/2}\gamma\|u_0\|_A + \tilde{\lambda}^{-1}\delta}{1 - \tilde{\lambda}^{-1}\gamma}, \quad \text{where} \quad \gamma^2 = \sum_{j,k=1}^{n} |\gamma_{jk}|^2, \quad \delta^2 = \sum_{j=1}^{n} \delta_j^2.$$

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Stability of the Ritz method

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B112/B231

λ is a positive constant, and u_c is the exact solution of the Ritz problem. M. G. Kreyn is mentioned. There are 8 references: [illegible] Soviet-bloc and 2 non-Soviet bloc.

ASSOCIATION Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imen. A. A. Zhdanov)

PRESENTED May 23, 1960, by V. I. Smirnov, Academician

SUBMITTED May 17, 1960

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APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

Some conditions for the stability of the Ritz method [with summary in English]. Vest. LGU no.13:40-51 '61. (MIRA 14:7)
(Functional analysis)

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S/020/61/138/002/002/024
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16.4100 16.6500 16.4100

AUTHORS: Gagen - Torn, L.N., and Mikhlin, S.G.

TITLE: On the solvability of nonlinear Ritz systems

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 2, 1961 258-260

TEXT: The authors give sufficient conditions for the solvability of the Cauchy problem to which the application of the Ritz method is leading for nonlinear problems.
On a linear set dense in the Hilbert space H let be given the functional $f(x)$; let $f(x)$ be the potential of a nonlinear operator $F(x)$. Let the Gateaux differential $DF(x,h)$ of $F(x)$ be an operator uniformly positively bounded from below. The minimum of $f(x)$ is sought. The approximate arrangement of Ritz

$$x \approx \sum_{i=1}^{n} a_i x_i \quad , \quad a_i = \text{const, for } a_i \text{ leads to}$$

the system

$$(Df(\sum_{i=1}^{n} a_i x_i), x_j) = 0 \qquad j = 1,2,\ldots,n$$

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On the solvability of ...

or

$$(F(\sum_{i=1}^{n} a_i x_i), x_j) = 0 \quad , \quad j = 1,2,\ldots,n \quad . \qquad (1)$$

According to D.F. Davidenko (Ref. 1, DAN 88, no. 4, 1953) the authors consider the auxiliary system

$$a_j + \lambda \left[(F(\sum_{i=1}^{n} a_i x_i), x_j) - a_j \right] = 0 \quad , \quad j = 1,2,\ldots,n \quad . \qquad (2)$$

The differentiation with respect to λ yields

$$\frac{da_j}{d\lambda} + (F(\sum_{i=1}^{n} a_i x_i), x_j) - a_j +$$

$$+ \lambda \left\{ \sum_{k=1}^{n} \left[(DF(\sum_{i=1}^{n} a_i x_i, x_k), x_j) - \delta_{jk} \right] \frac{da_k}{d\lambda} \right\} = 0 \quad , \quad j=1,2,\ldots,n \qquad (3)$$

where the coefficient matrix for the $da_k/d\lambda$ with the notation

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On the solvability of ...

$$\left(DF\left(\sum_{i=1}^{n} a_i x_i\ ,\ x_k\right)\ ,\ x_j\right) = \left[x_k,\ x_j\right]$$

can be written in the form

$$(1-\lambda)\,E + \lambda \begin{Vmatrix} [x_1, x_1] & [x_2, x_1] & \dots & [x_n, x_1] \\ [x_1, x_2] & [x_2, x_2] & \dots & [x_n, x_2] \\ \dots & \dots & \dots & \dots \\ [x_1, x_n] & [x_2, x_n & \dots & x_n, x_n] \end{Vmatrix} . \quad (4)$$

The determinant Δ_n of (4) for $\lambda \in [0,1]$ is different from zero so that from (3) by solution (rule of Cramer) it follows

$$\frac{da_j}{d\lambda} = \frac{\Delta^j_n}{\Delta_n} = g_j(\lambda\ ,\ a_1,\ a_2, \dots,\ a_n), \quad j = 1,2,\dots,n \qquad (5)$$

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Let the following conditions be satisfied :

1) $(F(\sum_{i=1}^{n} a_i x_i), x_j)$ and $(DF(\sum_{i=1}^{n} a_i x_i, x_k), x_j)$ are continuous in in $a_1, a_2, \ldots, a_n$ and it holds

$$(F(\sum_{i=1}^{n} a_i x_i), x_j) \leqslant p_m(a_1, a_2, \ldots, a_n) \tag{6}$$

$$(DF(\sum_{i=1}^{n} a_i x_i, x_k), x_j) \leqslant p_{m-1}(a_1, a_2, \ldots, a_n) \quad , \tag{7}$$

where p_m and p_{m-1} are polynomials of m-th and (m-1)-st degree, respectively.

2) It holds

$$(DF(\sum_{i=1}^{n} a_i x_i, h), h) \geqslant N(\sum_{i=1}^{n} a_i^2)^{(m-1)/2} \|h\|^2, \; N = \text{const.} \tag{8}$$

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Therefrom it follows

$$N\left(\sum_{i=1}^{n} a_i^2\right)^{n(m-1)/2} \leq \Delta_n \leq p_{n(m-1)}(a_1, a_2, \ldots, a_n) \quad . \qquad (9)$$

It is proved that (5) is solvable for $\lambda \in [0,1]$, wherefrom because of (3) the solvability of the Ritz system (1) can be concluded.

There are 3 Soviet-bloc and 1 non-Soviet-bloc references.

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

PRESENTED: December 24, 1960, by V.I. Smirnov, Academician

SUBMITTED: December 20, 1960

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C111/C333

AUTHOR: Mikhlin, S. G.

TITLE: Singular integral equations in the classes of Lipschitz functions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 3, 1961, 541-544

TEXT: The author uses the notations of his former papers (Ref. 1: Vestn. LGU, No. 1, 1956; Ref. 2: DAN, 131, No. 5 (1960)).

The author seeks sufficient conditions under which the solution (if existing) of

$$a(x)\, u(x) + \int_{E_m} \frac{f(x,\Theta)}{r^m}\, u(y)\, dy = g(x), \qquad (1)$$

$$r = |y - x|, \quad \Theta = \frac{y - x}{r}$$

satisfies the Lipschitz condition with a positive exponent. Assume

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that

$$\left(\frac{1+|x|^2}{2}\right)^{m/2} g(x) \in \mathrm{Lip}_{\alpha}(\Sigma)$$

where Σ is the sphere into which the Euclidean E_m is transformed under the stereographic transformation.

Furthermore, let the following conditions be satisfied:

a) $a(x) \in C^{(1)}(\Sigma)$

b) $f(x,\theta) \hat{\in} W_2^{(l)}(S)$, $l \geqslant m+2$

c) Let $\omega(x,r,\theta)$ be an arbitrary function of x, r, θ. Let $\partial\omega/\partial x_j$ denote the derivative which is calculated under the assumption that only r and θ depend on x such that

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Singular integral equations in the ... S/020/61/138/003/008/017
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$\partial\omega/\partial x_j = \partial'\omega/\partial x_j + \partial''\omega/\partial x_j$. It holds $\frac{\partial''}{\partial x_j}\left[\frac{f(x,\theta)}{r^m}\right] = \frac{f_j(x,\theta)}{r^{m+1}}$. Let

$$\frac{\partial' f(x,\theta)}{\partial x_j} \hat{\in} W_2^{(l-1)}(S), \quad f_j(x,\theta) \hat{\in} W_2^{(l-1)}(S)$$

moreover, assume that these functions as well as $f(x,\theta)$ are continuous on $\Sigma \times S$.

From these assumptions the author concludes: If $g(x)$ is orthogonal to all solutions of the homogeneous equation conjugate to (1), then (1) has a solution in $L_2(E_m)$. The author proves that, under the assumptions made, every such solution satisfies the condition

$\left(\frac{1+|x|^2}{2}\right)^{m/2} u(x) \in \mathrm{Lip}_\delta(\Sigma)$, where δ is determined by

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the data of the problem.

The author uses the following lemma for the proof: Let Ω be a finite domain of the E_m, the function $A(x,y)$ is assumed to satisfy

$$|A(x,y)| \leq C, \quad |A(x+h,y) - A(x,y)| \leq N|h|^{\alpha}, \quad 0 < \alpha < 1 \qquad (2)$$

in Ω, where C, N, α are constants. Then the integral operator with weak singularity

$$v(x) = \int_{\Omega} \frac{A(x,y)}{r^{\lambda}} u(y)\, dy, \quad 0 \leq \lambda < m \qquad (3)$$

transforms every bounded $u(x)$ into $v(x) \in \mathrm{Lip}_{\beta}(\Omega)$, where $\beta = \min(\alpha, m - \lambda)$.

The results of the author can be extended to equations

$$a(\xi)\, u(\xi) + \int_{\Gamma} K(\xi, \eta)\, u(\eta)\, d\Gamma_{\eta} = g(\xi), \quad g(\xi) \in \mathrm{Lip}_{\alpha}(\Gamma)$$

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Singular integral equations in the ...

where Γ is a closed, sufficiently smooth m-dimensional manifold, and where the kernel satisfies certain conditions.

There are 3 Soviet-bloc and 2 non-Soviet-bloc references. The reference to English-language publication reads as follows: A. P. Calderon, A. Zygmund. Am. J. Math., 78, No. 2 (1956).

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

PRESENTED: January 10, 1961, by V. J. Smirnov, Academician

SUBMITTED: January 5, 1961

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MIKHLIN, S.G.

LURYE, A. I., Head, Mechanics Department, Leningrad Polytechnical Institute imeni M. I. Kalinin [1961 position] - "Some applications of classic variational methods to problems of control systems"

~~MIKHLIN, S. G.~~, Leningrad State University [1961 position] - "Variational methods for solving linear and nonlinear boundary value problems"

NEMYTSKIY, V. V., Director, Institute of Mathematics and Mechanics, Moscow State University [1961 position] - "Some methods of qualitative examination in the large for systems of ordinary differential equations"

SOBOLEV, S. L., Director of the Institute of Mathematics and Computation Center, Siberian Department, Academy of Sciences USSR [1961 position] - "Some new problems in the theory of partial differential equations"

report to be submitted for the Conference on Differential Equations and their Applications, Prague, Czechoslovakia, 5-11 Sep 1962.

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JUN 25 1963

PHASE I BOOK EXPLOITATION SOV/6188

Mikhlin, Solomon Grigor'yevich

Mnogomernyye singulyarnyye integraly i integral'nyye uravneniya (Multidimensional Singular Integrals and Integral Equations). Moscow, Fizmatgiz, 1962. 254 p. 6000 copies printed.

Ed.: G. P. Akilov; Tech. Ed.: A. A. Luk'yanov.

PURPOSE: This book is intended for mathematicians and physicists concerned with the theory of multidimensional singular integrals and integral equations and their application to boundary-value problems in mathematical physics.

COVERAGE: The book is largely based on the results of the author's earlier work on the theory of multidimensional singular integrals and equations containing such integrals. The works of other authors are cited as required in the exposition of the theory. This study is primarily concerned with singular integrals over a Euclidean space or over a Lyapunov manifold without a boundary, and with equations containing such integrals. The basic results for such equations

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are formulated in terms of the "symbol" concept introduced by the author. In addition to the basic development of the theory, the book presents several applications of multidimensional singular integral equations to boundary value problems in mathematical physics. The author's theorem on multipliers of Fourier integrals in L_p spaces, which has not so far been treated in the literature, is presented as an appendix. The author thanks O. A. Oleynik, G. P. Akilov, and Kh. L. Smolitskiy. References cited include 26 papers by the present author, and approximately 100 other papers in Russian, English, German, Japanese, Italian, Spanish, and French.

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AUTHOR Mikhlin, S G (Leningrad)

TITLE On the rational choice of coordinate functions in the Ritz method

PERIODICAL Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v 2, no 3, 1962, 437-444

TEXT The terminology and results of the author's book, Variational Methods of Mathematical Physics are used throughout this work In solving the equation $Au = f$ (1) where A is a self-adjoint positive definite operator and u and f are elements of a real separable Hilbert space, the choice of a system of coordinate functions becomes important if accurate approximations are needed, the Ritz process may be unstable for a poor choice An operator B, convergent or at least semiconvergent with A, is constructed so that its spectrum is discrete The eigenfunctions of B are taken as the coordinate system In some cases when B and A are semiconvergent and the eigenfunctions of B are not known or their system is not complete, it is possible to find a simple system of elements which is complete and orthonormal in H_B This system will give a stable approximation for (1) One-dimensional examples treated are

$$Au = -\frac{d}{dx}\left(p(x)\frac{du}{dx}\right) + q(x)u, \qquad 0 < x < 1 \tag{2}$$

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On the rational choice of

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with the boundary conditions $u(0) = u(1) = 0$, $u(0) = u(1) = 0$, $u'(0) = u(1) = 0$, $u(0) - \alpha u(0) = 0$, $u(1) + \beta u(1) = 0$, $\alpha, \beta > 0$

2) The operator (2) with $p(x) = x^{\alpha} p_1(x)$, $0 < \alpha < 2$, with boundary conditions $u(0) = u(1) = 0$, $0 < \alpha < 1$, $u(1) = 0$, $1 \leq \alpha < 2$

Two dimensional examples treated are

$$-\sum \frac{\partial}{\partial x_j}\left(A_{jk}\frac{\partial u}{\partial x_k}\right) + Cu = f(x_1, x_2)$$

with boundary condition $u_s = 0$ when s is sufficiently smooth or piecewise smooth and with boundary conditions

$$\left[\sum A_{jk}\frac{\partial u}{\partial x_j}\cos(\nu, x_k) + \sigma u\right]_s = 0$$

ν being the external normal

SUBMITTED June 2, 1961

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16.4600

AUTHOR: Mikhlin, S. G.

TITLE: Ritz method in nonlinear problems

PERIODICAL: Akademiya nauk SSSR, Doklady, v. 142, no. 4, 1962, [illegible]

TEXT: It is demonstrated that the Ritz method gives minimalizing sequences for functionals $\Phi(u)$ which satisfy the following conditions: The domain $D(\Phi)$ of definition is a linear set; $\Phi(u)$ is continuously differentiable on arbitrary finite-dimensional linear subsets of $D(\Phi)$; $\Phi(u)$ is semi-continuous from below and increasing with respect to a certain metric ρ which is defined on $D(\Phi)$; a sequence $\{\varphi_n\} \subset D(\Phi)$ of coordinates is complete with respect to the metric ρ. A. Langenbakh (DAN, 121, No. [illegible] (1958), Vestn. LGU, No. 1, ser. matem., mekh. i astr., v. 1, 38 (1961) [illegible]) I. I. Vorovich (DAN, 105, No. 1 (1955), Izv. AN SSSR, ser. matem., 19, No. 1, 173 (1955)) are referred to. There are 4 Soviet references.

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Ritz method in nonlinear ...

PRESENTED: October 3, 1961, by S. L. Sobolev, Academician

SUBMITTED: September 28, 1961

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MIKHLIN, S.G.

"Boundary and eigenvalue problems in mathematical physics" by H. Sagan. Reviewed by S.G.Mikhlin. Zhur. vych. mat. i mat. fiz. 3 no.5:972-975 S-O '63. (MIRA 16:11)

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MIKHLIN, S.G.

Partial differential equations at the Prague Conference on Differential Equations. Usp. mat. nauk 18 no.2:197-199 Mr-Ap '63. (MIRA 16:8)

(Differential equations, Partial)

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MIKHLIN, S.G.

Index of a system of singular equations. Dokl. AN SSSR 152 no.3: 555-558 S '63. (MIRA 16:12)

1. Predstavleno akademikom V.I.Smirnovym.

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SABICH, V.M.; KAPILEVICH, M.B.; MIKHLIN, S.G.; NATANSON, G.I.;
RIZ, F.M.; SLOBODETSKIY, L.N.; TIKHONOV, A.N.;
LYUSTERNIK, L.A., red.; YANPOL'SKIY, A.R., red.
MIKHAYLOVA, T.N., red.

[Linear equations in mathematical physics] Lineinye uravneniia matematicheskoi fiziki. [by] V.M.Sabich i dr. Moskva, Izd-vo "Nauka," 1964. 368 p. (MIRA 17:7)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.G.

Stability of certain [illegible]. [illegible]
SSSR 157 no. 2:271-273 [illegible]

1. Predstavlen akademikom [illegible].

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ACCESSION NR: AM5013828 BOOK EXPLOITATION

17.
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Mikhlin, S. G.; Smolitskiy, Kh. L.

Methods for the approximate solution of differential and integral equations (Priblizhennyye metody resheniya differentsial'nykh i intergral'nykh uravneniy). Moscow, Izd-vo "Nauka", 1965. 383 p. illus., biblio., index. 20,750 copies printed.

Series note: Spravochinaya matematicheskaya biblioteka

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TOPIC TAGS: mathematics, differential equation, integral equation, numerical method, analytical method, variational method and web method, Cauchy problem

PURPOSE: This book is intended for engineers, physicists, mathematicians, aspirants, and senior students who are engaged in studies where the approximate solution of differential and integral equations is needed.

COVERAGE: The book contains the most important analytical and approximate numerical methods for solving the basic problems of differential and integral equations and presents the basic results

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concerning the stability and accuracy of these methods. Chapter one is written by the two authors jointly. Chapter two was written by Kh. L. Smolitskiy and chapters three and four by S. G. Mikhlin.

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L 07245-67 EWT(d) IJP(c) SOURCE CODE: UR/0233/66/000/001/0003/0004

ACC NR: AP6028912

AUTHOR: Mikhlin, S. G.

ORG: none

TITLE: Stability of variational methods [delivered at Session of Mathematical Society in March 1965]

SOURCE: AN AzerbSSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk, no. 1, 1966, 3-4

TOPIC TAGS: variational method, Hilbert space, mathematic operator, mathematic matrix, eigenvalue

ABSTRACT: The version published in this source is only an abstract of the complete paper. Given an equation Au = f, where u and f are the sought and given elements of a certain Hilbert space H, and A is a positive definite operator acting in this space, it is proved that in order for the Ritz variational method to be stable in a certain sense, it is necessary and sufficient that the coordinate system chosen in the Hilbert space be strongly minimal, in other words, that the eigenvalues of the matrices defining the solutions of the Ritz system be bounded from below by a certain positive constant for any given number of elements in the coordinate system. A particular case of this theorem is also presented and reference is made to other discussions of the Ritz and other variational methods. Orig. art. has: 8 formulas.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

ACC NR: AM6025268 Monograph UR/

Mikhlin, Solomon Grigor'yevich

Numerical realization of variational methods (Chislennaya relizatsiya variatsionnykh metodov) Moscow, Izd-vo "Nauka," 1966. 432 p. illus., biblio., indices. 10,500 copies printed.

TOPIC TAGS: variational method, variational method realization, variational method stability, Ritz method, Hilbert space

PURPOSE AND COVERAGE: The book deals with the numerical realization of variational methods and contains results obtained by the author and his coworkers and also by other authors published in the past. An exact definition and a complete solution of the problem of stability of variational methods, in particular of the highly important Ritz method, are presented for the first time. The book is highly original and there is no counterpart in the world literature. The book is intended primarily for engineers, physicists, and mathematicians working on the solution of problems in which the application of variational methods is advantageous. The author thanks N. A. Solov'yeva and T. A. Tushkina for calculations, and M. K. Gavurin for his reading of the manuscript and his valuable remarks. There are 156 references, 20 of which are non-Soviet.

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CA

12

Simple detection of phosphatase in milk as a test of pasteurization. S. Ya. Mikhlin and G. K. Shlygin (Acad. Med. Sci., Moscow). *Gigiena i Sanit.* 1950, No. 1, 36-41.—The test depends on the formation of red phenolphthalein color from enzymic cleavage of phenolphthalein diphosphate (Na salt) at pH 9-10 (best in pH 9.8 ammonia buffer soln.) in the presence of a little $CHCl_3$ with incubation at 37-8°; if after 24 hrs. no test is visible, the phosphatase is absent owing to complete destruction in pasteurization, fresh milk generally gives a pos. test in 0.5 hr. The reagent is prepd. by addn. of 50 g. $POCl_3$ in 50 ml $CHCl_3$ to 32 g. phenolphthalein with stirring and the ice-cooled mixt. is treated dropwise with 25 ml. dry pyridine, after standing overnight, evapn. in vacuo, diln. with 100 ml. H_2O and addn. of 40% NaOH until soln. is attained, extn. with Et_2O, acidification to Congo red with HCl, the free diphosphate is filtered and vacuum dried, this is neutralized with EtONa soln. in MeOH contg. a little pyridine (for improved soly.) and the pptd. Na salt is purified by pptn. with EtOH from 4:1 mixt. of MeOH-HCONH₂. G. M. Kosolapoff

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SA

11 H

Distribution of manganese in animal organs in dependence on mode of introduction and the nature of introduced compounds. S. Va. Mikhlin (Ind. Hyg. Inst., Moscow. *Arkh. Patol.* 12, No. 6, 56-7(1950).—After 4-5 min. injected (vein) Mn sulfate vanishes from the blood of a rabbit to the extent of 70%; in 5 hrs. it disappears completely; most Mn is retained in liver and muscle, none in the brain. Peroral administration also gives considerable retention in stomach tissues, while dust administration causes deposition in lung tissues. MnO_2, perorally administered, leads to retention in the stomach with small degree of circulation.

G. M. K.

- Fu-hsin Lab

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FOMINA, L.S.;MIKHLIN, S.Ya.;SHLYGIN, G.K.

Method of determination of intestinal phosphatase. Biokhimiia, Moskva 17 no.2:134-138 Mar-Apr 1952. (CIML 24:5)

1. Laboratory of Digestion of the Institute of Nutrition of the Academy of Medical Sciences USSR, Moscow.

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S. YA. MIKHLIN

Enzyme content of the secretions of the intestines in rickets. S. Ya. Mikhlin (Nutrition Inst., Acad. Med. Sci., Moscow). Pediatriya 1954, No. 3, 65-8.—In dogs with experimentally induced rickets no significant difference is observed in the abundance and distribution of enzymes in the intestinal secretions in comparison with the control animals. The results include the detns. of phosphatase, enterokinase, and sucrase. The 1st is primarily found in the secretions from the small intestine; enterokinase shows a similar distribution. G. M. Kosolapoff

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. Ya.

MIKHLIN, S.Ya.; GEYMBERG, V.G.

Excretion of intestinal enzymes with feces in dogs following suppression of normal intestinal flora. Vop. pit. 13 no.6:27-31 N-D '54. (MLRA 8:1)

1. Iz laboratorii pishchevareniya (zav. prof. G.K.Shlygin) i laboratorii mikrobiologii (zav. prof. V.N.Azbelev) Instituta pitaniya AMN SSSR, Moskva

(FECES,
enzymes, eff. of antibiotic prod. disord. of intestinal bacteriol. in dogs)
(ENZYMES,
in feces, eff. of antibiotic prod. disord. of intestinal bacteriol. in dogs)
(ANTIBIOTICS, effects,
on intestinal bacteriol. & fecal enzymes)
(INTESTINES, bacteriology,
eff. of antibiotics on intestinal bact. & fecal enzymes)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

KUVAYEVA, I.B.; MIKHLIN, S.Ya.

Determination of enterokinase. Biokhimiia 19 no.4:437-439 Jl-Ag '54. (MLRA 7:9)

1. Laboratoriya pishchevareniya otdela fiziologii i biokhimii pitaniya Instituta pitaniya Akademii meditsinskikh nauk SSSR, Moscow.
(Enterokinase)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. Ya.

5709. Simple method of assaying phosphatase in blood plasma. G. K. Shlygin and S. Ya. Mikhlin *Vop. med. Khim.*, 1955, 1, 461—462; *Referat. Zh. Biol. Khim.*, 1956, Abstr. No. 18211.—A simple method of determining the activity of alkaline and acid phosphatase of blood plasma is described based on fermentative decomposition of *n*-nitrophenyl phosphate Na (I) to *n*-nitrophenol (II) which, in an alkaline medium, results in the soln. becoming yellow. (A) Assay of the alkaline phosphatase: to 3·15 ml. of cooled 0·9% soln. of NaCl is added 0·1—0·3 ml. of blood. The mixture is centrifuged for 15 min. at 2000—3000 r.p.m., and the amount of erythrocytes is noted. Dilutions are made from the plasma obtained. To each tube two drops of 0·3% $MgCl_2$ soln. and 0·5 ml. of buffered substrate soln. (0·45 g. I dissolved in 100 ml. 0·001 *N*-HCl) are added. By shaking up 3 times with ether the admixture of free II is removed from this soln. 1 ml. of ammonium buffer (pH 10) is added to 9 ml. of the test soln. and the mixture is incubated for 30 min. at 37°. The resulting colour is compared with a standard soln. of II. (B) Assay of the acid phosphatase: substrate I is dissolved in 0·1 ml. of acetate buffer pH 5·0. The free II is removed by ether. The blood or serum is dissolved in 0·9% NaCl soln.; and further soln. are prep. without adding $MgCl_2$. After (30 min.) adding 0·5 ml. of 0·4% substrate soln. to each test tube the incubated samples are made alkaline by adding 2 drops of 2 *N*-NaOH. The colour is compared with the standard soln. (Russian) L. Parks

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. Ya.

GERM

The amount of enzymes in the duodenal juice and feces of patients following an operation for resection of the stomach because of cancer. S. Ya. Mikhlin and L. M. Levitskii (Nutrition Inst., Acad. Med. Sci. U.S.S.R., Moscow). *Voprosy Pitaniya* 14, No. 2, 34-8(1955).—In duodenal juice of patients (30), who 4-5 months earlier withstood resection of the stomach because of cancer, the following enzymes were identified and detd. (control given in parentheses): enterokinase 1500-5000 (200-670); trypsin and amylase 135-720 (135-720); and lipase 12-60 units/mL (70-200), resp. In gastric juice the amt. of pepsin was greatly decreased. In feces of the patients the amt. of enterokinase was greatly increased; however, its abs. amt. fluctuated widely from 40-90 to 300-700 to 500-3500 units/g. (10-20). In the great majority (27) of the patients the alk. phosphatase was also greatly increased: 200-5000 units/g. feces (40-90). The amt. of sucrase in most cases was the same as in healthy men. Presumably, because of the exclusion of gastric digestion, the enzymic activities of pancreatic and duodenal juices are correspondingly increased. E. Wierbicki

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKhlin S. YA.

Enzymes in the duodenal secretion and feces in sprue. S. Ya. Mikhlin and N. I. Ismailov (Inst. Nutrition, Acad. Med. Sci. U.S.S.R., Moscow). *Voprosy Pitaniya* 14, No. 5, 40-1(1955).—In sprue the amt. of alk. phosphatase (I) in feces was greatly increased while the amt. of enterokinase (II) was within the normal range, or only slightly increased; in duodenal juice II was within the lower range of the normal level or slightly decreased, trypsin and amylase were increased and lipase greatly decreased. Increased amts. of I and II were found also in patients suffering from dysentery, pellagra, and chronic colic. The enzyme tests may be used to study the restoration of the normal function of the intestines following certain diseases. B. W.

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. Ya.; MESTERIN, M. F.; ZOLOTOVA, K. V.

Problem of residual modifications of intestinal function in dysentery. Sov. med. 19 no.11:19-23 N '55 (MLRA 9:1)

1. Iz laboratorii fiziologii pishcvareniya (zav.-prof. O. K. Shlygin) Instituta pitaniya Akademii meditsinskikh nauk SSSR i kabineta dlya bol'nykh kishechnymi infektsiyami (zav. K. V. Zolotova) Sokol'nicheskogo rayona Moskvy.

(DYSENTERY, BACILLARY, seq., intestinal funct.)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

Clinical significance of quantitative estimation of enterokinase in the stool of patients suffering from food poisoning. S. Ya. Mikhlin, G. M. Kapnik, and O. N. Mukhina (Nutrition Inst., Moscow). *Terap. Arkh.* 28, No. 3, 32-6(1956).—Increased amts. of enterokinase in the stool of discharged cases of food poisoning indicate incomplete recovery. The proper dietary regime must be maintained until the level of enterokinase in the stool returns to normal.

A. S. Mirkin

3

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3"

"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.Ya.

Role of the determination of enterokinase and alkaline phosphatase in judging the functional state of the intestine. Lab.delo 3 no.6:16-22 N-D '57. (MIRA 11:2)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. G.K. Shlygin) Instituta pitaniya AMN SSSR, Moskva.
(ENTEROKINASE) (PHOSPHATASE) (INTESTINES)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

KAPNIK, G.M.; MIKHLIN, S.Ya.; MUKHINA, O.N.

Detecting functional intestinal disorders by studying enzymatic factors in gastrointestinal diseases of alimentary origin. Sov. med. 21 no.9:68-70 S '57. (MIRA 11:1)

1. Iz laboratorii pishchevareniya (zav. - prof. G.K.Shlygin) Institute pitaniya Akademii meditsinskikh nauk SSSR i 1-y klinicheskoy infektsionnoy bol'nitsy (nauchnyy rukovoditel' G.M.Kapnik)

(GASTROINTESTINAL DISEASES, diag.
determ. of enterokinase in feces)
(PROTEASES, determ.
enterokinase in feces in diag. of gastrointestinal dis.)
(FECES
enterokinase determ. in diag. of gastrointestinal dis.)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

NESTERIN, M.F.; MIKHLIN, S.Ya.; VERISOVA, M.A.

Detecting intestinal disorders in obliterated dysentery. Sov.med. 21 no.11:69-71 N '57. (MIRA 11:3)

1. Iz laboratorii fiziologii pishchevareniya (zav.-prof. G.K.Shlygin) Instituta pitaniya AMN SSSR i 1-y klinicheskoy infektsionnoy bol'nitsy (nauchnyy rukovoditel' G.M.Kapnik) Moskvy.

(DYSENTERY, metab.
fecal enzymes in obliterated form)
(ENZYMES, determ.
in feces in obliterated form of dysentery)
(FECES, in various dis.
ferments in obliterated form of dysentery)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

ALIYEVA, V.I.; MIKHLIN, S.Ya.

Significance of enzymatic indices in evaluating intestinal function in chronic colitis. Terap.arkh. 29 no.4:47-51 ap 57. (MIRA 10:10)

1. Iz laboratorii pishchevareniya (zav. - prof. G.K.Shlygin) i kliniki lechebnogo pitaniya (dir. - prof. F.K.Men'shikov) Instituta pitaniya AMN SSSR.

(COLITIS, physiology,
enterokinase & phosphatase in feces (Rus))
(PROTEASES, determination,
enterokinase in feces in colitis (Rus))
(PHOSPHATASES, determination,
in feces in colitis (Rus))
(FECES,
enterokinase & phosphatases in chronic colitis (Rus))

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

NESTERIN, M.F.; MIKHLIN, S.Ya.; VERISOVA, M.A. (Moskva)

Rate of ferment excretion in the evaluation of the intestinal activity in atypical and abortive forms of dysentery. Klin.med. 35 [i.e.34] no.1 Supplement:28 Ja '57. (MIRA 11:2)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. G.K. Shlygin) Instituta pitaniya AMN SSSR i 1-y klinicheskoy infektsionnoy bol'nitsy (nauchnyy rukovoditel' - G.M.Kapnik)
(DYSENTERY) (DIGESTIVE FERMENTS)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.Ya.; LEVITSKIY, L.M. (Moskva)

The enzyme secretion function of the intestines and pancreas following gastric resection for cancer. Klin.med. 35 no.4:56-60 Ap '57. (MLRA 10:7)

1. Iz laboratorii pishchevareniya (zav. - prof. G.K.Shlygin) i kliniki lechebnogo pitaniya Instituta pitaniya AMN SSSR (dir. - prof. F.K.Men'shikov)

(GASTRECTOMY, in various dis.
cancer of stomach, eff. on intestinal & pancreatic enzyme secretion)
(STOMACH NEOPLASMS, surg.
gastrectomy, eff. on intestinal & pancreatic enzyme secretion)
(PANCREAS, physiol.
enzyme secretion, eff. of gastrectomy for cancer of stomach)
(INTESTINES, physiol.
same)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

USSR / Microbiology. Microorganisms Pathogenic to Humans and Animals. F-5

Abs Jour : Ref Zhur - Biol., No 20, 1958, No. 90930

Author : Goymberg, V. G.; Mikhlin, S. Ya.; Pavlova, L. M.
Inst : Not given
Title : The Problem of Suppression of Enteric Microflora

Orig Pub : Zh. mikrobiol., epidemiol. i immunobiol., 1958, No 3, 128-129

Abstract : No abstract given

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S. Ya., GEYMBERG, V.G., PAVLOVA, Z.M.

The role of microflora in the destruction of enterokinase in the large intestine of the rabbit [with summary in English]. Vop.med.khim. 4 no.1:8-14 Ja-F'58 (MIRA 11:5)

1. Laboratoriya fiziologii pishchevareniya i laboratoriya mikrobiologii Instituta pitaniya AMN SSSR, Moskva.

(PROTEASES, metabolism
enterokinase destruction in large intestine in rabbit role of intestinal bact. (Rus))
(PHOSPHATASES, metabolism
destruction in large intestine in rabbit, role of intestinal bact. (Rus))
(INTESTINE, LARGE, bacteriology
bact. role in destruction of enterokinase & phosphatase in rabbits (Rus))

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.Ya.; PAVLOVA, Z.M.

The effect of aminopterin administration on the enzyme content of feces in puppies [with summary in English]. Vop.med.khim. 4 no.2:109-113 Mr-Ap '58. (MIRA 11:5)

1. Laboratoriya fiziologii pishchevareniya Instituta pitaniya AMN SSSR, Moskva.

(AMINOPTERIN, effects
on fecal excretion of alkaline phosphatase & enterokinase in dogs (Rus)
(PHOSPHATASES, metabolism
alkaline phosphatase excretion in feces, eff. of aminopterin admin. on dogs (Rus)
(PROTEASES, metabolism
enterokinase excretion in feces, eff. of aminopterin admin. on dogs (Rus)
(FECES,
alkaline phosphatase & enterokinase content, eff. of aminopterin admin. on dogs (Rus)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

ALIYEVA, V.I.; MIKHLIN, S.Ya.

Evaluating the condition of the large intestine in chronic colitis by enzyme indexes. Izv.AN Uz.SSR.Ser.med. no.5:49-57 '58. (MIRA 12:5)

1. AMN SSSR, Institut pitaniya.
(COLITIS) (DIGESTIVE ENZYMES)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

GEYMBERG, V.G.; MIKHLIN, S.Ya.; PAVLOVA, Z.M.

Inhibiting normal enteric microflora. Vop.pit. 17 no.1:92-93 Ja-F '58. (MIRA 11:4)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. G.K. Shlygin) i otdela pishchevoy gigiyeny (zav. - prof. F.Ye.Budagyan) Instituta pitaniya AMN SSSR, Moskva.
(INTESTINES--BACTERIOLOGY)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

GEYMBERG, V.G.; MIKHLIN, S.Ya.; PAVLOVA, Z.M.

Suppression of enteric microflora. Zhur.mikrobiol.epid. i immun. 29 no.3:128-129 Mr '58. (MIRA 11:4)

1. Iz Instituta pitaniya AMN SSSR.
(INTESTINES--BACTERIOLOGY)

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"APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134120015-3

MIKHLIN, S.Ya.; LEVITSKIY, L.M. (Moskva)

Remote effect of gastric resection in cancer on enzymatic function of the small intestine. Klin.med. 36 no.2:67-70 F '58. (MIRA 11:4)

1. Iz laboratorii fiziologii pishchevareniya (zav. - prof. G.K. Shlygin) i kliniki lechebnogo pitaniya (zav. - prof. F.K.Men'shikov) Instituta pitaniya AMN SSSR.

(GASTRECTOMY, effects,
on small intestine enzyme content, in cancer surg. (Rus))
(INTESTINE, SMALL, physiology,
enzyme prod., eff. of gastrectomy in cancer (Rus))
(ENZYMES,
in small intestine, eff. of gastrectomy in cancer (Rus))

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