

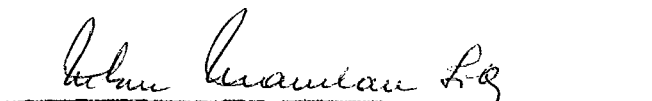
" PROGRAMAÇÃO LINEAR: UM ESTUDO BIBLIOGRÁFICO "


VERA LUCIA ALVES AMARAL

TESE SUBMETIDA AO CORPO DOCENTE DA COORDENAÇÃO
DOS PROGRAMAS DE PÓS-GRADUAÇÃO DE ENGENHARIA
DA UNIVERSIDADE FEDERAL DO RIO DE JANEIRO COMO
PARTE DOS REQUISITOS NECESSÁRIOS PARA A OBTEN-
ÇÃO DO GRAU DE MESTRE EM CIÊNCIA (M.Sc.), EM
ENGENHARIA DE SISTEMAS.

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JANEIRO DE 1978

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Veralúcia Alves Amaral

VERA LUCIA ALVES AMARAL

RESUMO

Foi feita uma extensa pesquisa bibliográfica relacionando-se os principais trabalhos sobre Programação Linear publicados de 1967 a 1975. A literatura relacionada baseia-se fundamentalmente na revista "International Abstracts of Operations Research" (IAOR). Também na ordenação e classificação dos artigos foram utilizados os critérios da IAOR.

Como exemplo de utilização da listagem de literatura examinamos na parte final deste trabalho problemas de alocação de recursos no setor agropecuário utilizando técnicas de Programação Linear.

ABSTRACT

An extensive bibliography in Linear Programming is presented. This bibliography is based in the journal "International Abstracts of Operations Research" (IAOR). Volumes 7 (1967) to 15 (1975) were examined and all articles or books relating to Linear Programming are listed. This material was ordered and classified using same criteria as IAOR.

As an example of use of this bibliography, resource allocation problems within agriculture are examined.

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1) INTRODUÇÃO

Em 1958 Saul I. Gass escreveu junto com Vera Riley o livro "Bibliography on Linear Programming and Related Techniques", John Hopkins Press, Baltimore. Na mesma época apareceram também os seguintes artigos:

- Rohde F. V. - "Bibliography on Linear Programming" - Op. Res. 5, 1, 1957
 Wagner H. M. - "A Supplementary Bibliography on Linear Programming" - Op. Res. 5, 4, 1957

Todos estes trabalhos continham listas de bibliografia cobrindo o material publicado nas principais revistas de Pesquisa Operacional.

Faltava no entanto uma lista mais atualizada de literatura sobre programação linear. O primeiro passo era portanto ser informar com maiores detalhes acerca da existência ou não de uma listagem atualizada e a mais completa possível de tal literatura.

O que fizemos então foi contactar os pesquisadores e as instituições que nos pudessem conceder tais informações. Entre outros tivemos oportunidade de conversar demoradamente sobre este assunto com o Prof. E. Balas além de manter correspondência com o Prof. S. I. Gass. Também foram consultados através de correspondência o "Institute of Management Science" e a "Operations Research Society of America".

De todos os lados foi confirmada a inexistência de uma listagem sistemática e atualizada de trabalhos em programação linear, ressaltando-se a importância de tal tarefa vir a ser feita.

Este foi portanto fundamentalmente o nosso objetivo: listar e classificar de uma forma sistemática os livros e artigos sobre programação linear que apareceram nas principais revistas especializadas durante os últimos anos.

Para isto baseamo-nos fundamentalmente na revista "International Abstracts of Operations Research" (IAOR). Examinamos todos os volumes de 1967 a 1975, relacionando todos os artigos sobre programação linear. O critério classificatório utilizado foi o do próprio IAOR permitindo enquadrar o livro ou artigo como Modelo, Aplicação, Teoria, etc...

A relação destes artigos compõe o capítulo 2 deste trabalho. Na seção 2-1, consta uma explicação mais detalhada sobre o critério de classificação bem como sobre o funcionamento da revista IAOR, convenções utilizadas, etc.... Em 2-2 estão relacionados os artigos propriamente ditos.

No capítulo 3 damos um exemplo de utilização da listagem de literatura. Como tema central tomamos problemas de alocação de recursos no setor agropecuario utilizando técnicas de programação linear.

Escolhemos alguns artigos relacionados com este tema, que nos pareceram mais interessantes, fizemos uma síntese dos mesmos concentrando-nos sobre a parte de modelagem. Visando situar os artigos apresentamos o problema geral de alocação em 3-2 e em 3-3 algumas noções básicas sobre o Método Simplex.

Esperamos que este trabalho possa ser útil e venha realmente a ser consultado. Este foi o seu principal objetivo. Aos alunos de cursos de programação linear de graduação ou pós-graduação fica assim disponível uma fonte de literatura tanto para a parte teórica como também para a parte referente a aplicações.

Cabe ressaltar que foi também nosso intuito destacar com o presente trabalho a importância da pesquisa bibliográfica, etapa fundamental de qualquer pesquisa científica séria e consequente, que tem sido infelizmente muitas vezes negligenciada. Um trabalho científico é antes de mais nada um trabalho de equipe. Por mais isolado que esteja o pesquisador participam do trabalho dele implicitamente dezenas de outros pesquisadores vivos ou até mesmo mortos. Esta equipe, esta participação implícita se dá em grande parte através da bibliografia consultada. Cabe intensificar esta participação, cabe aumentar a equipe!

2-1) CRITÉRIO DE CLASSIFICAÇÃO

A bibliografia sobre P.L. que segue baseia-se fundamentalmente na revista IAOR. "International Abstracts of Operations Research" é uma revista trimestral contendo, como o próprio nome indica um resumo dos artigos de P.O. que aparecem nas principais revistas especializadas nesta área.

As revistas que se seguem (PRIMARY JOURNALS) são cobertas integralmente pela revista IAOR, isto é, todos os artigos ali contidos são relacionados com seus respectivos resumos por essa revista. Segue a relação dos "PRIMARY JOURNALS".

BELGIUM

- "Cahiers du Centre d'Etudes de Recherche Operationnelle".

Institut de Statistique de P'U-
niversite Libre de Bruxelles
50, avenue F. D. Roosevelt 1050
Bruxelles, Belgium

- "Revue Belge de Statistique
d'Informatique et de Recherche
Operationnelle".

Editor: R. Sneyers
3, avenue Circulaire 1180 Bruxelles,
Belgium.

CANADA

- "INFOR" (Canadian Journal of Operational Research & Information Processing).

Editor: K. J. Radford
Box 2225, Station D
Ottawa, Ontario, Canada
(CN ISSN 0008-4638)

ITALY

- "Ricerca Operativa".

Editor: Bruno O. Martinoli
Italsider S.p. A.
Via Ilva, 3
Genova, Italy

NETHERLANDS

- "Mathematical Programming".

Editor: M. L. Balinski
Box 2070

Princeton, New Jersey 08540
 (NE ISSN 0025-5610

NEW ZEALAND

-"New Zealand Operational Research"
 Editor: H. G. Daellenbach
 University of Canterbury
 Christchurch, N. Zealand.

UNITED KINGDOM

-"Operational Research Quarterly".
 Editor: K. B. Haley
 The University of Birmingham
 Birmingham B15 2TT, England
 (IX ISSN 0030-3623)

UNITED STATES

-" Decision Sciences".
 Editor: William S. Peters
 American Inst. for Decision Sciences
 33 Gilmer, Georgia 30303
 (US ISSN 0011-7315)

-"Management Science".
 Editor: Martin K. Starr
 401 Uris, Columbia University
 New York, N. York 14850
 (US ISSN 0025-1909).

-"Operations Research".
 Editor: George L. Nemhauser
 Upson Hall, Cornell University
 Ithaca, New York 14850
 (US ISSN 0030-364X)

-"Transportation Research".
 Editor: Frank A. Haight
 The Pennsylvania Transport & Traffic
 Safety Center.
 University Park, Pennsylvania 16802
 (US ISSN 0041-1655)

WEST GERMANY

-"Zeitschrift für Operations Research".
 Physica - Verlag
 Postfach 1136
 D 87 Würzburg 2, West Germany
 (GW ISSN 0042-0573)

Além disso a revista IAOR relaciona artigos de outras revistas menos importantes. Dos SUPPLEMENTAL JOURNALS a revista IAOR relaciona somente aqueles artigos que interessam ao especialista em P.O. A seguir constam os nomes dos SUPPLEMENTAL JOURNALS.

SUPPLEMENTAL JOURNAL: IFORS Countries

ARGENTINA

--"Boletin de la Sociedad Argentina de Investigacion Operativa".
 Editor: Rafael Villamarin
 Sociedad Argentina de Investigacion Operativa.
 San Jose 371
 Buenos Aires, Argentina.

FRANCE

--"Metra"

SEMA

16- 20 Rue Barbes
 92128 Montrouge, France
 (FR ISSN 0026-1327)

--"Revue Francaise d'Automatique d'Informatique et de Recherche Operationnelle".

Editor: J. Abadie

AFCEP

Universite Paris IX- Dauphine
 75775 Paris 16, France
 (FR ISSN 0035-3035)

INDIA

--"Opsearch".

Editor: N. K. Jaiswal

Institute for Defence Studies & Analysis

Sapru House, Barakhamba Road

New Delhi-1, India

(II ISSN 0030-3887)

ITALY

--"Impianti".

Editor: G. Danese

Instituto di Impianti Industriali

Fac. Ingegneria

Via Opera Pia

Genova, Italy

(IF ISSN 0019-2945)

JAPAN

--"Journal of the Operations Research Society of Japan".

Operations Research Society of Japan.
Gakkai Center Building
2 - 4- 16 Yayoi, Bunkyo-Ku
Tokyo 113, Japan

--"Keiei Kagaku" (Management Science)

Operations Research Society of Japan
Gakkai Center Building
2- 4- 16 Yayoi, Bunkyo-Ku
Tokyo 113, Japan

NETHERLAND

--"Discrete Mathematics".

Editor: Peter L. Hammer
University of Montreal
Montreal 3 PQ, Canada
(NE ISSN 0012-365X)

SWITZERLAND

--"Die Unternehmung".

Veréinigung Schweiz. Betriebswirtschaftler
Verlag Paul Haupt Bern
Falkenplatz 14
3001 Bern, Switzerland
(SZ ISSN 0042-059X)

--"Industrielle Organisation"

Betriebswissenschaftliches Institut der
ETH II Zurich
Zurichbergstrasse 18
8028 Zurich, Switzerland
(SZ ISSN 0019-9281)

UNITED KINGDOM

--"International Journal of Physical Distribution".

Editor: Martin Christopher
Cranfield School of Management
Cranfield, Bedfordshire , England
(UK ISSN 0020-7527)

--"International Journal of Production Research".

Editor: N. A. Dudley
Dept. of Engineering Production
University of Birmingham
Birmingham B15 2TT, England
(UK ISSN 0020-7547)

-"OMEGA".

Editor: Samuel Eilon
 Imperial College of Science & Technology
 Exhibition Road
 London SW7 2BX, England

-"R & D Management".

Editor: A. W. Pearson
 Manchester Business School
 Booth Street West
 Manchester M 15 6 PB , England
 (UK ISSN 0033-6807)

UNITED STATES

-"AIIE Transactions"

Editor: Jim F. Wolbrink
 American Inst. of Industrial Engineers, Inc.
 345 E. 47 th. Street
 New York, New York 10017

-"Bell Journal of Economics and Management Science".

Editor: Paul W. MacAvoy
 Sloan School of Management
 Mass. Inst. of Tech.
 Cambridge, Massachusetts 02139
 (US ISSN 000 5-8556)

-"Computers and Operations Research".

Editor: Samuel J. Raff
 Raff Associates, Inc.
 912 Thayer Avenue
 Silver Spring, Maryland

-"Journal of the American Statistical Association".

Editor: Robert Ferber
 University of Illinois
 Chicago Circle, Box 6905
 Chicago, Illinois 60680
 (US ISSN 0003-1291)

-"Naval Research Logistics Quarterly".

Editor: Seymour M. Selig
 Managing Editor, NRLQ
 Office of Naval Research
 Arlington, Virginia 22217
 (US ISSN 0028-1441)

-"Networks"

Editor: Ivan T. Frisch
 Network Analysis Corporation

Glen Cove, New York 11542
(US ISSN 0028-3045)

-"Policy Sciences".
Elsevier Publishing Company
Jan Van Galenstraat 335
P.O. Box 211
Amsterdam, The Netherlands
(US ISSN 0032-2687)

-"SIAM Journal on Applied Mathematics".
Society for Industrial & Applied Mathematics.
33 South 17th St.
Philadelphia, Pennsylvania 19103
(US ISSN 0036-1399)

-"SIAM Review"
Society for Industrial & Applied Mathematics
33 South 17 th St.
Philadelphia, Pennsylvania 19103
(US ISSN 0036-1445)

-"Simulation".
Editor: John McLeod
P.O. Box 2228
La Jolla, California 92037
(US ISSN 0037-5497)

-"Technological Forecasting and Social Change"
American Elsevier Publishing Co., Inc.
52 Vanderbilt Avenue
New York, New York 10017
(US ISSN 0040-1625)

-"The Engineering Economist".
American Society for Engineering Education,
300 West Chestnut Street
Ephrata, Pennsylvania 17522
(US ISSN 0013-797X)

U.S.S.R

-"Avtomatika i Telemekhanika (PLPC)".
Editor: V. A. Trapeznikov
Kalanchevskaya ul. 15a
Moscow, U.S.S.R.
(UR ISSN 0005-2310)

-"Izvestiya Akademii Nauk SSSR, Tekhnicheskaya
Kibernetika (IEEE or CFSTI)."
Ulica Vavilova, 28
Moskva, V. 222 U.S.S.R

- "Kibernetika" (FP or CPSTI)
 Akademiya Nauk Ukrayins 'Koyi R.S.R Vidolil

- "Matematyky Mekhaniky i kibernetiky 'Naukova
 Dumba' Ukrayins'ka RSR"
 Kiev, U.S.S.R
 (UR ISSN 0023-1274)

WEST GERMANY

- "Angewandte Informatik"
 Editor: Wolf Eichen
 Mathematischer Beratungs- und Programmierungsdienst
 GmbH, 46 Dortmund, Kleppingstr. 26
 West Germany
 (GW ISSN 0013-5704)

- "Operations Research Verfahren"
 Editor: Rudolf Henn
 Institut für Statistik und Quantitative Methoden
 der Unternehmensführung der Universität
 75 Karlsruhe 1, Postfach 6380
 West Germany
 (GW ISSN 0078-5318)

SUPPLEMENTAL JOURNAL: Non - IFORS Countries

AUSTRIA

* "Computing"
 Springer Verlag
 175 Fifth Avenue
 New York, New York 10010
 (AU ISSN 0010-485X)

- "Metrika"
 Phisica-Verlag
 Rudolf Liebing K. G.
 Wallnerstr. 4, Vienna, Austria
 (AU ISSN 0026-1335)

Czechoslovakia

- "Ekonomicko-matematiky Obzor"
 Editor: Jiri Skolka
 Ekonomicko-matematiky, Komise CSAV
 Politickych Vyznw 7
 Prague 1, Czechoslovakia
 (CS ISSN 0013-3027)

HUNGARY

-"Sigma"

Editor: Bela Martos
 Nador u.7
 Budapest V. , Hungary
 (HU ISSN 0039-8128)

A sigla entre parenteses, que diz respeito às revistas soviéticas dá o nome da instituição que faz a tradução destas revistas . Segue o nome da instituição com seu respectivo endereço:

CFSTI

Clearinghouse for Federal Scientific and Technical Information.
 Port Royal and Braddock Roads
 Springfield, Virginia 22151

FP

Faraday Press, Inc.
 84 Fifth Avenue
 New York, New York 10011

IEEE

Institute of Electrical and Electronics Engineers.
 275 Madison Avenue
 New York, New York 10016

PLPC

Plenum Publishing Corporation
 227 West 17 th Street
 New York, New York 10011

Os artigos foram classificados seguindo-se os mesmos critérios da revista IAOR . Esta classificação consta de 5 grandes grupos.

"MODELS OF COMMON PROCESSES - São modelos matemáticos que apresentam uma formulação geral de um problema. Não se referem à aplicações práticas específicas .

EXPERIMENT AND SPECIAL APPLICATIONS - Apresentam artigos que se referem à aplicações práticas em determinada área de pesquisa operacional .

Sob THEORETICAL constam artigos de caracter mais teórico enquanto sob PROFESSIONAL se encontram artigos (ou livros) referentes a prática e o desenvolvimento da P.O.

BOOKS AND BOOK REVIEWS - Contém como o próprio nome indica resumos e comentários sobre livros da área de P.O.

Cada grupo acima mencionado subdivide-se em diversos subgrupos que especificam com maior detalhe o assunto que é tratado no artigo.

Cada volume anual da revista IAOR divide-se em diversos fascículos. O último fascículo de cada volume contém um índice cumulativo para todo volume, isto é, constam todos artigos relacionados durante aquele ano. Além disso o último fascículo contém um índice por autor e um índice por assunto. Ambos referem-se ao volume inteiro.

A relação de artigos (ou livros) que se seguem foi feita baseando-se no índice por assuntos, relacionando-se todos os artigos que constavam sobre a rubrica L.P.

Para cada artigo consta título, autor e indicações sobre a revista publicada. Uma explicação para as abreviaturas das revistas utilizadas segue mais a frente. Além disso consta em alguns artigos 3 ou 4 palavras chaves. Por último consta a palavra IAOR acompanhada de um nº, que permite a localização do 'abstract' respectivo na revista IAOR. Em alguns artigos teóricos encontramos a palavra IAOR acompanhada de um nº com uma especificação, o que significa que tais artigos de programação linear podem também estar classificados dentro de um outro campo de estudo.

O título da maioria dos artigos se encontra na língua original acompanhado, em parenteses da tradução para o inglês, quando essa é necessária.

O " * " que acompanha algum dos títulos indica que se trata de um livro e não de um artigo.

LISTA DE ABREVIACES

- Math. - Mathematical
 Probl. - Problems
 Opns. Res. - Operations Research
 Bibliog. - Bibliography
 Techn. - Technology
 Dyn. Prog. - Dynamic Programming
 Supp. - Supplement
 Adm. - Administration
 Man. Sci. - Management Science
 Operat. Res. Quart. - Operational Research Quartely
 Nav. Res. Log. Quart. - Naval Research Logistic Quartely
 Trans. Sci - Transportation Science
 R & D Management - Research and Development Management
 SIAM Review - Society for Industrial and Applied Mathematics Review
 P.O.P - Progressive Orientation Procedure
 C.C.E.R.O - Cahiers du Centre d'Etudes de Recherche Operationnelle
 RFIRO - Revue Francaise d'Informatique et de Recherche Operationnelle
 IJPR - International Journal of Production Research
 Bell J. for Econ. & Man. Sci. - Bell Journal for Economic and
 Management Science.
 Opns. Res. Verf. - Operations Research Verfahren
 Cors Journal - Canadian Operational Research Society Journal
 IEEE - Institute of Electrical and Electronic Engineers
 AIIE - Transactions - American Institute of Industrial Engineers
 Transactions.
 Estadist. Esp. - Estadistica Espanola
 Econ. Comp. & Econ. Cyb. Stud. & Res. - Economic Computation and
 Economic Cybenetics Studies
 and Research.
 CORSI Bulletin - Bulletin, Calcutta Branch of Operational Research
 Society of India
 Assn. - Association
 Cyb. Abs. - Cybenetics Abstracts

J. Ind'l Engrg. - Journal of Industrial Engineering

NZOR - New Zealand Operational Research.

IJPR - International Journal of Production Research

NRLQ - Naval Research Logistics Quarterly

Comput. & Opns. Res. - Computers & Operations Research

Tech'l Transl. - Technical Translations

U.S.G. R. & D.R. - U.S. Government Research and Development Reports

J. of the A.C.M. - Journal of the Association for Computing Machinery

2-2) CLASSIFICAÇÃO DOS ARTIGOS
 2-2-1) MODELS OF COMMON PROCESSES

COMPUTERS

"The Application of Analog Computers in Operations Research".
 J. Heinhold.

Computing (Austria). 1 (1966)3, pp. 197-213
 (Analog; iteration; algorithms; R; IAOR- 5712)

CONTROL

"Optimal Production, Investment, Advertising, and Price Controls for the Dynamic Monopoly Firm".

Russell G. Thompson (Texas A&M University, College Station, Texas)
 and Michael S. Proctor.

Man. Sci.: Theory (U.S.) 16 (1969) 3 (nov.), pp. 211 - 220
 (Dynamic monopoly; Control theory; Linear program; IAOR - 8091)

" Problems of Statistical Optimization of a Linear Control System with many Entrances and Exits". (Ukrainian)

V.S.Kulebaking and Zh.B.Linkovs'kii

Avtomatika (kiev) (U.S.S.R.) (1966) 6, pp.72 - 75

(Linear System; many entries / exits; statistical optimization ;
 IAOR - 8442 Control)

"Selective Control of Independent Activities: Linear Prog. of Mar - kovian Decisions".

Hirohide Hinomoto (College of Commerce & Business Admin., Univ. of Illinois, Urbana, Ill)

Man. Sci.: Theory (U.S.) 18 (1971) 1 (sept.), pp. 86 - 96
 (IAOR - 10031)

DECISION

"Linear Prog. Solutions for Separable Markovian Decision Problems".

G.T.Ghellinck and G.D.Eppen

Man. Sci.: (U.S.).13 (1967), 5 (jan.) , pp.371 -394

(Markovian; separable; linear programming solutions; IAOR- 6072)

" Computing a Bias- Optimal Policy in a Discrete-Time Markov Decision Problem".

Eric. V. Denardo (Yale University, New Haven, Conn.)

Opns. Res. (U.S.)18 (1970) 2 (mar. - april), pp.279 -289

(Bias-Optimal model; discrete time; linear programming; IAOR - 8447
 Decision)

" A Survey of Goal Programming".

J.S.H.kornbluth (Hebrew Univ., jerusalem, Israel)

OMEGA (U.K.) 1 (1973) 2 (april) , pp.193 -205

(IAOR - 12376)

DESIGN

" A Linear Programming Approach to Air- Cleaner Design".
 Suresh Advani (Mechanical Engrg. Dept, Tennessee Tech. Univ., Cooke -
 ville Tenn.)
 Opns. Res. (U.S.) 22 (1974) 2 (march - april), pp. 295 -297
 (IAOR - 12724)

" Erratum"
 Suresh Advani (34 leith Hill Rd. , Willowdale, Ontario, Canada)
 Opns. Res. (U.S.) 22 (1974) 6 (nov. - dec.), pp.1281
 (IAOR - 13294)

DISTRIBUTION

" A Problem of the Optimal Distribution of the Production of an
 Inhomogeneous Commodity" (in Russian)
 B.S.Verkhovskii
 Preemie Matematiki pri Razmeshchenii Proizvoditel'noi Sili
 Nauka (U.S.S.R) (1964), pp. 70 -81
 (Inhomogeneous output; optimal delivery; Dantzig - Wolfe)
 (IAOR - 5969)

" A Problem of Allocation of Production" (Czech; English summary).
 Benedikt Korda
 Ekonomicko - matematicky Uvzor (Czechoslovakia) 1 (1965) 2, pp.133 -
 154
 (Production allocation; maximize efficiency; linear program; IAOR -
 6074)

" A Solution Algorithm for the Distribution Problem" (in Russian).
 S.S. Lebedev
 Ekonomiko- matematicheskie metody (U.S.S.R) 2 (1965), pp.247- 267
 (Algorithm; successive refinement; chains; IAOR - 6076)

" A Linear Programming Approach to the Total Movement of a Homogeneous
 Product"
 J.H.Conley, R.S.Parnsworth, E. Koenigsberg, and V.Wiersema
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 F. Hutlon Barron (Univ. of Kansas , Lawrence, Kan)
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8841)

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7042)

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P. J. Pengilly and A. J. Moss
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Dennis H. Gensch (Univ. of Pittsburg, Grad. School of Business,
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J. I. Morgan (Dow Chemical Co., Midland, Mich.) and A. I. Johnson
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Edwin M. Barteo (Vanderbilt Univ. , Nashville, Tenn.)

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Pradip Maiti (Indian Statistical Institute, Calcutta, India) and
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PERSONNEL

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J. Agard (Air France , 1 Square Max Hymans, Paris 15, (75) France)
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(IAOR - 9027)

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(IAOR - 9028)

" Evaluating Managerial Personnel".

Thomas E. Bartlett (Wyvern Res. Assoc. , Mill Valley, Calif.) and
Leonard L. Linden

OMEGA (U.K) 2 (1974) 6 (dec.), pp. 815 - 819
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J. A. Bell, H. France , J. C. Greer and C. Watson
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Siegfried Badewitz

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(IAOR - 11619)

PRODUCTION

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Heiner Mueller-Merbach

Collection of 12 papers

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(Optimal lotsizes; multi-machine; multi-product; computational aids;
IAOR - 5026)

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B. I. Kuzin

Primenenie Matematiki v Ekonomike

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(Operation Stoppages; minimize; linear program; experimentation;
IAOR - 5028)

" O Sostavleniya Optimal'nogo Raspisaniya Raboty na n Stankakh ".
(On Forming the Optimal Assignment of Work to n Machines)

Yu. V. Glebskii and V. N. Shevchenko

Trudy po voprosam Primeneniya Elektronnykh Vychislitel'nykh mashin -
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(Minimize process time; OR maximize output; linear program; IAOR -
5252)

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V. G. Mednitskii

Ekonomicheskie i Matematicheskie Metody (U.S.S.R). 1 (1965), 2,
pp. 282 - 288

(Material layout; rectangles on a strip ; linear program; IAOR - 5749)

" Postroeni Matematicheskikh Modelei Lineinogo Programirovaniya pri Planirovanii Raskroya Materialov. Soobshch . 1. Obobshchenie Nekotorykh Literaturnykh Dannyykh po Planirovaniyu Raskroya s Priimeneniem Lineinogo Programirovaniya" . (Construction of "mathematical models of linear programming in Planning the layout of Materials. Communication 1 . Generalization of Certain of the Findings in the Literature on the Planning of layout by the Application of Linear Programming.)

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Izvestiya Vsshykh U'chebnykh Zavedenii
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(Materials layout; generalized methods; linear program ; IAOR - 5750)

" Planificarea Lunară a Productiei prim Metoda Programării Liniare".
(Monthly Planning of Production by Linear Programming Methods.),
(Rumanian; Russian, German, English & French summaries)

Vasile Borch

Constructia de Masini (Rumania), 17 (1965), 3, pp. 138 - 144

(Monthly Schedule; linear program; simplex method; IAOR - 5756)

" On a Method of Finding an Optimal Policy for Production Distributions with Penalty Costs for under Supply".

K. Vijayan and U.S.R. Murty

CCERO (Belgium) 8 (1966) 1, pp. 45- 59

(and distribution; under supply ; linear program; Model construction; IAOR - 6112)

" Parametric Production Planning".

Curtis H. Jones

Man. Sci.: (U.S) 13 (1967) 11 (july), pp. 843 - 846

(Optimal resource use; scheduling rules; heuristic search; IAOR - 6115)

" Khetti Programlashdyrmanyn Boru Galyglarynyn Azaldoyl Masynatetbigi"
(Application of Linear Programming to Decrease Wastage of Piping.)
(in Azerbaïdzhan; Russian summary)

M. A. Mustafazade , P. Kh. Mememedov, N. M. Hafyjev , and Sh. I. Mustafejev

Za Tekhnicheskie Progress (U.S.S.R) (1965) ; № 5, pp. 15 - 17

(layout problem; illustration; example; IAOR - 6272)

" Lineáris Programozási Feladatok" (Problems in Linear Programming)
(in Hungarian ; Russian, German, English, and French summaries.)

Miklos Hosszu

Nehézipari Műsz Egyet Közl (Hungary) 10 (1964), pp. 217 - 221

(Capacity; utilization; examples; IAOR - 6508)

" Linear Programming for Production Allocation".

Bruce B. Henry and Curtis H. Jones

J. Ind'l Engrg. (U.S) 18 (1967) 7 (july) ,pp. 403 - 412

(Varying quality; satisfy min level ; LP ; simulation; IAOR - 6511)

" Bayes Markovian Decision Models for a Multiperiod Reject Allowance"

Leon S. White

Opns. Res. (U.S) 15 (1967) 5 (sept. - oct.) , pp. 857 - 865

(Reject allowance ; multiperiod; LP ; Bayes rule ; IAOR - 6512)

" Simultane Mengen-und Ablaufplanung Industrieller Fertigungsprogramme". (Simultaneous Production Planning and Scheduling.)

Werner Zimmermann and Dieter Pfaffenzeller

Ablauf-und Planungsforschung (West Germany) 8 (1967) 1 (jan. -march), pp. 256 - 268

(Multiproduct; max output; LP; analog. computer; IAOR - 7044)

" A Loading Problem in Process Type Production".

Salah E. Elmaghraby

Opns. Res. (U.S) 16 (1968) 5 (sept. - oct.) , pp. 902 - 914

(Process type; loading problem; LP and DP ; IAOR - 7204)

" A Duality Theorem for a Class of Continuous Linear Programming Problems".

William F. Tyndall

J. of SIAM (U.S) 13 (1965) 3 , pp. 644 - 666

(Bottleneck problems; duality; linear programming; IAOR - 7542)

" Zavisnost Dvofaznog Proizvodnog Programa od Poslovnih Odluka"

(Dependence of Biphase Production Program upon Business Decisions)

(Serbo-croatian)

A. Vadnal

Ekonomist (Yugoslavia) 20 (1967) 3 , pp. 419 - 429

(2-phase program; with judgement; linear programming; IAOR - 7931)

" Making Short -Run Changes in Production when the Employment Level is Fixed".

M. Sobel (Yale Univ. , 2 Hillhouse Ave. , New Haven, Conn. 06520)

Opns. Res. (U.S) 18 (1970) 1 (jan. - feb.) , pp. 35 - 51

(Fixed employment schedule; various demands; model formulation; IAOR - 8296)

" The Optimal Alternative in the Placement of N Processing Points". (Russian)

A. N. Pustovoit, L.I. Fedorova , and R. M. Yakimov

Sbornye Nauchnye Trudy

Permskii Politekhnikheskii Institut (U.S.S.R.) (1966) 21, pp. 78 - 80)

(Assembly line; N processing points; optimize spacing; IAOR - 8467)

" Operativnaya Optimizatsiya Proizvodstvennykh Kompleksov Nepre-
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(Operational Optimization of Production Complexes of Continuous
Activity. II. Decompositional Control of Complexes.) (Russian;
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L. G. Pliskin

Avtomatika i Telemekhanika (U.S.S.R) (1967) 3; pp. 3 - 9
(Chemical production; dendritic complex; system decomposition;
IAOR - 8471)

" Opredelenie Optimal'nykh Razmerov Raskraivaemykh Materialov (listov)
Metodami Lineinogo Programirovaniya ". (Determination of the Optimal
Dimensions of Layout Materials (sheets) by Linear Programming Methods)
(Russian)

E. A. Grigor'yev

Trudy Leningradskogo Inzhenerno-Ekonomicheskogo Instituta (U.S.S.R.)
(1966) 58, pp. 213 - 216
(Sheet material layout; optimal dimensions; linear programming;
IAOR - 8660)

" A Heuristic Production Lot Scheduling Model".

David R. Denzler (409 Krannert , Purdue Univ., Lafayette Indiana 47907
AIIE Transactions (U.S) 2 (1970) 1 (march), pp. 59 - 63
(Scheduling m products; n planning periods; modified simplex;
IAOR - 8667)

" Linear Programming Applied to Production Planning and Operation of
a Chemical Process".

N. J. Royce

Operat. Res. Quart. (U.K) 21 (1970) 1 (march) , pp. 61 - 80
(Chemical ; production plan; linear aprox. , IAOR - 8855)

" Coordinamento Delle Produzioni di un Complesso di Stabilimenti
Mediante Programmazione Lineare". (Coordination of Production by
Linear Programming) (Italian)

M. Conforti, E. Pons, R. Ruggeri, T. Sale and R. Wegner (Via Monte
Generoso 4, 20155 Milan, Italy)
Impianti (Italy) II (1969) 11 (nov.), pp. 39 - 46
(IAOR - 9237)

"Use of the Transportation Method of Linear Programming in Production
Planning: A Case Study".

C. David Sadleir (49 Valley Woods Rd., Suite 19, Don Mills, Ontario,
Canada)
Operat. Res. Quart. (U.K) 21 (1970) 4 (dec.) , pp. 393- 402
(IAOR - 10072)

" Production Smoothing with Stochastic Demand II: Infinite Horizon
Case".

Matthew J. Sobel (Yale Univ., New Haven, Connecticut)

Man. Sci.: Theory (U.S) 17 (1971) (july) , pp. 724 - 735
(IAOR - 10073)

" Abschätzungen Zur Genauigkeit Eines Linearen Planungsmodells in Einer Gerätefabrik". (Accuracy Estimation of a Linear Programming Model in an Electrical Equipment Shop)

Gottfried Olivier (4811 Oldentrup ,.Am Recksiek 328, Germany)
Ablauf und Planungsforschung (Germany) 11 (1970) 3, pp. 164 - 185
(IAOR - 10442)

" A Linear Programming Model for Integrating the Annual Planning of Production and Marketing".

T.A.J. Nicholson and R. D. Pullen (London Grad. School of Business Studies, Sussex Place, Regent's Park, London NW1, 4SA, U.K)
IJPR (U.K) 9 (1971) 3, pp. 361 - 369
(IAOR - 11624)

" An Operational Optimization Procedure for Production Scheduling".
Ramchandran Jaikumar

Comput. & Opns. Res. (U.K) 1 (1974) 2 (aug.), pp. 191 - 200
(IAOR - 13368)

" A Production Planning System Based on Linear Programming".

Goeran Ahrsjoe, Stig Svedunger , and Boliden Aktiebolag (Helsing - borg, Sweden)
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Zdenek Gargulak

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" Methods for Scheduling and Sequencing Problems".

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B. S. Razumikhin

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J. Petric

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V. A. Danilyuk

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James A. Chisman

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G. Barbero
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Andras Nagy

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(Exports; cotton fabric; LP model; IAOR - 6547)

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Etsuji Osawa, Mitsuko Uchida and Kanosuke Saito

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(IAOR - 10301)

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Françoise Fabre and Gerard Gestaut

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András Bródy

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(Linear Models; comparison; 5 models; IAOR - 6903)

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Dept. of Mathematics, Karl Marx Univ. of Economics (Budapest, Hungary) (sept.) (1969) , pp. 29

(IAOR - 9071)

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Robert H. Crandall (School of Business, Queen's Univrsity, Flushing?
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Allen D. Franklin (Calif. State Univ., Hayward, Calif.) and Ernest
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(IAOR - 11704)

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James V. Koch (Illinois State Univ., I ll)

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Sang M. Lee (Virginea Polytechnec Inst., Blacksburg, Va.) and
Laurence J. Moore

Decision Sciences(U.S) 5 (1974) 3 (july),pp.405 - 414

(IAOR - 13157)

" Optimizing University Admissions Planning: Comment"

Thomas E. Johnson , Jr. (Univ. of South Florida, Lakeland , Fla.)

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(IAOR - 13745)

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Sang M. Lee (Virginia Polytechnic Inst., Blacksburg, Va.) and Laurence J. Moore
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(IAOR - 13746)

" An Interactive Procedure for the School Boundary Problem With Declining Enrollment".
Charles A. Hollway (Stanford Univ., Stanford, Calif.) , Donald A. Wehrung , Michael P. Zeitlin and Rosser T. Nelson
Opns. Res. (U.S) 23 (1975) 2 (march-april) , pp.191 - 206
(IAOR 14069)

ENGINEERING

"Raschet Optimal'nogo Rezhima Protsessa v Adiabaticheskom Reaktore na Osnove Metoda Linefnogo Programirovaniya". (Calculation of the Optimal Regime of a Process in an Adiabatic Reactor on the Basis of Linear Programming) (Russian)

A. A. Bezdenezhnykh

Coll. 'Automation of Chemical and Petrochemical Production' ,2 (Moscow, U.S.S.R) 1965, pp. 29 - 40
(Adiabatic reactor; regulator change; minimal cost; IAOR - 6905)

" Operational Research on the Surface Finish of Turned Metal"

S. N. Mukerjee and S. K. Basu

Opsearch (India) 5 (1968) 2 (june) , pp. 89 - 98

(Surface finish ; Latin Square design ; linear programming ; IAOR - 7741)

" Mathematical Programming Applications to Plastic Limit Structural Analysis".

C. Gavarini

RFAIRO (France) 7 (1973) 3 (sept.), pp. 55- 68

(IAOR - 13437)

FINANCE

"Optimal Level Debt Schedule for Municipal Bonds".

Kalman J. Cohen and Frederick S. Hammer

Man. Sci.: (U.S) 13 (1966) 3 (nov.) , pp. 161 - 166

(Municipal bonds; banking ; linear program; model construction; IAOR - 5279)

" Note on Level-Debt-Service Municipal Bidding"

Edward P. Loane

Man. Sci.: (U.S) 13 (1966) 3 (nov.) ,pp. 291 - 293.

(Municipal bond bids; level debt constraint; linear program; IAOR - 6563)

" Optimal Planning of Sources and Uses of Funds in a Commercial Bank With Operations Research Methods".

Hermann Meyer Zu Selhausen

Author (Univ. of Munich, Institut of Operations Research, 8 München 40, Bauerstr. 20, Germany) 1970 , pp.240 XLVIII
(IAOR - 14070)

FORESTRY

"Improving Sawmill Profits Through Operations Research".

Clark Row, Clyde Pasick and Sam Gutenberg

U.S. Forest Service Research Report SO-20(Southern Forest Experiment Station, 701 Loyola Ave., New Orleans, La., U.S.) , pp. 26
(Wood, Sawmill ; cutting patterns; linear program; IAOR - 5067)

" The Profit Contribution of Linear Programming to the Management of a Forest Industry Company".

G. C. Edge

Canadian Operational Research Society journal (Canada). 4 (1966), 2 (july) , pp. 61 - 68
(Wood cut, allocation; cost-profit analysis; linear program; IAOR - 5796)

" Aplicarea Programării Matematice la Amenajarea Pădurilor (Constituirea și Amplasarea Optimă a Suprafețelor Periodice în Rînd de Exploatare)". (Application of Mathematical Programming in the Domain of Forest Management. Formation and Optimal Arrangement of Periodic Sections in a Series of Forest Developments) (in Romanian; English, French , & Russian summaries .)

E. Balas

Studii Statistice Lucrările Celei 3 Consfătuirelor Stiintie Statistice 1963 (Romania) 1964, pp. 21 - 25.
(Forest management; optimal cutting plan; linear program; IAOR -6329)

" Primena Linearnog Programiranja na Probleme iz Ekonomike Sumarstva" (Application of Linear Programming in Problems of the Economics of Forest Management) (in Serbo-Croatian; English summary)

Vera D. Popovic

Shumarstvo (Bulgaria) 18 (1965) no 3 -5 , pp. 121 -133
(Management; economics; linear program ; IAOR - 6702)

" A Practical Approach to the Large-Scale Forest Scheduling Problem".

W. M. Caswell and A. Rao

Decision Sciences.: (U.S.) 5 (1974) 3 (july) , pp. 364 - 373
(IAOR - 13165)

GOVERNMENT

"The Determination of Local Government Electoral Boundaries".

G. Mills

Operat. Res. Quart. (U.K) 18 (1967) 3 (sept.), pp. 243 - 257

(Local boundaries; selection of ; LP, heuristics ; IAOR - 6143)

" Linear Programming of Income Tax Rates"

Y. Konder

Israel Journal of Technology (Israel) 6 (1968) 5 (nov. - dec.), pp. 341 - 354

(Income tax rates; for income distn ; linear programming; IAOR - 7589)

" A Linear Programming Approach to Designing an Optimum Tax package".

A. Agarwala (Indian Inst. of Management, 56 BT Rd., Calcutta, India) and G.C. Goodson

Operat. Res. Quart. (U.K) 21 (1970) 2 (june) , pp. 181 - 192

(IAOR - 9076)

" Distributional Constraints in Public Expenditure Planning".

Martin Feldstein (Harvard Univ., Cambridge, Mass.) and Harold Luft
Man. Sci.: (U.S) 19 (1973) 12 (aug.) , pp. 1414 - 1422

(IAOR - 11954)

HEALTH SERVICES

" Markovian Model for Hospital Admission Scheduling"

Peter Kolesar (Columbia Univ., 330 Mudd Bldg., N.Y., N.Y., 10027)

Man. Sci.: Application (U.S) 16 (1970) 6 (feb.), pp. B-384 - B-396

(Hospital admissions; scheduling; Markov Model; IAOR - 8327)

" Conflicting Strategic Objectives in Hospital Design".

Hans Jorgen Rasmusen (Nielsen & Rauschenberger Consulting Eng. Ltd., Lyngby, Denmark)

OMEGA (U.K) 2 (1974) 2 , pp. 243 - 251

(IAOR - 13167)

MANUFACTURING INDUSTRIES

"Ferroatloy Kōjō no Sōgyō Keikaku". (Production Scheduling in a Ferro-alloy Works)

Katsumi Kariuchi and Takeji Moriya

Operations Research (Japan) 11 (1966) 3 (march), pp. 22 - 28

(Ferroally works; production schedule; linear program; IAOR - 6567)

" Ob Odnom Metode Resheniya Zadach Svyazannykh s Upravleniem Khimichesk. Kim Proizvodstvom" (A Method of Solution of Problems Connected With Control of Chemical Production)

K. A. Bagrinevskiĭ and E. L. Berlyand

Nauchnye Trudy Novosibirskogo Universiteta

Seriya Ekonomiki (U.S.S.R) 5 (1965) , pp. 26 - 32

(Synthetic rubber; optimize production; nonlinear program; IAOR - 6703)

" Ob Odnom Primenenii Lineinogo Programirovaniya v Issledovanii Operatsii " (An Application of Linear Programming in Opns. Res.)
(in Russian)

Kh. N. Gizatullin

Uch. Zp. Bashkirsk. Un-t (U.S.S.R) 1965, 20, pp. 83 - 86
(Rubber products; forming shop; linear program; IAOR - 6909)

" A Multiplant, Multiperiod Allocation Model for Cable Production"

Richard L. O'Malley

J. Ind'l. Engrg. (U.S) 17 (1966) 11 (nov.), pp. 580 - 583
(Cable; production; linear program; IAOR - 6912)

" Applying a Modern Industrial Engineering Technique of Two Old Foundry Problems"

E. Paul DeGarmo

J. Ind'l Engrg. (U.S) 17 , (1966) 9 (sept.), pp. 449 - 453
(Foundry operation; optimal mix; linear program; IAOR - 5800)

" Optimal Product-Mix: A Case Study"

R. E. Jambhekar and K. C. Sahu

Opsearch (India) 5 (1968) 1 , pp. 27 - 35
(Machine tools; economic; linear program; IAOR - 7082)

" Multi-Product Scheduling in a Chemical Plant"

Samuel Eilon

Man. Sci. : Application (U.S) 15 (1969) 6 (feb.), pp. B-267 - B-279
(Chemical; 2scheduling methods; LP, simulation; IAOR - 7415)

" Primenenie Matematicheskogo Programirovaniya v Nekotorykh Voprosakh Lesosushil'noi Tekhniki" (Application of Mathematical Programming in Certain Problems in Lumber Kiln Technology) (Russian)

A. E. Shkol'nik

Nauchnye Trudy Tsendra Nauchnogo Instituta Mekhanicheskogo Obrabotki Drevesiny (U.S.S.R) (1964 (1965)) 19 , pp. 119 - 135
(lumber kilns; linear programming; simplex method; IAOR - 8714)

" Contract Award Analysis by Mathematical Programming"

Aharon Gabriel Bege-Dov (Univ. of Toledo, Toledo, Ohio)

Naval Res. Logistic Quartely (U.S) 17 (1970) 3 (sept.) , pp. 297 - 307
(IAOR - 10304)

" An Economic Model for a Tin-Box Manufacturing Company : A Case Study in LP "

S. B. Lahiri (ABM Ltd., Reading, U.K.)

Opsearch (India) 7 (1970) 4 (dec.) , pp. 268 - 284
(IAOR - 10689)

" A Model of the Hide-Leather Sequence in a Tannery"

Geoff Lockett (Univ. of Manchester , Hilton House? Manchester, MI 2FE, England)

Operat. Res. Quart.(U.K) 24 (1973) 4 (dec.), pp. 491 - 501
(IAOR - 13171)

MEDICINE

* Primenenie Metodov Lineinogo Programirovaniya Dlya Vybora Optimal'nykh Usloviĭ Oblucheniya Zlokachestvennykh Nevoobrazovaniĭ v Distantsionnoĭ Luchevoĭ Terapii " (Application of Linear Programming Methods to the Choice of Optimal Conditions of Irradiation of Malignant Growths in Remote Radiation Therapy)
 Yu. A. Oleynik and L. Ya. Klepper
 Kibernetika (U.S.S.R). 1965, 5, pp. 66- 87
 (Malignant growths; radiation therapy; optimal irradiation; IAOR- 6705)

" An Optimization Model of Tuberculosis Epidemiology"
 Charles Revelle (Dept. of Environmental Systems Engineering , Cornell University (U.S) 16 (1969) 4 (dec.), pp. B-190 - B-211
 (Tuberculosis Mgmt. in ; developing nations; linear program; IAOR - 8165)

METEOROLOGY

"Economic Measurement of Weather Hazards"
 R. S. Edwards
 Weather (U.K) 24 (1968) 2, pp. 70 - 73
 (Weather hazards; economic measure; symposium; IAOR - 7747)

Military

"An Economic Model for Planning Strategic Mobility Posture"
 G. Bennington (The Mitre Corp. , McLean, Va), L. Gsellman and S. Lubere
 NRLQ (U.S) 19 (1972) 3 (sept.), pp. 461 - 470
 (IAOR - 14075)

MINERAL INDUSTRIES

"Primenenie Lineinogo Programirovaniya Dlya Opredeleniya Optimal'nogo Varianta Raspredeleniya Vozdukha" (Application of Linear Programming to the Determination of the Optimal Variant Of Distribution of Air)
 S. Tsei, S. I. Petrovich and S. M. Tskhai
 Kazanskoe SSR Fylym Akademiya Khabarshysy, Vestnik Akademii Nauk Kazanskoe SSR (U.S.S.R). № 8 (1964) , pp. 92 - 94
 (Mine ventilation; power minimization; linear program; experimentation; IAOR - 5300)

" Détermination des Lits de Fusion Économique pour un Haut Fourneau dans une Usine Intégrée (Reckoning the Cheapest Burdening for Steel Works, Owing the Ore Producing Mines)
 Claude Witkowski

La Technique Moderne (France). 58 (1966). No 3 (march), pp. 114 -117
(Blast furnace; minimum cost; parametric program; doctoral thesis ;
IAOR - 5473)

" Genryo-Keikaku" (Material Planning)

Takeji Moriya and Yoshiki Miyaji

Operations Research (Japan). 11 (1966), 7 (july), pp. 18 - 29
(Steel, ore ; ship scheduling; linear program; IAOR - 5643)

" Put'resheniyu Mnogovariantnoï Zadachi Primenitel'no K Khimicheskomu Ispol'zovaniyu Uglya" (Means for a Solution of a Multi-Variant Problem Applied to the Chemical Utilization of Coal)

N. G. Bukharinov and A. N. Shishev

Trudy Leningradskogo Inzhenerno-Ekonomicheskogo Instituta (U.S.S.R). 53 (1965), pp. 90 - 104

(Coal, chemical process ; minimize cost; linear program; IAOR - 5822)

" Primenenie Lineinogo Programirovaniya Dlya Obespecheniya Zadannogo Soderzhaniya Komponentov Rudy, Postupayushcheï Iz Otkrytykh Kar'erov na Obogatitel'nyu Fabriku" (The Application of Linear Programming to the Problem of Maintenance of Prescribed Contents of Ore Passing from Open Pits to Concentration Plants.) (in Bulgarian; Russian and German summaries)

Veselin Stoyanov

Rudodobycha i Metalurgiya (Bulgaria) 20 (1965) 9, pp. 28 - 30
(Prescribed content; min ore costs; linear program; IAOR - 6345)

" Opyt Opredeleniya Maksimal'noï Proizvoditel'nosti Kar'era Metodom Lineinogo Programirovaniya " (Attempt to Determine the Maximal Productivity of a Quarry by Linear Programming Methods) (in Russian)

E. P. Kan

'Tr. Ist. Kazakhstan Interuniv. Scient. Conf. on Math. and Mechan.', 1963 (Alma-Ata 'Nauka' , U.S.S.R) 1965 , pp. 280 -281

(Quarry productivity ; Maximization; linear program; IAOR - 6920)

" Optimal Fixing of Coal Mines for Processing Plants"

G. P. Kulish , L. F. Luchina and V. I. Khizhnyak

Ekonomika i Matem. Metody (U.S.S.R) 2 (1966) 3, pp. 446 - 448

(Coal shaftsiting; linear prog. ; gradient descent; IAOR - 7241)

" Applying Linear Programming to the Design of Ultimate Pit Limits"

Manfred Meyer (Institut fur Unternehmensforschung an der Freien Universitat Berlin, Berlin, Germany)

Man. Sci.: Application (U.S) 16 (1969) 2 (oct.), pp. B-121 - B-135

(Open pit mine; evaluation; using LP ; IAOR - 8173)

" Algoritm i Blok-skHEMA Resheniya Zadachi Rascheta Shikhty Dlya Alyuminievykh Splavov" (An Algorithm and Block Scheme for Solution of a Problem of Calculation of Furnace Charges for Aluminum Sintering) (Russian)

V. I. Mel'nikov and V. V. Babin

Tekhnologiya Legkikh Splavov Nauchno-Tekhnicheskii Byulletin VILSA (U.S.S.R) (1967) 3

(Aluminum alloy smelting; Optimal furnace charge; linear programming; IAOR - 8719)

" Open Hearth and Basic Oxygen Furnaces: An Allocation Model for Production Planning".

R. Bandyopadhyay (Nat'l. Inst. of Bank Mgmt., 85 Neapean Sea Rd. Bombay 6, India)

IEEE Transactions on Systems Science and Cybernetics (U.S) SSC-5 (1969) 2 (april) , pp. 115 - 124

(IAOR 9459)

" Planungsmodelle fur Die Grundstoffindustrie " (Planning Models in Mineral (Extraction) Industries)

M. Meyer and H. Steinman

Physica Verlag (Wurzburg, Germany) 1971 , pp. 412

(IAOR - 10313)

" A Process Analysis Model of the U.S. Steel Industry"

C. S. Tsao (Univ. of Massachusetts, Amherst, Mass) and R. H. Day
Man. Sci.: Application (U.S) 17 (1971) 10 (june), pp. B 588 - B 608

(IAOR - 10123)

" Natural Gas and National Policy : A Linear Programming Model of North American Natural Gas Flows"

L. Waverman Univ. of Toronto Press (Toronto, Ontario, Canada) 1972

(IAOR - 13174)

PETROLEUM

" Opređenje Optimal'nogo Varianta Dobychi Nefti Metodom Linejnogo Programirovaniya " (Determination of the Optimal Variant of Extraction of Oil by the Methods of Linear Programming.)

M. A. Mustafazade

Primenenie Matematicheskikh Metodovi EVM v Ekonomicheskom Issledovanii

Tashkent (U.S.S.R) (1965), pp. 82 - 87

(Oil extraction ; optimal plan; linear program; IAOR - 5823)

"Primeneniye Matematicheskogo Programirovaniya Dlya Opređeniya Ratsional'noi Rasstanovki Svazhin pri Razrabotke Neftyanykh Mestorozhdenii " (Application of Mathematical Programming for Determination of the Regional Distribution of Wells in the Development of Petroleum Deposits)

M. A. Mustafazade, Yu. K. Osmanov and V. M. Teimurov

Primenenie Matematicheskikh Metodovi EVM v Ekonomicheskom Issledovanii

Tashkent (U.S.S.R) (1965), pp. 92 - 97

(Oil well development; regional distribution; linear program; IAOR - 5824)

- " Der Einsatz Von Datenverarbeitungsanlagen für Optimierungsrechnungen bei Mineralölraffinerien" (The Application of Data Processing Machines for Optimization in Oil Refineries)
R. Köhler
Elektronische Datenverarbeitung (Germany) 9 (1967) 7, pp. 306 - 311
(Refineries; optimization ; linear program; popular discussion ; IAOR 6715)
- " Ekonomicheskoe-matematicheskaya Model' Zadachi Optimal'nogo Razmeshcheniya Neftepererabatyvayushchei Promyshlennosti i Metod ee Resheniya na EVM " (An Economico-Mathematical Model of a Problem of Optimal Placement of the Petroleum Processing Industry and a Methods for its Computer Solution) (Russian)
V. L. Danilov and N. G. Egorov
Trudy Vsesoyuznyi Neftegazovyi Institut (U.S.S.R) 47 (1966), pp. 16-23
(Processing location; 3-index problem; linear programming; IAOR - 7969)
- " Applicazioni Della Ricerca Operativa di una Raffineria di Petrolio" (O. R. Applications at a Crude Oil Refinery) (Italian)
G. Busseti and M. Merlino
Quaderni di Ricerca Operativa (Italy) 6 (1967), pp. 135 - 137
(Refinery production; and storage; LP and simulation; IAOR - 8906)
- " Modele Pour le Processus du Melange d'Huiles Lourdes en vue de l'Optimisation a l'aide de la Programmation Lineaire" (Modelling of the Gas Oil Blending Process in View of Optimization by Means of Linear Programming) (French; English and Russian summaries)
V. Dumitru, V. Ionescu and G. Barbatu
Econ. Comp. & Econ. Cyb. Stud. & Res. (Rumania) (1967) 1 , pp. 93 - 98)
(Gas oil blending ; linear programming; example; IAOR - 8907))
- " Yōsui Hatsudensho o Fukumu Denryoku Keitō no Keizai Unyō" (Economical Operations of Electric Power Systems Including Pumping-UP Plants)
Tetsuo Akiyama and Yasuji Sekine
The Journal of the Institute of Electrical Engineers of Japan (Japan) 86 - 11 (1966) 938 (aug. 26) , pp. 1948 - 1957
(Min cost operation; network flow model; LP, decomposition; IAOR - 6716)
- " Two - Level Planning in the Production of Electric Energy" (Hungarian; Russian & English summaries)
Gyorgy Modi
Sigma (Hungary) 3 (1970) 4, pp. 255 - 270
(IAOR - 11082)
- " Use of Mixed Integer Programming to Investigate Optimum Running Conditions for a Thermal Power Station and Possible Extension to Capacity"
F. Cavaleri (Politecnico di Milano, Italy) , A. Reversi, and R. Ruggeri

Operat. Res. Quart. (U.K) 22 (1971) 3 (sept.), pp. 221 - 236
(IAOR - 11356)

"Models for Determining Least-Cost Investments in Electricity Supply"
Dennis Anderson
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" A Production and Distribution Model in the Gas Industry (A Part of
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Sakura Shineaki
Opns. Res. as a Management Sci. (Japan) 16 (1971) 10 (oct.), pp.
33 - 36
(IAOR - 12215)

PUBLIC SERVICE

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Werner Junginger (D - 7000 Stuttgart 80, Pfaffenwaldring 64 , Ger-
many)
Opns. Res. Verf. (Germany) 16 (1973) , pp. 178 - 188
(IAOR - 12866)

" An Analysis of the Parking Situation in the Downtown Area of West
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Yvo M. I. Dirickx (International Inst. of Management, Griegstrasse 5,
1 Berlin 33, German F. R.) and L. Peter Jennergren
Trans. Res. (U.S) 9 (1975) 1 (feb.), pp. 1 - 11
(IAOR - 14362)

SOCIAL

" A Land Use Plan Design Model"
Kenneth J. Schlager
Highway Research Abstracts (U.S) .35 (1966), 10 (oct.) , pp. 6
(Land use; plan design; linear program ;research report ; IAOR -
5827)

SPORTS

" Optimization of Pentathlon Training Plants"

Shaul P. Ladany (Tel-Aviv Univ., Tel-Aviv Israel)
 Man. Sci. (U.S) 21 (1975) 10 (June), pp. 1144 - 1155
 (IAOR - 14367)

TRANSPORTATION: AIR

"Optimal'noe Raspredelenie Samoletov po Avialiniyam Kak Zadacha Lineinogo Programirovaniya " (Optimal Assignment of Aircraft Among Air Routes as a Linear Programming Problem) (in Russian)
 V. V. Buryi , A. V. Krashevskii, L. Ya. Nagornyi and I. I. Tarasenko

Matematicheskie Modelirovanie i Teoriya Elektricheskikh Tsepei Vypusk 3 , Kiev, Naukna Dumka (U.S.S.R) . (1965), pp. 270 - 275
 (Aircraft assignment; among air routes; linear program; IAOR - 6008)

" Zastosuvaniya Liniinogo Programuvaniya Dlya Deruvaniya Povitryanim Rukhom " (Application of Linear Programming for Control of Air Traffic" (Ukrainian; Russian and English summaries)
 A. I. Volevich, V. L. Volhovich and L. F. Dargreiko
 Avtomatika (U.R.S.R) (1969)6, pp. 21 - 27
 (IAOR - 10319)

" Modele de Choix d'Investissements d'une Compagnie Aerienne " (Investment Choise Models of an Airline Company)
 J. Peyrelevade and G. Gervais
 RFAIRO (France) 7 (1973) 2 (may), pp. 27- 51
 (IAOR - 13459)

TRANSPORTATION: GENERAL

"Allocation of Transportation Units to Alternative Trips --- A Column Generation Scheme With Out-of-Kilter Subproblems"
 M. R. Rao and S. Zionts
 Opns. Res. (U.S) 16 (1968) 1 (jan-feb.), pp. 52 - 63
 (Allocate units; to alternative trips; LP, out-of-kilter; IAOR -7088)

"Evaluation of User Benefits Arising from Changes in Transportation Systems"
 M. Beckmann (Brown Univ., Providence , Rhode Island) and J. Wallace III
 Trans. Sci. (U.S) 3 (1969) 4 (nov.), pp. 344 - 351
 (Origin-destination demand; user benefits; changes in trans. systemm; IAOR - 8515)

" An Optimization Mode for Transportation Planning" (summaries in German, French and Russian)

Ronald E. Miller

Transportation Research (U.S) 1 (1967) 3 (nov.), pp. 271 - 286
(Equipment assignment ; over geographic network; linear programming;
IAOR - 8726)

" A Branch-and-Bound Algorithm for Determining the Minimal Fleet Size of a Transportation System"

Anders Martin-Lof (Royal Institute of Technology, Stockholm, Sweden)
Trans. Sci. (U.S) 4 (1970) 2 (may), pp. 159 - 163
(IAOR - 9084)

" Investment in Network Expansion under Uncertainty"

J. Midler

Trans. Res. (U.S) 4 (1970) 3 (oct.), pp. 267 - 280
(IAOR - 9834)

" Resource Allocation for Transportation"

G. Bennington (North Carolina State Univ., Chapel Hill, North Carolina) and S. Lubore

Naval Res. Logistic Quartely (U.S) 17 (1970) 4 (dec.), pp. 471 - 484
(IAOR - 10129)

" A Linear Programming Model for Cargo Movement Evaluation"

F. J. Gould (Univ. of N. Carolina, Chapel Hill, N.C.)

Trans. Sci. (U.S) 5 (1971) 4 (nov.), pp.344 - 365
(IAOR - 11090)

TRANSPORTATION:RAIL

" Transshipment Model and Transport Planning"

Ashok parikh

Artha Vijnana (India). 8(1966) , 4 (dec.), pp. 445 - 472
(LP model; min. ton-kilometers; compared to actual; IAOR - 6011)

" An Optimization Approach to Freight Car Allocation under Time-Mileage per Diem Rental Rates"

Willian P. Allman (Sears Roebuck & Co., Chicago, Ill)

Man. Sci.: Application (U.S) 18 (1972) 10 (june), pp. B 567 - B 574
(IAOR - 10860)

" Mathematical Methods in Planning in Rail Transportation. Textbook for Institutes of Rail Transport. Second Edition" (Russian)

I. V. Belov and A. B. Kaplan

Transport (Moscow, U.S.S.R) 1972, pp. 248
(IAOR - 11734)

TRANSPORTATION:ROAD

"The Design of Routes, Service Frequencies and Schedules for a Municipal Bus Undertaking: An Case Study"

W. Lampkin and P.D. Sallmans

Operat. Res. Quart. (U.K) 18 (1967) 4 (dec.), pp. 375 - 398
(Municipal bus; route structure ; Heuristic; IAOR - 6179)

" A Linear Programming Model For The Assignment Of Traffic"

J. A. Tomlin

Australian Road Research Board Paper 277 (60 Denmark St., Kew E.4, Victoria, Australia) , sept. 1966, pp. 7

(Urban, traffic ; assignment; special LP; experimentation; IAOR -6738)

" The Size and Composition of a Road Transport Fleet"

J. Gould

Operat. Res. Quart. (U.K) 20 (1969) 1 (march), pp. 81 - 92
(Fleet size; composition; linear programming; IAOR - 7604)

" Hanshin Kōsoku Dōro ni Okeru Kōtsu Seigyō" (Traffic Control of the Hanshin Highway) (Japanese)

Tsuna Sasaki

Operat. Res. as a Management Science (Japan) 14 (1969) 3 (march), pp. 2 - 8

(Traffic volume; maximization; linear programming; IAOR - 7761)

" A Combined Linear and Dynamic Programming Model for Interdependent Road. Investment Planning" (German, French and Russian summaries)

Göran Bergendahl

Transportation Research (U.S) 3 (1969) 2 (july), pp. 211 - 228

(Investment planning; interdependent roads; LP and DP; IAOR - 7851)

" A Mathematical Programming Model for the Combined Distribution-Assignment of Traffic"

J. A. Tomlin (Scientific Control Systems Ltd., London, England)

Trans. Sci. (U.S) 5 (1971) 2 (may) , pp. 122 - 140

(IAOR - 9980)

" Estimating the Traffic Capacity of a Signalized Road Junction"

Richard E. Allsop (Research Group in Traffic Studies, Univ. College, London, U.K)

Trans. Res. (U.S) 6 (1972) 3 (sept.), pp. 245 - 256

(IAOR - 11383)

" Optimal Traffic Signal Settings - I . Criterion for Undersaturation of a signalized Intersection and Optimal Signal Setting" (French and German summaries)

K. Ohno and H. Mine (Kyoto Univ., Kyoto , Japan)

Trans. Res. (U.S) 7 (1973) 3 (sept.), pp. 243 -267

(IAOR - 12241)

" Optimal Traffic Signal Settings - II . A Refinement of Webster's Method" (French and German summaries)

K. Ohno and H. Mine (Kyoto Univ., Kyoto, Japan)
Trans. Res. (U.S) 7 (1973) 3 (sept.), pp. 269 - 292
(IAOR - 12242)

" Capacity of a Signalized Road Junction; Critique and Extensions"
Sam Yagar (Univ. of Waterloo, Ontario, Canada)

Trans. Res. (U.S) 8 (1974) 2 (april), pp. 137 - 147
(IAOR - 13476)

" Minimizing Delay at a Signalized Intersection for Time-Invariant Demand Rates"

Sam Yagar (Dept. of Engineering , Univ. of Waterloo, Waterloo N2L 3G1, Canada)

Trans. Res. (U.S) 9 (1975) 2/3 (july), pp. 129 - 141)
(IAOR - 14405)

TRANSPORTATION:WATER

" Discrete Programs for Moving Known Cargoes from Origins to Destinations on Time at Minimum Barge Line Fleet Cost"

N. L. Schwartz

Trans. Sci. (U.S) 2 (1968) 2 (may), pp. 134 - 145
(Barges & towboats; min fleet cost ; linear programming; IAOR - 7100)

" A Column Generation Algorithm for a Ship Scheduling Problem"

Leif H. Appelgren

Trans. Sci. (U.S) 3 (1969) 1 (feb.) , pp. 53 - 68
(Ship scheduling; decomposition algorithm; dynamic programming ;
IAOR - 7425)

" A Multivehicle Tanker Scheduling Problem"

M. Bellmore (Johns Hopkins Univ. , 34 th & Charles St., Dept. of O.R. , Baltimore, Md. 21218), G. Bennington and S. Lubore

Trans. Sci. (U.S) 5 (1971) 1 (feb.), pp. 36 - 47
(IAOR - 9850)

URBAN AFFAIRS

"Modelling School Facility Requirements in New Communities"

Charles M. Eastman and Kenneth O. Kortanek (School of Urban & Public Affairs, Carnegie-Mellon Univ., Pittsburgh, Pa. 15213)

Man. Sci. : Application (U.S) 16 (1970) 12 (aug.) ,pp. B 784 - B 799
(School facilities; requirements; Markovian model; IAOR - 8931)

" Linear Programming and Financial Analysis of the New Community Development Process"

Richard L. Heroux and William A. Wallace (Rensselaer Polytechnic Inst., Troy, N.Y.)

Man.Sci. (U.S) 19 (1973) 8 (april), pp. 857 - 872
(IAOR - 11398)

" Evaluation of Alternative Growth Patterns in Urban Systems"

R. Sharpe, J. F. Brotchie, P. A. Ahern and J. W. Dickey (Virginia Polytechnic Inst. and State Univ., Blacksburg, Va.)

Comput & Opns. Res. (U.S) 1 (1974) 3/4, pp. 345 - 362
(IAOR - 14107)

WATER

" Water Quality Improvement Programming Problems"

Matthew J. Sobel

Water Resources Research (U.S) 1 (1965) 4 (4 th quarter), pp. 477 - 487

(Regional quality; linear systems; linear program; IAOR - 5315)

" On the Optimization Model of Groundwater Utilization"

O. Levin and M. A. Pollatschek

Israel J. of Technology (Israel) 6 (1968) 5 (nov.-dec.) , pp.366 - 375

(Aquifer system; optimum operation; LP & other models; IAOR - 7610)

" Linear Programming Analysis of a Water Supply System"

Ishwar Gupta

AIIE Transactions (U.S) 1 (1969) 1 (march), pp. 56 - 61

(Supply system; optimization; linear programming; IAOR - 7611)

" A Method to Optimize the Design of an Hydraulic Network" (Italian)

Remigro Ruggeri

Impianti (Italy) 60 (1973) 5 (may), pp. 43 - 48

(IAOR - 12571)

" Water Quality Control: Nonlinear Programming Algorithm"

G. Graves (Univ. of California, Los Angeles, Calif.) , D. Pingry and A. Whinston

RFAIRO (France) 60 (1972) V-2 (oct.), pp. 69- 78

(IAOR -)

2-2-3) THEORETICAL

PROGRAMMING: LINEAR

"Programarea Liniiara Cu Conditii Logice" (Linear Programming With Logical Conditions.)

F. Rado

Comunicarile Academiei R.P.R. (Rumania). 13 (1963), 12 (dec.), pp. 1039 - 1042

(Logical Constraints; inequality disjunct; branch and bound; theoretical; IAOR - 5150)

"Metoda Styčnych Hypersfér v Teorii Lineárního Programování".
(The Method of Contact Hyperspheres in Linear Programming)

František Nožička

Ekonomickomatematicky Obzor (Czechoslovakia). 2 (1966), 1 (feb.), pp. 3 -10

(New method; contact hyperspheres; extremum on; theoretical; IAOR - 5151)

"Asupra Determinarii Minimelor Functiilor Pseudobooleene".

(Determination of the Minima of Pseudo-Boolean Functions) (Rumanian; Russian and French summaries)

P. Ivanescu, Ivo Rosenberg and S. Rudeanu

Studii si Cercetari Matematika Academia Republicii Populare Romine (Rumania). 14 (1963), № 3, pp. 359 - 364

(Pseudo-boolean; objective function; minimum; IAOR - 5152)

"An Approach to Some Structured Linear Programming Problems"

John M. Bennett

Opns. Res. (U.S). 14 (1966), 4 (july-aug.), pp. 636 - 645

(Angular matrix; partition; algorithm; IAOR - 5153)

"Statistical Control Applications in Linear Programming"

Norbert Lloyd Erick

Man. Sci. (U.S). 11 (1965), 8 (june), pp. B 177 - B 186

(Control limits; statistical; day to day; IAOR - 5154)

"Generalized Upper Bounded Techniques for Linear Programming - I"

George B. Dantzig and Richard M. Van Slyke (Operations Research Center, Univ.of California, Berkeley, 5 august 1964)

U.S.G.R. & D.R. Order AD - 610 950. from Clearinghouse, pp. 24
(Transportation; assignment, etc. ; special algorithm; IAOR - 5155)

"Analysis of the Effect of Variance on Linear Programming Problems"

Louie B. Chester (Air Force Inst. of Tech., Wright-Patterson AFB, Washington, D.C., august 1964)

U.S.G.R. & D.R. Order AD - 611273. from Clearinghouse, pp. 105
(Effect of Variance ; on solutions; statistical; research report; IAOR - 5156)

"What is Linear Programming ? "

(Trans. of Populyarnye Lektsii po Matematike (U.S.S.R) Vol.33 (1959), pp. 103)

A.S. Barsov.

(1964). Order from D.C.Heath and Co., (285 Columbus Ave., Boston, Mass.), pp. 110

(Popular; ; ; popular discussion; IAOR - 5157)

"On Finding a Maximal Assignment".

A. Yapan

Opns. Res. (U.S) 14 (1966) 4 (july-aug.), pp. 646 - 651

(Assignment problem; algorithm; Hungarian method; computational aids; IAOR - 5338)

"O Reshenii Drobno-Lineinogo Programirovaniya" (Solution of Problems of Fractionally- Linear Programming)

E. I. Filipovich

Trudy po Voprocam Primeneniya Elektronnykh Vychislitel'nykh Mashinakh v Narodnyu Khozyaistbe (USSR) . (1964), pp. 20 - 22

(Fractional; linear ratio; linear constraints; IAOR - 5339)

"Asupra Programarii Liniare Stocastice" (On Linear Stochastic Programming)

B. Bereanu

Comunicarile Academia Republicii Populare Romine (Rumania). 13 (1963), 6, pp.517 - 522

(Stochastic; ; ; IAOR - 5340)

" Primena Analize Osetljivosti pri Resevanju Problema Linearnog Programiranja na Analognim Rachunskim Masinama" (Application of the Method of Sensitivity Analysis to the Solution of a Linear Programming Problem by Means of Analogue Computers) (English resume)

Stanoje Bingulac and Vukota Mastilovic

Automatika (Yugoslavia) 5 (1964), 2, pp. 105 - 111

(Sensitivity analysis; initial parameters; simulation; experimentation; IAOR - 5341)

"Updating the Product Form of the Inverse for the Revised Simplex Method".

G. B. Dantzig, Roy Harvey and Robert McKnight (Operations Research Center, Univ. of Calif. , Berkeley, december 1964)

U.S.G.R. & D.R. Order AD- 614 576 from Clearinghouse, pp. 13

(revised simplex; product inverse; updating; research report; IAOR - 5342)

" Generalized Upper Bounding Techniques for Linear Programming, II "

George B. Dantzig and Richard M. Van Slyke (Operations Research Center, University of California, Berkeley, february 1965)

U.S.G.R. & D.R. Order AD- 614 577 from Clearinghouse , pp. 26

(Upper bounding; techniques; generalized; research report; IAOR - 5343)

" Svertyvanie Konechnykh sistem Lineinykh Neravenstv" (Contraction of Finite Systems of Linear Inequalities)

S. N. Chernikov

Zhurnal Vychislitel'noi Matematiki i Matematicheskoi Fiziki (U.S. S.R.) . 5 (1965) , 1, pp. 3 - 20

(Linear inequalities; eliminate unknowns; matrix scheme; IAOR - 5516)

" O Nakhozhdanii Granichnykh Reshenii Sistemy Lineinykh Neravenstv i o Metode Uravnitel'nykh Spuskov" (Finding Boundary Solutions of a System of Linear Inequalities, and the Method of Equalizing Descents)

E. Ya. Remez

Doklady Akademii Nauk SSSR (U.S.S.R). 160 (1965), 6, pp. 1265 - 1268

(Boundary solutions; all; Jordan transformation; theoretical; IAOR - 5517)

" Aspecte Stochastice Ale Programării Liniare" (Stochastic Aspects of Linear Programming)

M. Iosifescu and R. Theodorescu

Studii Statistice Lucrărilor Confățăreilor Stiintei Statistice (Romania). 1962, pp. 83 - 92

Mentioned in Referativnyi Zhurnal; Matematika, 1964, 6V389; no review

(Stochastic aspects; discussion; ; theoretical; IAOR - 5518)

" New Algorithm and Cutting Plane Constraints for the Solution of Diophantine Linear Programs"

Fred Glover (Carnegie Inst. of Tech., Pittsburgh, Pa. , Graduate School of Industrial Administration , feb. 1965)

U.S. G.R. & D.R. Order AD- 618 690 from Clearinghouse, pp. 181

(Diophantine; cutting plane; algorithms; research report; IAOR - 5519)

"Ein Lösungsalgorithmus Eines Parametrischen Verteilungsproblems"

(An Algorithm for Solution of a Parametric Distribution Problem)

Egon Seiffart

Ekonomicko-Matematicky Obzor (Czechoslovakia). 2 (1966), 3 (aug.), pp. 263 - 283

(Parametric; distribution problem; dual-simplex; IAOR - 5688)

" Ein Verfahren Zum Erkennen Von Transportproblemen aus der Simplexmatrix" (A Method for Detecting Transportation Problems in Simplex Matrices)

K. Schmid

Computing (Austria) 1 (1966)2, pp. 133 - 145

(Transportation; problems; detecting; experimentation; IAOR - 5895)

"Block Triangularization of Multi-State Linear Programs"

Romesh Saigal (O.R. Center, Univ. of Calif. , Berkeley, March 1966)

U.S.G.R. & D. R. Order AD- 631 810 from CFSTL , pp. 42

(Multi-State; triangularization; block; research report; IAOR - 5896)

" A Gradient Method in Linear Programming" (English; Russian summary) (English; Russian summaries)

M. Altman

Bulletin de Académie Polonaise des Sciences

Série des Sciences Mathématiques Astronomiques et Physiques (Poland);
12, (1964), 8, pp. 483 - 489

(Gradient method; basic solution; improve sequentially; IAOR - 5897)

" Simpleks-Metod Bez Drobni Chisla" (The Simplex Method Without Fractions) (Bulgarian; Russian and German Summaries)

Neda Stoinova-Penkrova

Trudove Vissh Ikonomicheski Institute Sofia (Bulgaria). (1964), №1,
pp. 357 - 370

(Simplex method; without fractions; increased precision; IAOR - 5898)

" Osnovenye Svoistva Funktsii Maxima na Odnom Klasse Zadach Parametricheskogo Lineinogo Programirovaniya" (Fundamental Properties of a Function of the Maximum in a Class of Parametric Linear Problems)

A. Yagel'

Eseti NSV Teaduste Akademia Toimetised.

Tuusikalis-Matemaatiliste ja Tehniliste Seer (Estonia) 13 (1964),
4, pp. 382 - 402

(Parametric problem; solution function; computing scheme; IAOR -5899)

"Zvedeniya Odnoi Zadachi Razmeshcheniya do Transportnoi "

(Reduction of an Allocation Problem to a Transportation Problem)
(Ukrainian)

P. L. Dombrovskii

Problemi Rozvitku Prirodnykh i Technikh Nauk, L'viv, L'vivs'kii
Universitet (Ukrainian SSR). (1964), pp. 29 - 31

(Allocation problem; 2- index; ; IAOR - 5900)

"Nekotorye Metody Resheniya Zadach o Razmeshchenii" (Some Methods of Solution of the Allocation Problem)

T. N. Borisova, Z. Blashek, V. G. Karmanov and B. T. Polyak

Sbornik Rabot Vychislitel'nogo Tsentra Moskovskogo Universiteta (U.
S.S.R). (1965), №3, pp. 441- 451

(Allocation problem; computer programs; ; IAOR - 5901)

"O Mnozhestve Reshenii Vyrozhdennoi Zadachi Lineinogo Programirovaniya"
(On the Set of Solutions of a Degenerate Problem in Linear Programming)

Ya. I. Zabetin

Nauchnye Trudy Moskovskogo Inzhenerno-Ekonomicheskogo Instituta (U.
S.S.R). (1964), pp. 44 - 46

(Degenerate problems; set of solutions; ; IAOR - 5902)

"O Reshenii Bol'shikh Zadach Lineinogo Programirovaniya na EVM po Printsipu Razlozheniya Dantsiga-Vol'fa" (Solution of Large Linear Programming Problems on a Principle of Dantzig-Wolfe)

U. Kh. Malkov

Primenenie Matematicheskikh Metodov v Ekonomicheskom Issledovanii

po Sel'skokhozaistvyu (U.S.S.R), (1964), pp. 106 - 113
(Large problems; decomposition method; on computer; IAOR - 5903)

"Programma Realizatsii na M-20 Modifitsirovannogo Simpleksnogo Metoda Dlya Resheniya Obshchei Zadachi Lineinogo Programirovaniya"
(A Program for the Realization on the M-20 of the Modified Simplex Method for Solution of the General Linear Programming Problem)

R. A. Zvyagina

Optimal'noi Planirovanie

Sibirskoe Otdelenie Akademii Nauk SSSR (U.S.S.R). 1 (1964), pp. 5 - 51

(Modified simplex; method; computer program; IAOR - 5904)

"Proizvodstvenno-Transportnaya Zadacha Lineinogo Programirovaniya"
(The Production-Transportation Problem of Linear Programming)

V. L. Makarov

Nauchnye Trudy Novosibirskogo Universitet

Seriya Ekonomika (U.S.S.R)

(Production; transportation; ; IAOR- 5905)

"Metod posledovatel'nogo Ulusheniya Plana" (A Method of Successive Improvement of a Plan)

S. Karimberdneva

Trudy po Vychislitel'noi Matematike i Tekhnike (Uzbek SSSR). (1962 (63)), pp. 87 - 101

(Plan improvement; sequential; computer program; IAOR - 5906)

"Podprogramma Iterativnogo Metoda Resheniya Obshchei Zadachi Lineinogo Programirovaniya" (Subprogram of an Iterative Method of Solution of the General Linear Programming Problem)

E. P. Borisova

Book (Vychislitel'nyi Tsentr Akademii Nauk SSSR, U.S.S.R). (1964), pp. 43

(Iterative method; of Petrzhikovskii; computer programmed; IAOR- 5907)

"Algoritmus Jednej Aproximativnej Metody Linearneho Programovania" (Algorithm for an Approximation Method in Linear Programming) (Slovenian)

Juraj Cherven

Ekonomicky Casopis (U.S.S.R). 13 (1965), 1, pp. 14 - 20

(Approx method; algorithm; ; IAOR - 5908)

"Algoritm Resheniya Parametricheskoi Lineinogo Programirovaniya" (Solution Algorithm for a Parametric Linear Programming Problem)

Z. M. Khairutdinov

Itogi

Nauchnaya Konferentsiya Kazanskogo Universiteta Za. 1963

Sektsiya Matematika Kibernetika, i Teoriya Veroyatnosti, Mekhanika (U.S.S.R). (1964), pp. 54-57

(Several parameters; objective, constraint; Solution algorithm; IAOR - 5909)

- "Programma Gradientnogo Metoda Dlya Resheniya Zadach Nelineinogo Programirovaniya" (A Program for the Gradient Method for Solution of Linear Programming Problems)
D. I. Batishev
Trudy Proektnye Tekhnologiskogo i Nauchno-Inzhenernogo Instituta Volgo-Vyatsk Sovnarkhoz (U.S.S.R). 1 (1964), 6, pp. 174 - 183
(Gradient method; block diagram; computer program; IAOR - 5910)
- "O Reshenii Sistem Lineinykh Neravenstva" (Solution of Systems of Linear Inequalities)
E. I. Filipovich
Trudy po Vopracam Primeneniya Elektronicheskikh Vychislitel'nykh Mashin v Narodnom Khozyaistve (U.S.S.R). (1964), pp. 10 - 19
(Convex polyhedron; vertices calculation; algorithm; IAOR - 5911)
- "Aspecte Probabilistice si Statistice in Programarea Liniera"
(Probabilistic and Statistical Aspects in Linear Programming) (in Romanian; English, French and Russian summaries)
M. Iosifescu and R. Theodorescu
Studii Celei 3 Consfatuirelor Stiintei Statistice. 1963 (Romania). 1964, pp. 85 - 86
(Probabilistic and; statistical aspects; thesis report; IAOR - 6039)
- "Solutii cu Risc Minim in Programarea Liniera" (Minimal Risk Solution in Linear Programming) (in Romanian; Russian and English summaries)
B. Bereanu
Anadele Universitatea Bucuresti
Seria Stiintelor Naturii (Romania), 13 (1964) 1, pp. 121 - 140
(Minimal risk; detailed exposition; of earlier results; ; IAOR - 6040)
- "Poznamka o Urceni Simplexu Rovinami a o Parametricom Vyjadreni Suradnie Jeho Bodov" (Note on the Determination of a Simplex by Planes and on the Parametric Expression for its Corner Points) (in Slovenian)
Pavel Bartos
Casopis pro Pestovani Matematiky (Czechoslovakia) 90 (1965) 3, pp. 366 - 368
(Degenerate system ; consistency condition; simplex corners; IAOR - 6041)
- "Eine Elementare Methode zur Behandlung des Entartungsfalles in der Linearen Optimierung" (An Elementary Method for Treating the Case of Degeneracy in Linear Programming)
H. Bialy
Unternehmensforschung (Germany). 10(1966) 2, pp. 118 - 123
(Pivot elimination; in basis cycles; ; IAOR - 6042)
- "Beitrage zur Dekomposition von Linearen Programmen" (Contributions to the Decomposition of Linear Programs)
S.T. Tan
Unternehmensforschung (Germany) 10(1966) 3/4, pp. 168 - 189 , 247 - 268

(Decomposition; various methods; interrelations; IAOR - 6043)

"Chislennye Metody Resheniya Zadach Lineinogo Programirovaniya"
(Numerical Methods of Solution of Linear Programming Problems) (in Russian)

B. S. Verkhovskii

Ekonomicheskie i Matematicheskie Metody (U.S.S.R) 1 (1965) 5, pp. 776 - 784

(Canonical forms; methods of solution; survey article; IAOR - 6204)

"Ob Ispol'zovanii Spetsifiki Usloviĭ zadachi v Metode Ulucheniya Plana" (Utilization of the Specifics of the Conditions of a Problem in the Method of Improvement of Plan) (in Russian)

K. V. Kim

Ekonomicheskie i Matematicheskie Metody (U.S.S.R) 1 (1965) 1, pp. 86 - 93

(Constraint matrices; block decomposable; plan improvement; IAOR - 6205)

"Ob Odnom Algoritme Dlya Resheniya Sistemy Lineinykh Neravenstv" (A Solution Algorithm for a System of Linear Inequalities) (in Russian; Aserbaïdzhan summary)

A.G. Shirvanov

Izvestiya Akademii Nauk Aserbaïdzhan SSR (U.S.S.R) 1965, no 2, pp. 19 - 25

Mentioned in Cyb. Abs., 1966, No 2; T 252; no review given

(Linear equalities; solution of system; algorithm; IAOR - 6206)

"O Nekorrektnykh zadachakh Optimal'nogo Planirovaniya i Ustoichivykh Metodakh ikh Resheniya" (On Improper Problems of Optimal Planning and Stable Methods for Their Solution) (in Russian)

A. N. Tikhonov

Doklady Akademii Nauk SSSR (U.S.S.R) 164 (1965) 3, pp. 507 - 510
(improper problems; stable solution; for data errors; IAOR - 6207)

"A General Approach to Solutions of Linear Programming Problems With Block Structures" (Trans. of Akademiya Nauk SSSR . Doklady, vol. 166 (1966), no 5, pp. 1062 - 1065)

E. G. Golshtein

May 23, 1966 . Order JPRS - 35 655 and TT - 66-32090 from CFSTI

(Block structures; general approach; ; theoretical; IAOR - 6208)

"Use of Linear Programming in Soviet Planning"

(Trans. from Pravda, Moscow (U.S.S.R) aug. 24; 1965, pp. 2)

L. Kantorovich

Sept. 14, 1965 . Order JPRS - 31 991 and TT- 65-32485 from CFSTI

(Use in planning; U.S.S.R; ; theoretical; IAOR 6209)

"Numerische Erfahrungen Mit Zwei Dekompositionsverfahren der Linearen Planungsrechnung" (Numerical Experiments With Two-Principles of Decomposition in Linear Programming)

Dietrich Ohse

Ablauf-und Planunssforschung (West Germany). 8 (1967) 2 (april -june), pp. 289 - 301

(Decomposition; principles; numerical experiments; IAOR - 6399)

"Stufenweise Lösung Eines Linearen Optimierungsproblems" (Stepwise Solution of a Linear Optimization Problem) (in German; Russian, English and French summaries)

Heinz Korth

Wissenschaftliche Reihe (East Germany) 13 (1964) 5, pp. 647 - 649
(Computer mem limit; stepwise calculation; numerical example; IAOR - 6400)

" A Feasible Direction Method for Linear Programming " (With Russian summary)

M. Altman

Bulletin de l'Académie Polonaise des Sciences
Série des Sciences, Mathématique, Astronomiques; et Physiques (Po - land) 13 (1965) 3, pp. 299 - 334

(Feasible directions; general methods; ; IAOR - 6401)

"Ein Reihenfolgeproblem" (A Problem in Assignment Theory)

E. Seiffart

Colloquium on Applications of Mathematics to Economics, 1963 . Budapest (Hungary). 1965, pp. 339 - 341

(Assignment problem; reduced to ; travelling salesman ; IAOR - 6402)

"Ob Odnom Vidoizmenenii Metoda Posledovatel'nogo Uluchsheniya Plana"
(A Modification of the Method of Successive Improvement of Plan)

(in Russian)

E. G. Gol'shtein

Ekonomicheskie i Matematicheskie Metody (U.S.S.R) 1 (1965)
1, pp. 83 - 85

(Iterative improvement; both primal & dual; deviation estimates;
IAOR - 6403)

"Postanovka i Interpretatsiya Zadach Lineinogo Programirovaniya"
(The Formulation and Interpretation of Linear Programming Problems)
(in Russian)

B. S. Verkhovskii

Ekonomicheskie i Matematicheskie Metody (U.S.S.R) 1 (1965), 4, pp.
588 - 596

(Model construction; iterative improvement; of initial plan ; IAOR-
6404)

"Linearinen Ohjelmointi" (Linear Programming); (in Finnish),

Pentti Jotuni

Tyonjohto ja Tekniikka (Finland) 1965, 3, pp. 50 - 53

(Elementary Exposition; ; ; IAOR - 6405)

"O Lineinom Programirovanii" (Linear Programming) (in Russian)

A. S. Solodovnikov and V. M. Podyks

Nekotorykh Vaprosakh Sobremennei Matematiki i Kibernetiki
Prosveshchenie (U.S.S.R). 1965 , pp. 325 - 398

(Short course; simplex method; duality; IAOR - 6406)

"Zadacha Lineinogo Programirovaniya s Peremennymi Tekhnologicheskimi Koeffitsientami" (A Linear Programming Problem With Variable Technological Coefficients) (in Russian)

K. A. Amiragov

Trudy Vychislitel'nogo Tsentra

Akademiya Nauk Azerbaidzhanskogo SSR (U.S.S.R) 1965, 3, pp. 110 - 124

(Variable matrix; of coefficients; within limits; IAOR - 6407)

"Voprosy Resheniya Zadach Lineinogo Programirovaniya s Pomoshch'yu Analogovykh Vychislitel'nykh Mashin" (The Solution of Linear Programming Problems on Analog Computers) (in Russian)

I. M. Vitenberg and E. F. Efremova

Voprosy Teorii i Primeneniya (U.S.S.R) 1965, pp. 150 - 165

(Analog computer; modification of; Payne's method; IAOR - 6408)

"Postoptimizarea Solutiilor in Problemele de Programare Liniară" (Post-Optimization of Solutions in Linear Programming Problems) (in Romanian; English, French, & Russian summaries)

I. Nădejde

Studii Statistice Lucrările Celei 3 Consfătuirelor. Stiintie 1963 (Romania) 1964, pp. 132 - 142

(Post-optimization; of solutions; ; IAOR - 6409)

"Ob Odnof Zadache Lineinogo Programirovaniya" (A Linear Programming Problem) (in Korean; Russian summary)

Kyu Sen Iyom

Sukhak ka Mulli . 9 (1965) 2, pp. 10 - 18

(A problem; from Korea; ; IAOR - 6410)

"Über den Zusammenhang der Uzawamethode der Linearen Optimierung mit der Methode der Vollständigen Beschreibung" (On the Relationship of the Uzawa Method of Linear Optimization with the Method of Complete Inventory)

G. Wintgen

Colloquium on Applications of Mathematics to Economics, 1963 - Budapest (Hungary) 1965, pp. 359 - 367

(Uzawa method ; and census method; relationship of ; IAOR - 6411)

"Two Gradient Method Algorithms for Linear Programming, With Application to the Decomposition Problem" (With Russian summary)

M. Altman

Bulletin de l'Académie Polonaise des Sciences. Série des Sciences Mathématique, Astronomiques et Physiques (Poland). 13 (1965) 7, pp. 465 - 472

(General problem; gradient algorithms; decomposition problem; IAOR - 6412)

"Kchislennomu Resheniyu Obshchei Zadachi Matematicheskogo Programirovaniya" (Toward a General Solution of the General Problem of Linear Programming) (in Russian; Uzbek summary)

N. E. Kirin

Doklady Akademii Nauk Uzbekskogo SSR (U.S.S.R) 1965, №6, pp. 5-8
(General problem; general solution; successive approx.; theoretical;
IAOR - 6413)

"Un Algorithme Pour Résoudre Certains Problèmes de Programmation
Mathématique" (An Algorithm for Solution of Certain Problems of
Mathematical Programming)

F. Rado

Mathematica (RPB) (Romania) 6 (1964) 1, pp. 105 - 116
(Logical constraints; example; ; IAOR - 6622)

"A Remark on Basis Solutions of the Linear Programming Problem"

Andrzej Cielezinski and Włodzimierz Szwarec

Mathematica (RPB) (Romania) 6 (1964) 1, pp. 129 - 130

(Constraint system; basic solutions; graph theory; IAOR - 6623)

"Parametricheskii Metod Resheniya Zadach Drobnogo Programirovaniya"
(A Parametric Method of Solution of Fractional Programming Problems
on Analogue Computers)

M. V. Rybashov and E. E. Dudnikov

Doklady Akademii Nauk SSSR (U.S.S.R) 161 (1965) 6, pp. 1289 - 1290

(Fractional problems; parametric method; analog computer; IAOR -
6624)

"Senkei Keikakuho ni Okeru Keisan no Kanryakuka" (Some Simplifications
in the Calculation of Linear Programming)

Mitsuo Hamada

Industrial Engineering (Japan) 8 (1966) 4 (April), pp. 331 - 336

(Initial basis; revised simplex; algorithm; IAOR - 6625)

"Generalization of the Duality Theorem in the Theory of Linear Pro-
gramming"

Makoto Ohtsuka

Journal of Science of the Hiroshima University, Ser. A-I (Japan) 30

(1966) 1 (July), pp. 31 - 39

(Extended duality; Radon measure; potential theory; theoretical;
IAOR - 6626)

"Some Examples Related to the Duality Theorem in Linear Programming"

Mochio Yoshida

Journal of Science of the Hiroshima University, Ser. A-I (Japan)

30 (1966) 1 (July), pp. 41 - 43

(Infinite program; duality; counterexamples; IAOR - 6627)

"On a Capacitability Problem Raised in Connection With Linear Pro-
gramming"

Maretsugu Yamasak

Journal of Science of the Hiroshima University, Ser. A-I (Japan)

30 (1966) 1 (July), pp. 57 - 73

(Potential theory; capacitability; duality; theoretical; IAOR - 6628)

"An Infeasibility - Pricing Decomposition Method for Linear Programs"

Egon Balas

Opns. Res. (U.S) 14 (1966) 5 (Sept. - Oct.), pp. 847 - 873

(Decomposition; Dantzig-Wolfe model; two versions; IAOR - 6629)

"An Extension of Generalized Upper Bounding Techniques for Structured Linear Programs"

M. Sakarovitch and R. Saigal

SIAM J. Appl. Math. (U.S.) 15 (1967) 4 (July), pp. 906 - 914
(Special Structure; upper bounding; extension; IAOR - 6630)

"Generalized Capacity and Duality Theorem in Linear Programming"
Makoto Ohtsuka

J. of Science of the Hiroshima University, Ser. A-I (Japan) 30 (1966)
1 (July), pp. 45 - 46

(Duality theorem; generalized capacity; potential; theoretical;
IAOR - 6771)

"О некоторых вопросах параметрического линейного программирования" (Some Problems in Parametric Linear Programming)

S. V. Zhak Vychislitel'noi Matematiki i Vychislitel'noi Tekhniki, Rostovskii Universitet (U.S.S.R) 1965, pp. 8 - 22

(Parametric; domain decomposition; simplex method; IAOR - 6772)

"A Two-Parameter Dual Problems in Linear Programming. Part I"
(In Polish)

Ireneusz Nykowski

Przegląd Statystyczny (Poland) 12 (1965), 3, pp. 203 - 217
(Two parameters; dual problem; ; IAOR - 6773)

"A Two-Parameters Dual Problem in Linear Programming. Part II"
(in Polish)

Ireneusz Nykowski

Przegląd Statystyczny (Poland) 12 (1965), 4, pp. 311 - 323
Mentioned in Cyb. Abs., 1966, № 6, T 236; no review given
(Two parameters; dual problem; ; IAOR - 6774)

"Decomposition Methods in Linear Programming" (in Czech)

Jiří Bouška and Martin Cerný

Ekonomicko-Matematický Obzor (Czechoslovakia) 1 (1965) 4, pp.
337 - 369

(Block methods; exposition; ; review of methodology; IAOR - 6775)

"Vector Analogue of the ϵ Polynomial Algorithm of Charnes"
(in Ukrainian)

A. S. Shteinberg

Dopovidi Akademii Nauk Ukrainського SSR (U.S.S.R) 1965, 9, pp.
1133 - 1136

(Degeneracy removal; simplex method; perturbation; IAOR - 6776)

"Solving Linear Programming Problems With Fixed Point Electronic Computers"

M. Oprescu, M. Chiriță and St. Niculescu

Economic Computation and Economic Cybernetics Studies and Research (Rumania) 1966, 2, pp. 15 - 27

(Algorithm; for fixed point; computer; IAOR - 6777)

" A Lineáris Programozás Alapfeladatáról" (Fundamental Problems of Linear Programming) (Hungarian; Russian, German, English and French summaries)

Asszonyi Csaba

Nehézipari Műsz. Eyyet. Közli (Hungary) 1964, 9, pp. 5 - 12
(Fundamental; problem; exposition; IAOR - 6965).

"Dvukhkomponetnaya Zadacha Lineĭnogo Programirovaniya" (A Two-Component Problem in Linear Programming) (Russian)

M. A. Yakovleva

'Optimal planning', № 2 (Novosibirsk , Siberian Division, As U.S.S.R) 1964 , pp. 23 - 40
(2-component; problem; algorithm; IAOR - 6966)

"Sadachi Matematicheskogo Vyborá i Metody Ikh Resheniya" (Problems of Mathematical Choice and Methods for Their Solution) (Greek)

M. Baybas

Tekhnika Khronika

Geniki Ekdosis (Greece) 1965 , 8, pp. 64 - 68
(Solution; feasibility; descriptive note; IAOR - 6967)

"Reshenie Bol'shikh Zadach Lineĭnogo Programirovaniya (LP) na Elektronnykh Vychislitel'nykh Mashinakh (EVM) "
(Solution of Large Linear Programming (LP) Problems on Electronic Computing Machines (ECM)) (Russian)

V. KH. Malkov

Colloq. on Applic. Mathem. to Econ. Budapest, 1963 (Hung. Acad. Sci. , Budapest, Hungary). 1965, pp. 263 - 268
(Large programs; efficient methods; computer problems; IAOR - 6968)

"Obosbshchennaya Programma Dlya Raspredelitel'nykh Metodov Lineĭnogo Programirovaniya" (A Generalized Program for the Distributive Methods of Linear Programming) (Russian)

G. B. Belyavskaya and Yu. N. Pecherskiy

Coll. 'Data of the Fourth Conf. of the Young Scientists of Moldavia, 1964, Phys. Math. Series' (Kishinev, USSR) 1965, pp. 55 - 58
(Distributive method; generalized program; ; IAOR - 6969)

" Modelirovanie Simpleksnogo Metoda Resheniya Obsheĭ Zadachi Lineĭnogo Programirovaniya na Obratimyykh Lineĭnykh Preobrazovatelyakh" (Simulation of the Simplex Method of Solution of the General Problem of Linear Programming on Reversible Linear Transformers) (Russian)

V. N. Borĭkovskaya

Kibernetika (U.S.S.R) 1965 , 6 , pp. 43 - 48
(Simplex simulation; on reversible; linear transformers; IAOR - 6970)

"Algoritmy Dlya Nakhozheniya Obshehikh Reshenii Sistem Lineinykh Neravenstv" (Algorithms for Finding General Solutions of Systems of Linear Inequalities) (English)

V. G. Kuznetsov

Zh. Vychisl. Matem. i Matem. fiz (U.S.S.R) 6 91966) 2, pp. 336 - 342

(Linear inequalities; solutions of; new algorithms; IAOR - 6971)

"Expériences Et Statistiques Sur La Résolution Des Programmes Linéaires De Grandes Dimensions" (Experiences and Statistics on the Resolution of Large Scale Linear Programmes)

Jacques de Buchet

Metra (France). 6 (1967), 1. (march), pp. 93 - 102

(Large scale; computation; Statistic; IAOR - 6972)

"Příspevek k Lineárnímu Systémovému Programování ; Sledování Změn Prvku a_{ij} Matice Soutavy Podmínek Simplexové úlohy Lineárního Programování" (Contribution to Linear System Programming ; Changes in Coefficients a_{ij} in a System Matrix of a Simplex Problem of Linear Programming) (in Czech)

Tomáš Gál

Ekonomicko-Matematicky Obzor (Czechoslovakia). 3 (1967) 4 (nov.), pp. 446 - 456

(Sensitivity analysis; coefficient variation; parameter intervals; IAOR - 6973)

"Solving the Fixed Charge Problem by Ranking the Extreme Points"

Katta G. Murty

Opns. Res. (U.S) 16 (1968) 2 (march-april), pp. 268 - 279

(Fixed charge prob. ; algorithm; rank extreme pts. ; IAOR -6974)

"Otyskanije Najlučšego v Čebyseva Rešenija Nesovmestnoj Sistemy Linejnych Algebraičeskich Uravnenij" (Best Tshebyshev Approximation of Over-Determinate Linear Equations) (Russian)

L. V. Vojtesek

Aplikace Matematiky (Czechoslovakia). 11 (1966) 3 (june), pp. 232 - 237

(Overdetermined system; Tshebyshev approx; gradient method; IAOR - 7122)

"A Duality Theorem for Continuous-Time Linear Programming Problems"

T. K. Kumar

Unternehmensforschung (Germany) 10 (1966) 4, pp. 224 - 236

(Continuous time ; duality theorem; approximation; IAOR - 7123)

"Přispěvek k Lineárnímu Systémovému Programování. Sledování Změn Koeficientů a_{ij} Základních Strukturních Proměnných Simplexové Úlohy Lineárního Programování" (Linear System Programming . 2. Changes in Coefficients a_{ij} of Basic Structural Variables in a Simplex Problem of Linear Programming) (in Czech)

Tomáš Gál

Ekonomicko-Matematicky Obzor (Czechoslovakia) 4 (1968) 1 (feb.), pp. 76 - 92

(Sensitivity analysis; to constraint coeffs.; examples; IAOR - 7124)

"A Parametric Programming Problem"

N. E. Iarchenko

Ekonomika i Matem. Metody (U.S.S.R) 2 (1966) 3, pp. 448 - 451
(Coefficient variation; sensitivity; solution stability ; IAOR - 7284)

"Modification of the Primal-Dual Algorithm for Degenerate Problems"
Harold Greenberg

Opns. Res. (U.S) 16 (1968) 6 (nov. - dec.), pp. 1227 - 1230
(Primal-dual algorithm; modification for ; degenerate problems;
IAOR - 7285)

"On the Problem of Cycling in Linear Programming " (Russian)

L. A. Gutnik

Dokl. AN SSR (U.S.S.R) 170 (1966) 1, pp. 53 - 56
(Simplex method; cycling prevention; new algorithm; IAOR - 7439)

"Ob Odnom Spetsial'nom Algoritme Lineĭnogo Programirovaniya"
(On a Special Algorithm of Linear Programming). (Russian)

I. V. Nit

Ekonomika i Matem. Metody (U.S.S.R) 2 (1966) 4, pp. 563 - 570
(Special method; parametric programming; 2-sided approximation;
IAOR - 7440)

"Metod Posledovatel'nogo Ulusheniya Dlya Resheniya Zadachi Lineĭnogo
Programirovaniya s Dopolnitel'nymi Ogranicheniyami" (The Method
of Successive Improvement of Plan for a Linear Programming Problem
with Supplementary Constraints) (Russian)

R. A. Zvyagina

Tr. Leningr. Inzh. - Ekon. In-ta (U.S.S.R) 1966, 58, pp. 199 -
203

(Block problems; 1 constraint per block; simplex method; IAOR - 7441))

"Elektronnoe Modelirovanie Nekotorykh Zadach Matematicheskogo Pro-
gramirovaniya" (Electronic Modelling of Certain Problems of Mathe-
matical Programming) (Russian)

G. E. Pukhev, V.V. Vasil'yev and A.N. Klepikova

Tr. Leningr. Inzh.-Tekhn. Inst. (U.S.S.R) 1966, 58 ,pp. 251 - 261
(Electronic simulation; diff. eq. avoidance; 2 methods; IAOR - 7442);

"An Explicit Solution of a Special Class of Linear Programming Pro-
blems"

A. Ben-Israel and A. Charnes

Opns. Res. (U.S) 16 (1968) 6 (nov. - dec.), pp. 116 - 1175
(General solution; representation by; generalized inverse; IAOR -
7443)

"The Criss-Cross Method for Solving Linear Programming Problems"
Stanley Zionts

Man. Sci. : Theory (U.S) 15 (1969) 7 (march), pp. 426 - 445
(Criss-cross method; Vs. simplex; FORTRAN program; IAOR - 7444);

"A Decision Rule in the Simplex Method that Avoids Cycling"

A.G. Azpeitia and D.J. Dickinson

Numerische Mathematik (Germany) 1964 , 6, pp. 329 - 331
(Simplex method; rule to ; avoid cycling; IAOR - 7630);

"The Sign-Gradient Method in Linear Programming" (English; Rumanian and Russian summaries)

M. Altman

An. Stiint. Univ. Iasi, 1965, sec. Ia (Rumania) 11 (1965) 2, pp. 323 - 330

(Vectors with n coordinates; sign-gradient method; IAOR - 7631)

"Das Schwerpunktverfahren der Linearen und Nichtlinearen Optimierung und Seine Anwendungen" (The Centroid Process of Linear and Nonlinear Optimization and Its Application) (German; Czech summary)

Klaus Lommatzsch

Ekonomicko-Matematicky Obzor (Czechoslovakia) 2 (1966) 1, pp. 21-33

(Global extreme=local; and other constraints; coordinate descen;

IAOR - 7632)

"Mekhanicheskaya Model' i Metod Resheniya Obshchei Zadachi Lineinogo Programirovaniya" (A Mechanical Model and Method of Solution of the General Linear Programming Problem) (Russian; English summary)

N.O. Vil'chevskiy and B. S. Razumikhin

Avtomatika i Telemekhanika (U.S.S.R) 1966, 4, pp. 88 - 103

(Iterational approach; by penalty functions; mechanical analog; IAOR - 7633)

"Mekhanicheskaya Model' i Metod Resheniya Obshchei Zadachi Lineinogo Programirovaniya" (A Mechanical Model and Method of Solution of the General Linear Programming Problem) (Russian; English summary)

N. O. Vil'chevskiy i Telemekhanika (U.S.S.R) 1966, 4, pp. 88-103

(Iterational approach; by penalty functions; mechanical analog; IAOR - 7633)

"Ispol'zovanie Spetsial'noi Struktury Matrits Dlya Resheniya Zadach Planirovaniya" (Use of a Special Structure of Matrices for Solutions of Planning Problems) (Russian)

V. A. Volkonskiy

Ekonomika i Matem. Metody (U.S.S.R) 2 (1966) 2, pp. 235 - 248

(Equality system; special structure; iterative process; IAOR - 7634)

"Lineinaya Zadacha s Dvuparametricheskoj Tselevoj Funktsiej" (A Linear Problem with a Two-Parameter Objective Function)

Ireneusz Nykowski

Ekonomika i Matem. Metody (U.S.S.R) 2 (1966) 4, pp. 548 - 557

(2-parameters objective; sequential polyhedrons; fixed optimal basic sol.; IAOR - 7635)

"Přispěvek k Lineárnímu Systémovému Programování. 3. sledování Současných Změn Všechných Koeficientů a_{ij} Základních i Nezákladních Strukturních proměnných Simplexové Úlohy Lineárního Programování" (Linear System Programming. 3. Changes in all Coefficients a_{ij} of Basic and Non-Basic Structural Variables in a Simplex Problem of Linear Programming" (Czech)

Tomáš Gál

Ekonomicko-Matematicky Obzor (Czechoslovakia), 4 (1968) 2 (may), pp. 190 - 201

(Coefficient variation; sensitivity analysis; general method; IAOR - 7636)

"Hledání Bazického Řešení Úlohy Lineárního Programování" (Finding of a Basic Solution of the Problem of Linear Programming) (Czech)

Jan Lisý

Ekonomicko-Matematicky Obzor (Czechoslovakia) 4 (1968) 4 (nov.), pp. 485 - 495

(Basic solution; by new method; multiplex method; IAOR - 7637)

"Non-Parametric Sensitivity Analysis in Linear Programming"

Robert N. Braswell and Frederick M. Allen

AIIE Transactions (U.S) 1 (1969) 1 (march), pp. 17 - 23

(Sensitivity analysis; non-parametric; probabilistic L.P. ; IAOR - 7638)

"A Method for Obtaining the Optimal Dual Solution to a Linear Program Using the Dantzig-Wolfe Decomposition"

Warren E. Walker

Opns. Res. (U.S) 17 (1969) 2 (march-april), pp. 368 - 370

(Dual solution; using; decomposition; IAOR - 7639)

"O Stokaasticheskoj Ustoichivosti Dvoistvennykh Zadach Linejnogo Programirovaniya" (Stochastic Stability of Dual Problems of Linear Programming) (Russian)

N. I. Arbuzova

Ekonomika i Matematicheskie Metody (U.S.S.R) 2 (1966) 4, pp. 558 - 562

(Random coefficients; stochastic stability; primal & dual; IAOR - 7795)

"Metod 'Shtrafných' Funktsií i Obosnovanie Metoda Paína"

(The Method of Penalty Functions and Basis of Paine's Method) (Russian; English summary)

N.N. Karpinskaya

Avtomatika i Telemekhanika (U.S.S.R) 1967, 1, pp. 140 - 146

(Penalty functions; connection with; Paine's method; IAOR - 7796)

"Iteratsionnyĭ Metod Resheniya i Dekompozitsiya Zadach Linejnogo Programirovaniya" (Iterational Method of Solution and Decomposition of Linear Programming Problem) (Russian; English summary)

B.S. Razumikhin

Avtomatika i Telemekhanika (U.S.S.R) 1967, 3, pp. 80 - 97

(Solution, decomposition; iterative method; penalty functions; IAOR - 7797)

"Une Méthode de Cheminement Intérieur en Programmation Linéaire" (A Method of Interior Sequential Advance in Linear Programming)

Bernard Bureau and Dan Costovici

Metra (France) 7 (1968) 1 (march), pp. 103 - 113

(interior; sequential advance; algorithm ; IAOR - 7798)

"A Heuristic Solution Procedure for Linear Programming Problems with Special Structure"

Armando Riesco and Michael E. Thomas

AIIE Transactions (U.S) 1 (1969) 2 (june), pp. 157 - 163
(Homogeneous costs; upper bounds; heuristic; IAOR - 7799)

"An Approach to Some Structured Linear Programming Problems"

John M. Bennett and David R. Green

Opns. Res. (U.S) 17 (1969) 4 (july - aug.), pp. 749 - 750
(Decomposition; of angular systems; algorithm; IAOR - 7870)

"Une Methode Graphique de Resolution de Certains Types de Programmes Lineaires de Grandes Dimensions" (A Graphical Method for Solving Certain Types of Large Programs)

J. Klatzmann and G. Matthys

Econometrica (U.S) 34 (1966) 2 (april), pp. 481 - 490

(High dimensionality; special structure; primal-dual method; IAOR - 8007)

"Analiz Chuvstvitel'nosti Lineinykh Programm" (Sensitivity Analysis of Linear Programs) (Russian)

A. Kh. Tsoi

Trudy Instituta Gornichnogo Dela

Akademiya Nauk KazSSR (U.S.S.R) 24 (1967), pp. 30 - 34

(Sensitivity analysis; constraint coeff.; variable; IAOR - 8008)

"O Prostranstve Parametrov Obshchei Zadachi Lineinogo Programirovaniya" (On the Space of the Parameters of the General Linear Programming Problem) (Russian)

Vol'fgang Temel't

Siberskii Matematicheskii Zhurnal (U.S.S.R) 8 (1967) 3, pp. 680 - 688

(Space of parameters; decomposition; optimum as functional; IAOR - 8009)

"Prispevek k Linearnimu Systemovemu Programovani. 4. Economicko-Matematicky Pohled na Problemy Degenerace" (Linear System Programming. 4. Economic and Matematic Aspects of Degeneracy) (Czech)

Thomas Gal and Jaroslav Habr.

Ekonomicko-Matematicky Obzor (Czechoslovakia) 4 (1968) 3 (aug.), pp. 320 - 336

(Ideal solutions; purposive degeneracy; numerical examples; IAOR - 8201)

"Basic Feasible Solutions and the Dantzig-Wolfe Decomposition Algorithm"

A. S. Goncalves

Operat. Res. Quart. (U.K) 19 (1968) 4 (dec.), pp. 465 - 469

(Decomposition; full master program; compare with original; IAOR - 8202)

"Die Behandlung Unterer und Variablen Grenzen in der Linearen Programmrechnung" (Lower and Upper Bounds of Single Variables in Linear Programming Problems)

H. Müller-Merbach

Elektronische Datenverarbeitung (Germany) 11 (1969) 4, pp. 153 - 158

(Lower & upper bounds; transforming coordin; examples; IAOR - 8203)

"Das Triplex-Verfahren" (The Triplex Method)

H. P. Kunzi (Stockerstrasse 44, Zurich, Switzerland) and K. Kleibohm

Unternehmensforschung (Germany) 12 (1968) 3, pp. 145 - 154

(Triplex algorithm; computing efficiency; test problems; IAOR - 8390)

"On Approximative Solution of Large-Scale Linear Programming Problems"

Ferenc Forgo and Jenő Szep (Department of Mathematics, Karl Marx University of Economics, Budapest, Hungary)

Research Report, april 1969, pp. 26

(Approximate solution; for large problems by; approximating obj. fun; IAOR - 8391)

"A Decomposition Method for Interval Linear Programming"

Adi Ben-Israel (Northwestern Univ.; Evanston, Ill) and Philip D. Roberts

Man. Sci.: Theory (U.S) 16 (1970) 5 (jan.), pp. 374 - 387

(Interval L.P.; alternative method; for general L.P.; IAOR - 8392)

"Generalized Networks Generalized Upper Bounding and Decomposition of the Convex Simplex Method"

David P. Rutenberg (Graduate School of Industrial Administration, Carnegie-Mellon University, Pittsburgh, Pa. 15213)

Man.Sci.: Theory (U.S) 16 (1970) 5 (jan.), pp. 388 - 401

(Constraint matrices; with special; structures in L.P; IAOR - 8393)

"A Note on Pattern Separation"

R. Grinold (Graduate School of Business Administration, University of California, Berkeley, California, 94720)

Opns. Res. (U.S) 18 (1970) 1 (jan. - feb.), pp. 187 - 190

(Separation method for; convex polyhedral sets using; separating hyperplane; IAOR - 8394)

"On Linear Programming in a Markov Decision Problem"

Eric V. Denardo (Dept. of Administration Sciences, Yale University, 2 Hillhouse Ave. ; New Haven, Conn., 06520)

Man.Sci. ; Theory (U.S) 16 (1970) 5 (jan.), pp. 281 - 288

(IAOR - 8395)

"Ob Odnom Teoreme o Vypuklykh Mnogogrannnikakh v Svyazi s Voprosom Nakhozhdeniya Sovokupnosti Reshenii Sistemy Lineinykh Neravenstv" (On a Theorem on Convex Polyhedra in Relation to the Problem of the Problem of Finding the Set of Solutions of a System of Linear Inequalities) (Russian)

E. Ya. Remez and A. S. Shteinberg

Ukrainskii Matematicheskii Zhurnal (U.R.S.R) 19 (1967) 2, pp. 74-89

(Linear inequality system; canonical polyhedron; abstract graph; IAOR - 8576)

"A Generalization of a Result in Linear Programming"

J. C. Gittins, j.

Inst. Math. Appl. (U.K) 3 (1967), 2 (june), pp. 193 - 201

(Simplex method; extension & generalization; IAOR - 8577)

"Kotazce Degenerace ve Vychozim Reseni Simplexovych Uloh Linearniho Programovani" (On the Question of Degeneracy in the Original Solution of Simplex Linear Programming Problems) (Czech)

Ivan Fucik and Tomas Gal

Ekonomicko-Matematicky Obzor (Czechoslovakia) 5 (1969) 3 (aug.), pp. 295 - 303

(Some zero components; degeneracy removal; modified simplex; IAOR-8578)

" 'Linear' Programming with Absolute Value Functionals"

David F. Shanno and Roman L. Weil, Jr. (Graduate School of Business, Univ. of Chicago, Chicago Ill),

Man. Sci.; Theory (U.S) 16 (1970) 5 (jan.), pp. 408

(Linear Programming; absolute value functionals; separable programming; IAOR - 8579)

"Sp6s6b Rozwiazywania Rewnych Dwuparametrycznych Zad6n Programowania Liniowego " (A Method of Solution of Certain Two-Parameter Problems in Linear Programming) (Polish; Russian and English summaries)

Ireneusz Nykowski

Zeszytynaukowe Szkoły Główny Gospodstwa Wiejskiego Ogrodniectwo (Poland) (1965) 57, pp. 5 - 29

(2-parameter constraints; 1-parameter reductions; solution method; IAOR - 8769)

"K Vprosu o Tekhniko-Ekonomicheskoy Smysle Dvoistvennykh Zadach v Teorii Lineinogo Programirovaniya" (The Question of the Technico-Economic Meaning of Dual Problems in the Theory of Linear Programming) (Russian)

Trudy Leningradskogo Inzhenerno-Ekonomicheskogo Instituta (U.S.S.R) (1966) 58, pp. 217 - 225

(Dual variables; technico-economic; interpretations; IAOR - 8770)

"Issledovanie Ustoichivosti i Metody Korrektirovki Optimal'nogo Plana v Zadachakh Lineinogo Programirovaniya" (Investigation of Stability and Methods for Correcting an Optimal Plan in Linear Programming Problems) (Russian)

A. I. Khalif

Trudy Tsentra Nauchnogo Instituta Morskogo Flota (U.S.S.R) (1966) 70, pp. 43 - 60

(Stability; correct opt. plan; fleet example ; IAOR - 8771)

"Primenenie Obobshchennogo Gradientnogo Spuska v Blochnom Programirovanii" (Application of Generalized Gradient Descent in Block Programming) (Russian)

N. Z. Shor

Kibernetika (U.S.S.R) (1967) 3, pp . 53 - 55

(2-block , stochastic; piecewise linear object; generalized gradient; IAOR - 8772)

"O Raspredelenii Chisla Shagov Simpleks-Metoda" (On the Distribution of the Number of Steps in the Simplex Method) (Russian).

N. N. Vorob'ev

Ekonomika i Matematicheskie Metody (U.S.S.R) 3 (1967) 3, pp. 461 - 462

(Random vertex transit ; asymptotic distribution; of number of steps; IAOR - 8773)

"Metod Posledovatel'nogo Uluchsheniya Plana Dlya Resheniya Odnogo Klassa Zadach Lineinogo Programirovaniya" (A Method of Sequential Improvement of Plan for Solution of a Class of Problems of Linear Programming) (Russian)

A. E. Bakhtin and Yu. I. Volkov

Ekonomika i Matematicheskie Metody (U.S.S.R) 3 (1967) 4, pp. 581 - 587

(2-block type; transportation-like; successive improvement; IAOR - 8774)

"An Extended Duality Theorem for Continuous Linear Programming Problems"

William F. Tyndall (Dept. of Mathematics & Astronomy , Franklin & Marshall College , Lancaster, Penn.)

SIAM J. Appl. Math. (U.S) 15 (1967) 5 (sept.), pp. 1294 - 1298

(Duality theorem; extension; ; IAOR - 8775)

"Metodo SPARA per la Soluzione di una Classe di Programmi Lineari" (SPARA Algorithm to Solve a Class of Linear Programs)(Italian)

B. Martinoli (c/o Italsider , Via Ilva 3, Genova, Italy);

Quaderni di Ricerca Operativa (Italy) 5 (1966) , pp. 73 - 84

(SPARA algorithm; faster than simplex; on IBM 1410 and 7094; IAOR - 8951).

"Perche' e Come e' Stato Realizzato it Codica SPARA " (Why and How SPARA Program has been Prepared) (Italian)

E. Albani (Via Visconti di Modrone, 32, Milan, Italy)

Quaderni di Ricerca Operativa (Italy) 6 (1967), pp. 31 - 39

(SPARA code; description and ; running times; IAOR - 8952)

" Duality Theorems for Continuous Linear Programming Problems."

Atsushi Murakami and Muretsugu Yamasaki

Journal of Science of Hiroshima University (Japan) 33 (1969) 2, pp. 213 - 221

(Continuous LP ; duality theorems; feasibility; IAOR - 89 53)

"Sur le Probleme des Contraintes Supplementaires en Programmation Lineaires et Application au Probleme de Decomposition" (On the Problem of Supplementary Constraints in Linear Programming and its Application to the Problem of Decomposition) (French; German, English and Russian summaries)

Hoang Tuy

Elektronischer Informationsverarbeitete und Kybernetik (E. German); 3 (1967) 3, pp. 141 - 156
(IAOR - 9139)

"Analiz Resheniya Zadachi Lineinogo Programirovaniya " (Analysis of the Solution of a Linear Programming Problem) (Russian)

A. B. Mandel'

Ekonomika i Matematicheskie Metody (U.S.S.R); 3 (1967) 6, pp. 909 - 921
(IAOR - 9140).

"Criteres Multiples en Programmation Mathematique : Une Solution dans le cas Lineaire" (Several Objective Functions in Linear Programming)

R. Benayoun (SEMA, 35, Boulevard Brune, Paris 14, France) and J. Tergny

Revue Francaise d'Informatique et de Recherche Operationnelle (France) 3 (1969) V-2 (july) , pp. 31 - 56
(IAOR - 9141)

How Good is the Simplex Algorithm? "

Victor Klee (Dept. of Math., Univ. of Washington, Seattle , Wash. 98105) and George J. Minty

Mathematics Research Lab. (Being Scientific Research Labs.) Math. Note No 643, Feb., 1970 , pp. 28

(IAOR - 9142).

" O Minimaksnykh Resheniyakh Zadach Lineinogo Programirovaniya" (Minimax Solutions of Problems in Linear and Quadract Programming); (Russian)

A. D. Iutsenko and A. V. Martynov

Izvestiya Akademii Nauk SSSR

Tekhnicheskaya Kibernetika (U. S.S.R) (1968), 2, pp. 25 - 30

(IAOR - 9335).

"Issledovanie Zadachi Drobno-Lineinogo Programirovaniya Pri Var'irovaniy Nekotorykh Parametrov" (Analysis of a Problem of Fractional-Linear Programming Under Variation of Certain Parameters) (Russian; Azerbaidzhani summary)

D. M. Manyurov

Izvestiya Akademii Nauk AzerbSSR

Seriya Fiziko-Tekhniki i Matematiki (U.S.S.R) (1968) 4 , pp. 89 - 95

(IAOR - 9336))

" O Zadachakh Lineinogo Programirovaniya na Orientirovannykh Grafakh" (Linear Programming Problems on Oriented Graphs) (Russian)

N. N. Vorob'ev , V. V. Malinnikov and A. I. Sobolev
 Ekonomika i Matematicheskie Metody (U.S.S.R) 4 (1968) 4, pp. 622-
 628
 (IAOR - 9337)

"Nekotorye Voprosy Approksimatsii Optimal'nogo Znacheniya Beskonech-
 nomernykh Zadach Lineinogo Programirovaniya " (Some Questions in
 the Approximation of the Optimal Value of Infinite-Dimensional
 Linear Programming Problems) (Russian)
 A.M. Verhik and V. Temel't
 Sibirskii Matematicheskii Zhurnal (U.S.S.R) 9 (1968)4 ,pp.790 - 803
 (IAOR - 9338)

"A Mutual Primal-Dual Linear Programming Algorithm"
 Milton Y. Harris
 Naval Research Logistics Quartely (U.S) 17 (1970) 2 (june) ,pp. 199 -
 206
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Harvey J. Greenberg (Man. Sci. Systems, Rockville, Md) and Dennis C. Rarick

Math. Programming (Netherlands) 7 (1974) 2 (oct.) pp. 240 - 244
(IAOR - 13851)

"A Complementary Variant of Lemke's Method for the Linear Complementary Problem"

C. Van de Panne (Univ. of Calgary, Calgary, Alberta, Canada)

Math. Programming (Netherlands) 7 (1974) 3 (dec.), pp. 283 - 310
(IAOR - 13852)

"Duality, Indifference and Sensitivity Analysis in Multiple Objective Linear Programming"

J. S. H. Kornbluth (Hebrew Univ., Jerusalem, Israel)

Operat. Res. Quartely (U.K) 25 (1974) 4 (dec.), pp. 599 - 614
(IAOR - 13853)

"Note on 'Many-Sided Shadow Prices'"

Samuel Eilon (Imperial College of Sci. & Tech., Exhibition Rd., London, England) and R. Flavell

OMEGA (U.K) 2 (1974) 6 (dec.)
(IAOR - 13854)

"A Comparison of the Primal-Simplex and Complementary Pivot Methods for Linear Programming"

Arunachalam Ravindran (Purdue Univ., Lafayette, Ind)

NRLQ (U.S) 20 (1973) 1(March), pp. 95 - 100
(IAOR - 14164)

"Linear Programming Models in Business"

Derrick Smith

Polytech Publishers (Stockport, U.K.) 1973, pp. 219

A review by Keith Tizzard appears in Operat. Res. Quart. 25 (1974) 4 (dec.), pp. 643 - 644

(IAOR - 14165)

"Coil Slitting - A Shop Floor Solution"

F. A. Caruso (Western Electric, Hawthorne Works, Chicago, Ill) and J. J. Kokat

Industrial Engineering (U.S) 5 (1973) 11 (nov.), pp. 18 - 23
(IAOR - 14445)

"The Techniques of Linear Multiobjective Programming"

P. L. Yu. (Univ. of Rochester, Rochester, N.Y.) and M. Zeleny

RFAIRO (France) 80 (1974) V-3 (nov.), pp. 51 - 71
(IAOR - 14446)

"Note on 'Many-Sided Shadow Prices' "

A. Eilon (Imperial College, London, England) and R. Flavell

OMEGA (U.K) 2 (1974) 6 (dec.), pp. 821 - 824
(IAOR - 14447)

"Planning for Repetitive Cycles Using an Infinite Horizon Linear Program"

A. J. Michael (Dept. of Finance, Boston Univ. , 212 Bay St. , Boston, Mass.)

Zeitschrift fur Operations Research (German F. R.) 19 (1975); 1 (feb.) pp. 15 - 18

(IAOR - 14448)

"For Identification of Redundant Inequalities in Linear Programming"

T. Gal (Inst. f. Wirtschaftswissenschaften, Lehrgebiet Operations Research, TH Aachen, D-51 Aachen, Templergraben 55, German F. R.)

Zeitschrift fur Operations Research (German F. R.) 19 (1975) 1 (feb.), pp. 19 - 28

(IAOR - 14449)

" A Note Method for Multiparametric Linear Programming"

C. Van de Panne (Univ. of Calgary, Alberta, Canada)

Man. Sci. (U.S) 21 (1975) 9 (may), pp. 1014 - 1020

(IAOR - 14450)

" Vertex Generation and Cardinality Linear Programs"

David S. Rubin (Univ. of North Carolina, Chapel Hill, N. C.)

Opns. Res. (U.S) 23 (1975) 3 (may - june), pp. 555 - 565

(IAOR - 14451)

"The Solution of Leontief Substitution Using Matrix Iterative Techniques"

Gary J. Koehler (Univ. of Florida, Gainesville, Fla) , Andrew B. Whinston and Gordon P. Wright

Man. Sci. (U.S) 21 (1975) 11 (july) , pp. 1295 - 1302

(IAOR - 14452)

LISTA DE ARTIGOS TEÓRICOS QUE REPRESENTAM EXTENSÃO DE PROGRAMAÇÃO LINEAR ENVOLVENDO TAMBÉM OUTROS CAMPOS DE ESTUDO.

"On the Minimization of the Number of Arithmetic Operations for the Solution of Linear Algebraic Systems of Equations"

(Trans. of Zhurnal Vychislitelnoi Matematiki i Matematicheskoi Fiziki (U.S.S.R) Vol. 5 (1965), nº 1, pp. 21 - 33)

V. V. Klyuev and N. I. Kokovkin-Shcherbak

(14 june 1965). Order CS -24; AD- 616 611 and TT- 65-62498 from Clearinghouse

(Algebraic systems; linear ; optimal solving; IAOR - 5122 COMPUTATIONAL ANALYSIS)

"Nova Metoda Celociselneho Linearniho Programovani" (A New Method of Integer Linear Programming)

Robert Faure and Yves Malgrange

Ekonomicko Matematicky Obzor (Czechoslovakia) 2 (1966), 1 (feb.),

pp. 11 - 20

(Feasible solutions; improvement of; block diagram; theoretical;
IAOR - 5145 INTEGER PROGRAMMING)

"A Computer Code for Integer Solutions to Linear Programs"

John Haldi and Leonard M. Isaacson

Opns. Res. (U.S). 13 (1965), 6 (nov. - dec.), pp. 946 - 959

(Cutting plane method ; simplex; computer program; experimentation;
IAOR - 5147 INTEGER PROGRAMMING)

" The Traveling Salesman Problem; On the Reduction of Certain Large Problems to Smaller Ones"

Michael Rothkopf

Opns. Res. (U.S). 14 (1966), 3 (may - june), pp. 532

(Salesman ; travelling; reduction method; IAOR - 5161 NETWORK PROGRAMMING)

"Dynamic Programming Treatment of the Travelling Salesman Problem"

Richard Bellman

J. of the A.C.M. (U.S) 9 (1962) , 1 (jan.), pp. 61 - 63

(Salesman; travelling; dynamic programming; IAOR - 5162 NETWORK PROGRAMMING)

"The Method of the Center of Gravity in Linear and Non-Linear Programming and its Uses"

Klaus Lemmertzsch

Ekonomicko-Matematicky Obzor (Czechoslovakia), 2 (1966), 1 (feb.), pp. 21 - 33

(Center of gravity; no matrix inversion; gradient method; theoretical;
IAOR - 5163 NON-LINEAR PROGRAMMING)

"Programming variable factors"

Robert Wilson

Man. Sci. (U.S). 13 (1966), 1 (sept.), pp. 144 - 151

(Variable factor; linear; concave dual; computational aids; IAOR - 5165 NON-LINEAR PROGRAMMING)

"Recursive Constraints and Stochastic Linear Programming"

J. K. Sengupta

Metrika (Germany). 10 (1966), № 7, pp. 6 - 72

(Recursive constraints; linear ; stability; IAOR - 5167 PROBABILISTIC PROGRAMMING)

" O Rewnym Zadaniu Sterowania Nadrzednego" (On a Problem of Control of Peak Level) (Russian & English summaries)

Andrzej Straszak

Archiv Automatiki i Telemekhaniki (Poland) , 9 (1964), 2, pp. 167 - 177

(Local optimal systems; common signal source; peak level control ;
IAOR - 5318 CONTROL PROCESSES)

"Iteratsionnyi Metod Resheniya Zadachi Vypuklogo Programirovaniya"
(An Iterational Method for the Solution of a Convex Programming Problem)

I. M. Eremin and V. D. Mazurov

Doklady 3-i Konferentsii po Matematike i Mekhanike

Tomskii Universitet (U.S.S.R). (1964), pp. 264

(Convex problem; iteration method; ; IAOR - 5344 MATHEMATICAL PROGRAMMING)

"Reshenie Trekhindeksnoi Transportnoi Zadachi Metodom Potentsialov"
(Solution of a 3-index Transportation Problem by the Method of Potentials)

K. V. Safaeva

Voprosy Vychislitel'noi Matematiki i Tekhniki (U.S.S.R). (1964),

pp. 129 - 143

(3-index problem; method of potentials; ; IAOR 5356 TRANSPORTATION PROGRAMMING)

"An algorithm for the Solution of Mixed Integer Programming Problems"

Norman J. Driebeek

Man. Sci. (U.S.) . 12 (1966), 7 (march), pp. 576 - 587

(Mixed-integer; algorithm; ; IAOR - 5512 INTEGER PROGRAMMING)

"On an Algorithm for the Solution of Problems of Integral Linear Programming With Boolean Variables"

(Trans. of Akademiya Nauk SSSR. Doklady 164 (1965), 5, pp. 993 - 996)

Yu. Yu. Finkelshtein (28 december 1965)

Order JPRS - 33498 and TT- 65-34072 from Clearinghouse

(Linear; boolean variables; algorithm; computational aids; IAOR - 5514 INTEGER PROGRAMMING)

"Solution Algorithm for an Elementary Linear Programming Problems"

S. A. Sukiasyan

Trudy Vychislitel'nogo Tsentra Akademii Nauk Armenskogo SSR (U.S.S.R.)

2 (1964), pp. 17 - 21

(Objective constraints; maximize for each λ ; solution algorithm;

IAOR - 5530 PARAMETRIC PROGRAMMING)

"A Decomposition Algorithm for Quadratic Programming"

A. Whinston

CCERO (Belgium). 8 (1966), 2, pp. 112 - 131

(Convex; block diagonal ; decomposition; IAOR - 5697 QUADRATIC PROGRAMMING)

"Nekoterye Algoritmy Optimal'nogo Upravleniya Nepreryvnymi Proizvodstvennymi Protssessami" (Some Algorithms of Optimal Control of Discontinuous Production Processes)

V. V. Ivanov

Vychislitel'naya Tekhnika Dlya Avtomatizirovaniya Proizvodstva (U.S.S.R). (1964), pp. 43 - 49

(Optimize; response speed; sequential analysis; IAOR - 5866 CONTROL PROCESSES)

- "A Simplex Technique for a Particular Convex Programming Problem"
S. P. Aggarwal
Canadian Operational Research Society Journal (Canada). 4 (1966),
2 (july), pp. 82 - 88
(Convex function max. ; linear constraints; simplex analog.; compu-
tational aids; IAOR - 5912 MATHEMATICAL PROGRAMMING)
- " Programming With a Quadratic Constraint"
C. Van de Panne
Man. Sci. (U.S) . 12 (1966), 11(july), pp. 798 - 815
(Linear objective; quadratic constraint; method; IAOR - 5914 MATHE-
MATICAL PROGRAMMING)
- "Two -Stage Programming Under Uncertainty With Discrete Distribution
Function"
M. El. Agizy
Opns. Res. (U.S) 15 (1967) 1 (jan. - feb.), pp. 55 - 70
(Stochastic; two-stage; discrete distributions; IAOR - 5925 PROBABILI-
STIC PROGRAMMING)
- "Lineinoe Stokhasticheskoe Programirovanie" (Linear Stochastic
Programming)
T. N. Pervozvanskaya
Trudy Leningradskogo Inzhenerno-Ekonomicheskogo Instituta (U.S.S.R) .
53 (1965), pp. 142 - 146
(Linear ; survey article; ; IAOR - 5928 PROBABILISTIC PROGRAM-
MING)
- "Optimale Projektbeschleunigung Durch Parametrische Lineare Pla -
nungsrechnung" (Optimal Acceleration of Projects by Parametric
Linear Programming)
Heiner Mueller - Merbach
Elektronische Datenverarbeitung (Germany) . 9 (1967) 1 (jan.), pp.
33 - 39
(Project cost curves; parametric linear; programming; computational
aids; IAOR - 6032 CRITICAL PATH PROGRAMMING)
- "A Principal Pivoting Simplex Algorithm for Linear and Quadratic
Programming"
Robert L. Graves
Opns. Res. (U.S). 15 (1967) 3 (may - june), pp. 482 - 494
(Inequalities; simplex; algorithm; IAOR - 6052 QUADRATIC PROGRAMMING)
- "On Balanced Sets, Cores, and Linear Programming"
A. Charnes and L. Kortanek
CCERO (Belgium) 9 (1967) 1 (april), pp. 32 - 43
(N-person; duality/redundancy ; admissibility; IAOR - 6191 GAMES)
- "Ob Odnom Klasse Protsessov Dlya Resheniya Matrichnykh Igr "
(A Class of Processes for the Solution of Matrix Games) (in Russian)
Ya. M. Klihterov
Izvestiya Akademii Nauk SSSR
Tekhnicheskaya Kibernetika (U.S.S.R) 1965 , № 5, pp. 23 - 41
(Matrix; as dynamic process; convergence criteria; IAOR - 6192

GAMES)

"Asupra Unei Clase de Probleme de Programare Parametrică"
(On a Class of Parametric Programming Problems) (in Romanian)

I. Drăgan

Studii Si Cercetări Matematica

Academia Republicii Populare Romine (Romania) 17 (1965) 3, pp. 445 - 449

(Objective function; quadratic in; parameter; IAOR - 6215 PARAMETRIC PROGRAMMING)

"Lokal'nye Algoritmy Dlya Zadach Lineinogo Tselochislennogo Programmirovaniya" (Local Algorithms for Integer Linear Programming Problems) (in Russian)

Yu. I. Zhuravlev and Yu. Yu. Finkel'shtein

Problemy Kibernetika (U.S.S.R) 14 (1965), pp. 289 - 295

(Large problems; nonlinear, combinat'l ; and special structure; IAOR - 6386 OPTIMIZATION)

"Szélsőérték Konvex Poliéder Felett" (Extremal Values on a Convex Polyhedron) (in Hungarian; Russian, German, English, & French summaries)

Csaba Asszonyi and Tomás Meggyes

Nehézipari Műszaki Eggetem Kizlemerneyei (Hungary). 12 (1965), pp. 21 - 37

(Extrema of functions; polyhedron boundary; Uzawa Method; IAOR - 6419 MATHEMATICAL PROGRAMMING)

"La Méthode De L'Algorithme De Réinversion En Programmation Linéaire"
(The Inversion Algorithm in Linear Programming)

Franco Bramucci

Metra (France) 6 (1967) 2 (june), pp. 357 - 381

(Inversion algorithm; for L.P. ; maximize precision; IAOR - 6598 COMPUTATIONAL ANALYSIS)

"Gradientnyĭ Metod Resheniya Zadach Lineinogo i Kvadratichnogo Programmirovaniya na Elektronnoĭ Modeli" (The Gradient Method of Solution of Linear and Quadratic Programming Problems on an Electronic Simulador)

M. V. Rybashov

Avtomatika i Telemekhanika (U.S.S.R) 26 (1965) 12, pp. 2151 - 2162

(Gradient systems of; differential eqns.; electronic simulador; IAOR - 6631 MATHEMATICAL PROGRAMMING)

"Ob Algoritmakh Dlya Resheniya Nekotorykh Zadach Nelineinogo Chesbyshevskogo Priblizheniya i Nelineinogo Programmirovaniya"

(Algorithms for the Solution of Certain Problems of Non-Linear Chebyshev Approximation and Non-Linear Programming)

S. I. Zukhovitskiĭ

Issledovaniya Po Sovremenym Problemam Konstruktivnoĭ Teorii Fun - ktsii

Akademii Nauk Azerb. SSR (U.S.S.R) 1965, pp. 9 - 17

(Convex; no local extrema; algorithms developed ; IAOR - 6636

NON-LINEAR PROGRAMMING)

"Pro Odnu Zadachu Kvadraticnogo Programuvaniya " (A Quadratic Programming Problem) (in Ukrainian; Russian and English summaries)
M. I. Zhaldak and B. Kovbacevko
Dopovidi Akademii Nauk U.R.S.S.R (U.S.S.R), 1965 , 8 , pp. 990 - 993
(Linear constraints; positive def. obj. ; reduction to L.P. ; IAOR - 6641 QUADRATIC PROGRAMMING)

"Remarks on 'Linear Programming Under Uncertainty' "
A. C. Williams and M. Avriel
Opns. Res. (U.S.) 16 (1968) 1 (jan. - feb.), pp. 198 - 202
(Linear programming; under uncertainty; a dual theorem; theoretical;
IAOR - 6782 PROBABILISTIC PROGRAMMING)

"Dvoĭstvennyĭ Metod v Ekstremal'nykh Zadachakh . II " (The Dual Method in Extremal Problems. II) (Russian)
B. N. Pshenichnyy
Kibernetika (U.S.S.R) 1965, 4, pp. 64 - 69
(Convex & linear; Chebyshev approx.; duality; IAOR - 6977 MATHEMATICAL PROGRAMMING)

"Role of the Theory of Graphs in Operations Research"
C. Ramanujacharyulu
CORSI Bulletin (India) 1957 , pp. 93 - 106
(Scheduling; networks; enumeration; IAOR - 7106 GRAPHS)

"Sufficient Conditions for Positive Recurrence and Recurrence of Specially Structured Markov Chains"
Thomas B. Crabill
Opns. Res. (U.S.) 16 (1968) 4 (july - aug.), pp. 858 - 867
(Positive recurrence; and recurrence; sufficient conditions; IAOR - 7109 MARKOV PROCESSES)

"Comments on a Paper by Romesh Saigal: 'A Constrained Shortest Route Problem' "
Marc Rosseel
Opns. Res. (U.S.) 16 (1968) 6 (nov. - dec.), pp. 1232 - 1234
(Shortest path; errors in L.P. and; D.P. formulation; IAOR - 7275 CRITICAL PATH PROGRAMMING)

"An Approach to Zero-One Integer Programming"
A. Victor Cabot and Arthur P. Hurter, Jr.
Opns. Res. (U.S.) 16 (1968) 6 (nov. - dec.) ,pp. 1206 - 1211
(Zero-One variables; algorithm based on; linear programming ; IAOR - 7281 INTEGER PROGRAMMING)

"A Note on Linear Programming and Integer Feasibility"
Fred Glover
Opns. Res. (U.S.) 16 (1968) 6 (nov. - dec.), pp. 1212 - 1216
(Basic solutions; to linear problems; new strategies; IAOR - 7282 INTEGER PROGRAMMING)

"(g,W) - Optima in Markov Renewal Programs"

Bennett Fox

Man. Sci.: Theory (U.S) 15 (1968) 3 (nov.) , pp. 210 - 212

(Renewal programs; nearly optimal; linear programming; IAOR - 7429
MARKOV PROCESSES)

"Ein Gradienten-und Schwerpunktverfahren der Linearen und Nichtli -
nearen Optimierung" (A Gradient and Centroid Process for Linear
and Nonlinear Programming) (German; Czech and Russian summaries);

Klaus Lommatzch

Aplikace Matematiky (Czechoslovakia) 11 (1966) 4, pp. 303 - 313

(Gradient; and centroid; process; IAOR - 7445 MATHEMATICAL PROGRAM-
MING)

"Diskretnye Periodicheskie Protssesy" (Discrete Periodic Processes)
(Russian)

K. A. Rodosskiy

Dokl. AN SSSR (U.S.S.R) 169 (1966) 6 , pp. 1276 - 1278

(Discrete,periodic; processes; integer linear form; IAOR - 7623
OPTIMIZATION)

"A Method of Unifying Multiple Objective Functions"

Lawrence E. Briskin

Man. Sci. (U.S) 12 (1966) 10 (june), pp. B-406 - B-416

(Multiple objectives; unifying; nonlinear programming; IAOR - 7781
OPTIMIZATION)

"Linear Programming Techniques in Regression Analysis; The Hidden
Danger"

Douglas C. Crocker

AIIE Transactions (U.S) 1 (1969) 2 (june), pp. 112 - 126

(Estimate coefficients; by linear programming; limitations; IAOR -
7887 STATISTIC:REGRESSION)

"O Priblizhennom Reshenii Odnoi Zadachi Neanaliticheskogo Upravleniya"
(Approximate Solution of a Problem of Nonanalytical Control) (Rus-
sian; English summary)

M. A. Dukhevnyi and E. G. Fainshtein

Avtomatika i Telemekhanika (U.S.S.R) (1967) 4, pp. 159 - 164

(Integral of deviations; minimization; linear programming; IAOR -
7983 CONTROL PROCESSES)

"Duality in Markov Decision Problems With Countable Action and State
Spaces"

John P. Evans

Man. Sci. :Theory (U.S) 15 (1969) 11 (july), pp. 626 - 638

(Countable action space; and state space; duality theory; IAOR -
8014 PROGRAMMING: MARKOV DECISION)

"A Simplex-Type Algorithm for Linear and Quadratic Programming - A
Parametric Procedure"

R. Jagannathan

Econometrica (U.S) 34 (1966) 2 (April), pp. 460 - 471
 (Linear & quadratic; parametric method; simplex type; IAOR - 8018
 PROGRAMMING: MATHEMATICAL)

"Iterativnoe Reshenie Zadach Lineinogo i Kvadraticnogo Programirovaniya" (Iterative Solution of Linear Programming Problems) (Russian)

I .I. Dikin

Doklady Akademii Nauk SSSR (U.S.S.R) 174 (1967) 4, pp. 747 - 748
 (Linear quadratic; algorithms, converge; steepest descent type; IAOR-8021 PROGRAMMING: MATHEMATICAL)

"The Relationship Between Continuous Zero-Sum Two-Person Games and Linear Programming"

Ferenc Forgo (Dept. of Mathematics, Karl Marx University of Economics, Budapest, Hungary)

Research Report, Jan. 1969, pp. 14

(Relationship between ; games and linear programming; Ohtsuk's theorem; IAOR - 8359 GAMES)

"Generalization of Dilworth's Theorem on Minimal Chain Decomposition"

M. Raghavachari (Carnegie-Mellon Univ.; Dept. of Statistics, Pittsburgh, Pa. 15213) and V. L. Mote

Man. Sci.: Theory (U.S) 16 (1970) 7 (March), pp. 508 - 511

(Generalization of; Dilworth's theorem; on min chain decomp. ; IAOR - 8361 GRAPHS)

"Cash Flows in Networks"

A. H. Russell (The City University, London, England)

Man. Sci.: Theory (U.S) 16 (1970) 5 (Jan.), pp. 357 - 373

(Max present value; of cash flow; nonlinear program; IAOR - 8371 NETWORKS)

"A Fractile Approach to Linear Programming Under Risk"

J. K. Sengupta and J. H. Portillo-Campbell (Iowa State University, Ames Iowa, 50010)

Man. Sci.: Theory (U.S) 16 (1970) 5 (Jan.), pp. 298 - 308

(Maximize fractile; of distn. of profits; theory, computation; IAOR - 8401 PROGRAMMING: PROBABILISTIC)

"Algoritm s Obratnoi Matritsei Dlya Resheniya Transportnoi Zadachi s Dopolnitel'nymi Ogranicheniyami" (Algorithm With Inverse Matrix for Solution of a Transportation Problem With Supplementary Constraints) (Russian)

K. V. Kim

Ekonomika i Matematicheskie Metody (U.S.S.R) 3 (1967) 4, pp. 588 - 592

(Supplemental constraints; decomposition; simplex method; IAOR - 8404 PROGRAMMING: TRANSPORTATION)

"Solving Certain Non Convex Quadratic Minimization Problems by Ranking the Extreme Points"

A. Cabot (Indiana Univ., Graduate School of Business, Bloomington,

Indiana, 47401) and R. L. Francis

Opns. Res. (U.S) 18 (1970) 1 (jan. - feb.), pp. 82 - 86

(Linear constraints; extreme-point ranking; solve related L.P. problems; IAOR - 8403 PROGRAMMING : QUADRATIC)

"Metody Pro Nalezni Vsech Krajnich Bodu Konvexniho Polyedru"
(Methods for Finding All Vertices of a Convex Polyhedron) (Czech)

Miroslav Manas

Ekonomicko-Matematicky Obzor (Czechoslovakia) 5 (1969) 3 (aug.), pp. 325 - 342

(Determining all vertices; of a convex polyhedron; numerical calc's; IAOR - 8542 COMPUTATIONAL ANALYSIS)

"Linear Programming Solutions to Ratio Games"

G. Schroeder (Dept. of Defense, Washington, D.C.)

Opns. Res. (U.S) 18 (1970) 2 (march-april), pp. 300 - 305

(non-linear ratio function; minimax solution; linear programming; IAOR - 8550 GAMES)

"On Terminating Stochastic Games"

H. Mine, K. Yamada, and S. Osaki (Kyoto University, Kyoto, Japan)

Man. Sci. :Theory (U.S) 16 (1970) 9 (may), pp. 560 - 571

(Stochastic games; finite termination; transient behavior; IAOR - 8552 GAMES)

"Dynamic Programming Treatment of the Job Assignment Problem"

J. P. Saksena (Indian Statistical Institute, Calcutta, India)

Opsearch (India) 6 (1969) 2 (june), pp. 129 - 136

(Assignment, n jobs; m men, n/m integer; numerical illustrations; IAOR - 8572 PROGRAMMING: DYNAMIC)

"Asupra Continuitatii Optimului Unui Program Liniar " (On the Continuity of the Optimal Solution of a Linear Programming Problem)
(Romanian)

M. Dragomirescu and C. Bergthaler

Studii Si Cercetari Matematica

Academia Republicii Populare Romine (Romania) 18 (1966) 8, pp. 1197-1200

(Optimal Solution; nec. and suff. cond's; for; proof of continuity ; IAOR - 8586) PROGRAMMING: PARAMETRIC)

"Ob Odnom Primenenii Matrichnykh Igr K Priblizhennomu Resheniyu Zadach Lineinogo Programirovaniya" (An Application of Matrix Games to the Approximate Solution of Linear Programming Problems)
(Russian)

O. K. Romanov

Uchebnye Zapiski

Moskovskii Oblastnoi Institut (U.S.S.R) (1967), pp. 149 - 155

(Linear Programming by; Brown's method of ; fictitious play; IAOR - 8750 GAMES)

"Ob Odnom Iteratsionnom Metode Resheniya Zadach Lineinogo i Vypluk-
logo Programirovaniya" (An Iterative Method of Solution of Problems
of Linear and Convex Programming). (Russian)

S. M. Movshevich

Ekonomika i Matematicheskie Metody (U.S.S.R) 3 (1967) 4, pp. 593 -
60 0

(Conversion; to unconditional min; penalty functions; IAOR -8761
PROGRAMMING: CONVEX)

"Error Produced by Linearization in Mathematical Programming"

W. J. Baumol (Princeton Univ., Dept. of Economics, Princeton, N.J.
08540) and R. C. Bushnell

Econometrica (U.S) 35 (1967) 3-4 (july - oct.), pp. 447 - 471

(Nonlinear problems; solved by linearization; study of errors; IAOR-
8777 PROGRAMMING: MATHEMATICAL)

"Metody Priblizheniya v Prostranstve Tselevykh Funktsii Pri Res-
henii Zadach 'Na Uzkie Mesta' " (Method of Approximation in the Spa-
ce of Objective Functions in the Solution of Problems 'In Tight Pla-
ces'); (Russian)

T. N. Pervozvanskaya

Zhurnal Vychislitel'noi Matematiki i Matematicheskoi Fiziki (U.S.S.
R) 7 (1967) 3, pp. 704 - 710

(Dynamic programming; sequential approximation; by linear programming;
IAOR - 8779 PROGRAMMING : MATHEMATICAL)

"A Note on Trauth and Woolsey's Integer Linear Programming Article"

Lawrence E. Briskin (Operations Evaluation Dept., National Cash Re-
gister Co., Dayton, Ohio 45409)

Man. Sci.: Application (U.S) 16 (1970) 10 (june), pp. B651 -

(Operation of LIP-1; Trauth & Woolsey; a note ; IAOR - 8950 PROGRAM-
MING: INTEGER)

"Modely Rozpoznvani" (Models of Recognition) (Czech)

Josef Lauber

Ekonomicko-Matematicky Obzor (Czechoslovakia) 6 (1970) 2 (june) ,
pp. 142 - 160

(IAOR - 9099 ADAPTIVE PROCESSES)

"Sieci PERT a Programowanie Liniewe" (PERT Networks and Linear
Programming) (Polish; Russian and English summaries)

Z. Czerwinski and E. Ignasek

Przeglad Statystyczny (Poland) 14 (1967) 4 , pp. 357 - 371

(IAOR - 9130 PROGRAMMING: CRITICAL * PATH)

"On Weakly Balanced Games and Duality Theory"

A. Charnes (College of Business admin., Univ. of Texas, Austin, Texas
78712), M. Eisner and K. O. Kortanek

CCERO (Belgium) 12 (1970) 1(may), pp. 7 -21

(IAOR - 9117 GAMES)

"Un Algorithme Lexicographique Pour la Resolution des Programmes Lineaires en Variables Binaires" (A Lexicographic Algorithm for Solving Linear Programs With Binary Variables)

Irinel Dragan (Universite 'AI. Cuza', Jassy, Rumania).

Man. Sci., Theory (U.S) 16 (1969) 3 (nov.), pp. 246 - 252

(IAOR - 9138 PROGRAMMING: INTEGER)

"A Method for Systematic Simultaneous Parametrization of Vectors b and c in LP-Problems"

Tomas Gal

Ekonomicko-Matematicky Obzor (Czechoslovakia) 6 (1970) 2 (june),

pp. 161 - 175

(IAOR - 9152 PROGRAMMING: PARAMETRIC)

"A Note on Deterministic Equivalents to Stochastic Linear Programming Problems"

Jitka Zackova (Dept. of Mathematical Statistics, Charles Univ., Sokolovska Prague 8, Czechoslovakia)

Zeitschrift fur Wahrscheinlich-keitstheorie und Verwande Gebiete (Germany) 14 (1970) 4 (feb.), pp. 264 - 268

(IAOR - 9156 PROGRAMMING: PROBABILISTIC)

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3- UM PROBLEMA ESPECÍFICO DE APLICAÇÃO DE P.L. : PROBLEMAS DE ALOCAÇÃO EM AGROPECUÁRIA.

3-1) PROBLEMA DE ALOCAÇÃO GERAL

O problema de alocação surge quando temos um número de tarefas a serem realizadas, existindo uma limitação quanto à quantidade de recursos disponíveis. Respeitando-se as limitações de recursos deseja-se maximizar ou minimizar uma função objetivo. Esta função objetivo dá o critério segundo o qual deve-se efetuar a otimização do problema.

Os problemas de alocação, que trataremos aqui, ou seja problemas de atribuição ou distribuição de recursos, são um caso particular de aplicação de programação linear. Tanto as limitações de recursos como a função objetivo são representadas por equações lineares.

Para exemplificar consideremos o seguinte caso:

Dados:

- "n" produtos "j" que devem ser fabricados em "m" máquinas "i". O nº de máquinas disponíveis é limitado. Cada unidade do produto "j" leva a um lucro "c_j". O objetivo é maximizar o lucro determinando quanto vai ser produzido de cada produto, sem naturalmente exceder o nº disponível de máquinas.

FORMULAÇÃO DO PROBLEMA.

A seguir formularemos este modelo de forma mais compacta, isto é,

$$\text{Max. } Z = \sum_{j=1}^n c_j x_j$$

sujeito a:

$$\sum_{j=1}^n a_{ij} x_j \leq b_i$$

$$x_j \geq 0$$

onde $i=1, \dots, m$
 $j=1, \dots, n$

Sejam:

b_i quantidade dos recursos disponíveis

x_j quantidade a ser produzida do produto "j"

a_{ij} quantidade de tempo consumido por cada unidade do produto "j"

REPRESENTAÇÃO

	Produtos "j"	Quantidade total de tempo disponível na máquina "i"
Máquinas "i"	a_{ij}	b_i
Lucro por unidade	c_j	

A seguir apresentaremos alguns casos particulares que dizem respeito ao problema de alocação aplicados ao setor agropecuário.

3-2) CASOS PARTICULARES.

EXEMPLOS:

I) Este exemplo foi retirado do artigo: "Linear Programming Farm Management Analysis" - James N. Boles - Journal Economics - Vol. 37 , nº 1 , fevereiro de 1955

Neste exemplo o objetivo é maximizar o lucro líquido numa fazenda onde desejamos plantar: algodão (P_1) , batatas (P_2) , alfafa (P_3) , açúcar de beterraba (P_4) e cevada (P_5). Sabe-se que o lucro líquido por acre (c_j) é de \$207(dólares), \$200(dólares) , \$86(dólares), \$136(dólares) e \$29(dólares), respectivamente. São levados ainda em consideração uma série de fatores tais como:

- Na fazenda existem 150 acres de terra disponível para se cultivar; a água disponível no período 1 é de 2.200 poleg.³/m² no período 2 é de 2.110 poleg.³ /m² e no período 3 é de 730 poleg.³/m²; não serão plantados lotes com mais de 60 acres de algodão e não mais que 50 acres de batatas serão plantados. Deseja-se determinar

quantos acres de cada produto serão plantados.

A seguir apresentamos a matriz que especifica a quantidade de recursos a serem utilizados por unidade do produto "j", onde as linhas da matriz representam os recursos disponíveis e as colunas os produtos.

	P ₁	P ₂	P ₃	P ₄	P ₅
terra disponível	1	1	1	1	1
ág. disp. período 1	4	13.3	15.8	13	6.3
ág. disp. período 2	16.6	0	22.2	42.7	0
ág. disp. período 3	7.8	0	11.1	33	0
lotes de algodão	1	0	0	0	0
lim. de batata	0	1	0	0	0

O problema pode ser formulado através do seguinte modelo matemático:

$$\begin{aligned}
 1P_1 + 1P_2 + 1P_3 + 1P_4 + 1P_5 &\leq 150 \\
 4P_1 + 13.3P_2 + 15.8P_3 + 13P_4 + 6.3P_5 &\leq 2.200 \\
 16.6P_1 + 22.2P_3 + 42.7P_4 &\leq 2.110 \\
 7.8P_1 + 11.1P_3 + 33P_4 &\leq 730
 \end{aligned}$$

$$P_1 \leq 60$$

$$P_2 \leq 50$$

$$\text{Max. } Z = 207 P_1 + 200 P_2 + 86 P_3 + 136 P_4 + 29 P_5$$

Dessa maneira, para se cultivar 3 unidades de algodão necessitamos de 3 acres de terra; 12 poleg.³/m² de água no período 1, 49.8 poleg.³/m² de água no período 2 e 23.4 poleg.³/m² de água no período 3

A solução ótima para o problema exposto no exemplo I é :

Depois de uma série de cálculos, pelo método simplex, cálculos esses que podem ser feitos utilizando computadores, encontramos a solução ótima que satisfaz as condições imposta no problema. Feito os cálculos necessários vamos encontrar:

$$Z^* = 26.397,20$$

onde Z^* é o valor da função objetivo para solução ótima obtida pelo método simplex .

Para o lucro líquido de \$ 26.397,20 dólares , os 150 acres de terra foram utilizados de maneira que em 5 acres de terra cultivaremos cevada, 16 acres de terra cultivaremos açúcar de beterraba, 19 acres de terra cultivaremos alfafa, 60 acres de terra para o cultivo de algodão e 50 acres de terra para o cultivo de batatas.

Dessa maneira, as condições que apresentamos foram satisfeitas, e os resultados acima nos mostram o plano ótimo.

II) Este exemplo ,foi retirado do artigo : " Some Applications of Activity Analysis in Agricultural Economics" - Richard A. King - Journal of Farm Economics - Vol. 35 -1953

O problema em questão caracteriza-se em saber "Por quanto tempo os frangos de uma determinada granja serão nutridos a fim de se maximizar a renda?

Cada grupo de 1000 frangos serão nutridos por um determinado período e depois vendido por uma certa quantia.

O grupo "A" refere-se aos frangos vendidos com a idade de 8 semanas.

O grupo "B" refere-se aos frangos vendidos com a idade de 9 semanas.

O grupo "C" refere-se aos frangos vendidos com a idade de 10 semanas.

O grupo "D" refere-se aos frangos vendidos com a idade de 11 semanas.

O grupo "E" refere-se aos frangos vendidos com a idade de 12 semanas.

Para o grupo "E" considera-se 2 alternativas:

- i) O preço dos frangos estabelecidos na base de 32 ¢ / libra-peso.
- ii) O preço dos frangos estabelecidos na base de 35 ¢ /libra-peso.

Sabemos além disso que os frangos ao alcançarem a sua idade de venda terão sofrido uma porcentagem de mortalidade. Em 1000 frangos sobrevivem apenas 960 pertencentes ao grupo "A" , 958 per-

tecentes ao grupo "B", 955 pertencentes ao grupo "C" , 952 pertencentes ao grupo "D" ,e 950 pertencentes ao grupo "E" .

Naturalmente que o fato de se desejar maximizar o lucro líquido da granja nos levará a considerar fatores como o crescimento das aves, alimento consumido pelas aves, preço de venda, capital de produção, etc.

MATRIZ DE CUSTO

Considera-se que de 1000 pintos originalmente comprados somente uma parcela sobrevive, isto é, os pintos sofrem uma porcentagem de mortalidade já especificada acima. Os custos para cada tipo de frangos a ser criado é :

	A	B	C	D	E(i)	E(ii)
(1) -Nº de frangos vendidos.	960	958	955	952	950	950
-Quant. de alim. consumido por frangos vendidos. (lbs)	5.2	6.5	8.0	9.5	12.0	12.0
(2) -Quant. total de alim. consumido por cada grupo. (CWT)	49.9	62.3	76.4	90.4	114.0	114.0
(3) -Custo total dos alim. consumidos pelos frangos de cada grupo. (\$) :	279.44	348.88	427.84	506.24	638.40	638.40
-Preço de 1000 pintos comprados para serem vendidos. (\$)	185.00	185.00	185.00	185.00	185.00	185.00
(4) -Gastos de manutenção do aviário. (\$)	20.00	20.00	20.00	20.00	20.00	20.00
-Custo total do fazendeiro. (\$)	484.44	553.88	632.84	711.24	843.40	843.40

(1) Frangos vendidos são os frangos que sobrevivem de 1000 pintos em cada grupo.

(2) Os valores obtidos foram calculados multiplicando o nº de frangos vendidos em cada grupo pela quantidade de alimentos consumidos por frango vendido de cada grupo.

-CWT é a centésima parte da libra.

(3) A unidade do cwt do alimento custa \$5,6 , logo os valores obtidos para cada grupo é o produto de \$5,6 pela quantidade total de alimentos consumidos por grupo.

(4) Gastos que o fazendeiro tem com a manutenção do aviário (2 ¢ / pinto comprado.)

MATRIZ DE VENDA

	A	B	C	D	E(i)	E(ii)
-Nº de frangos vendidos.	960	958	956	952	950	950
(1)-Libra-peso por frango.	2.2	2.6	3.0	3.4	3.8	3.8
(2)-Libra-peso total de frangos vendidos,	2112	2491	2865	3237	3610	3610
(3)-Preço por libra-peso (¢)	32	32	32	32	32	35
(4)-Total de venda (\$) ⁽⁴⁾	675.84	797.12	916.80	1035.84	1132.20	1263.50
(5)-Lucro Líquido (\$)	191.40	243.24	283.93	324.60	311.60	420.10

(1) Peso de cada frango com uma certa idade.

(2) Total de peso vendido em cada grupo.

EX: Do grupo "A" vendeu-se 960 frangos pesando cada um 2.2 libras então o total será $960 \times 2.2 = 2112$ libras.

(3) Considera-se os frangos em qualquer idade vendidos por 32 ¢ / libra-peso. Considera-se ainda que somente os frangos com 12 semanas de idade poderão ser vendidos a 35 ¢ / libra-peso.

(4) Do grupo "E" foram vendidas 3610 libras-peso a 32 ¢ / libra então o total de venda é de \$1132,20

Do grupo "E" foram vendidas 3610 libras-peso a 35 ¢ / libra então o total de vendas é de \$1263,50

(5) Lucro líquido será encontrado subtraindo o total de venda pelo total de custo.

EX: O grupo "B" teve um gasto de \$553,88 e o total de venda é de \$797,12 então $\$797,12 - \$553,88 = \$243,96$

Além de apreciar o custo e receita associados aos diversos grupos de aves temos ainda que examinar as restrições envolvidas no problema. Foram considerados somente dois tipos de restrições. O primeiro diz respeito ao capital envolvido. Este inclui o valor das aves, material de limpeza, combustível para calefação e alimentos. Como normalmente o fazendeiro tem um capital limitado a sua disposição, é compreensível que no nosso modelo exista uma restrição que representa esta limitação. O segundo tipo de restrição diz respeito ao espaço ocupado pelas aves. Chamamos de "Pen Space" o espaço da capoeira (gaiolas grandes para criação de aves) ocupado por 1000 aves de um determinado grupo. Por exemplo 1000 aves do grupo "A" ocupam 590 pés quadrado enquanto o mesmo nº de aves do grupo "D" ocupam 900 pés quadrado de capoeira. O fato de aves de diversos grupos ocuparem a capoeira por diversos períodos diferentes é levado em consi-

deração através do conceito de "Pen Time". Assim por exemplo 1000 aves do grupo "A" ocupam 590 pés quadrado por 10 meses (consideramos 2 meses para limpeza e conservação das gaiolas), enquanto 1000 aves do grupo "D" ocupam 900 pés quadrado por 13 meses. O quadro seguinte permite relacionar Pen time e Pen space para cada grupo de aves.

	A	B	C	D	E(i)	E(ii)
Pen Space	590	680	790	900	1000	1000
Pen Time	5900	7480	9480	11700	14000	14000

O segundo tipo de restrição é estabelecido para o "Pen time"

A formulação do problema quanto a restrição de recursos foi feita da seguinte maneira.

Fixou-se um lucro líquido de 1000 dólares para cada grupo. Este lucro corresponde dentro de cada grupo a um certo nº bem determinado de aves. Assim por exemplo 1000dól. de lucro líquido são o resultado da criação de 5.225 aves do grupo "A" ou 3.081 aves do grupo "D". A este nº de aves por sua vez está associado uma certa quantia de capital, bem como um certo valor para o "Pen Time". A tabela seguinte relaciona os valores para cada grupo.

	A	B	C	D	E(i)	E(ii)
Franços	5225	4111	3522	3081	3207	2380
Pen Time	30.8	30.8	33.4	36.0	44.9	33.3
Capital	2531	2277	2229	2191	2705	2008

Cabe lembrar que este quadro foi elaborado considerando-se para cada grupo o mesmo lucro líquido de 1000 dólares.

Analizando o quadro vemos para a alternativa (i) (frangos de 12 semanas a preço de 32 ¢ / libra) que podemos, relativamente à solução ótima, desprezar os grupos "A e E" pois eles implicam em maiores gastos de capital e Pen time. Por exemplo o grupo "A" para o mesmo lucro de 1000 dól. gasta a mesma quantidade de Pen time que o grupo "B" gastando no entanto mais capital. Representa portanto uma solução pior que o grupo "B". Da mesma maneira raciocinamos para o grupo "E".

Considerando a alternativa (ii) (frangos de 12 semanas a preço de 35 ¢ / libra), podemos relativamente à solução ótima desprezar os grupos "A, C, e D" pois eles implicam em maiores gastos de capital e Pen time. Por exemplo o grupo "A" gasta mais capital do que o grupo "B", gastando no entanto a mesma quantidade de Pen time, os grupos "C e D" gastam mais Pen time e mais capital do que o grupo "E".

Os quadros abaixo representa para cada alternativa as soluções possivelmente ótimas.

ALTERNATIVA (i)			
	B	C	D
Pen time	30.8	33.4	36.0
Capital	2277	2229	2191

ALTERNATIVA (ii)		
	B	E (ii)
Pen time	30.8	33.3
Capital	2277	2008

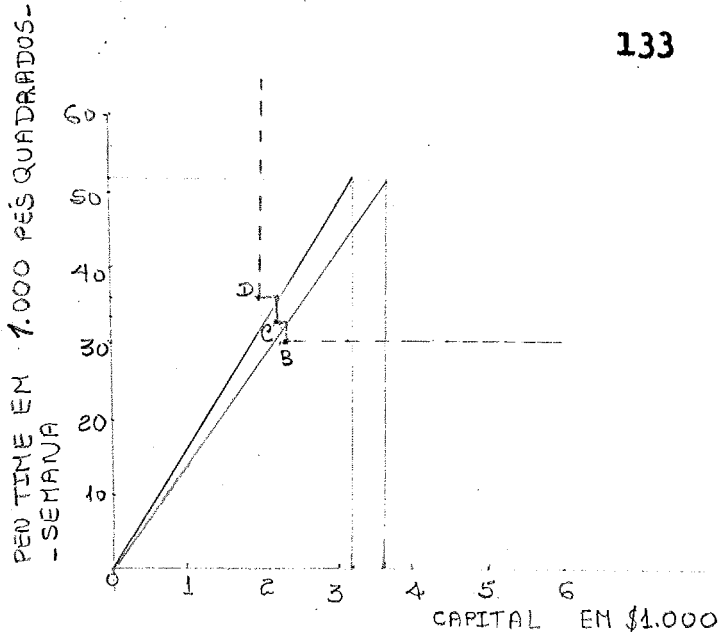
Qual deles será realmente a solução ótima? Vai depender da quantidade de recursos disponíveis. As figuras abaixo apresentam diversas regiões, dentro das quais um determinado grupo de aves representa a solução ótima.

Analizemos primeiramente a alternativa (i). Consideremos por exemplo um montante de 52000 pés quadrados-semana de Pen time disponível. Neste caso teríamos as seguintes decisões possíveis.

Caso o capital disponível seja maior que \$3600 o grupo de aves que constitui a solução ótima é o grupo "B".

Se o capital disponível estiver na faixa de \$3200 a \$3600 o grupo de aves que constitui a solução ótima é o grupo "C"

Se o capital disponível for menor que \$3200 o grupo de aves que constitui a solução ótima é o grupo "D".

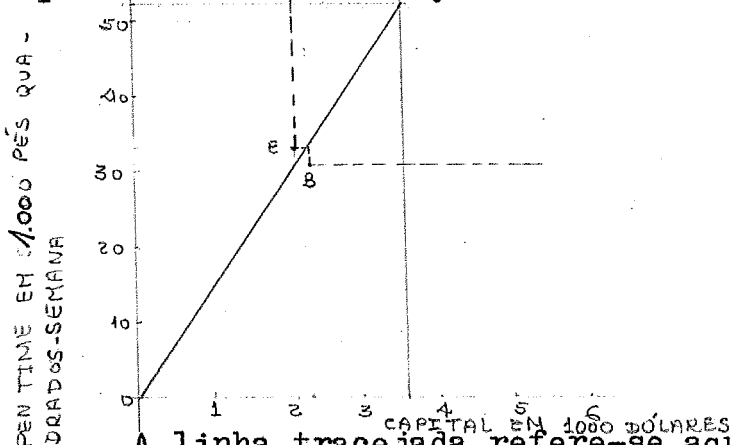


É claro que quanto mais nos afastamos da origem, maior a quantidade global de recursos disponíveis e portanto maior lucro total. A linha tracejada corresponde a um lucro de 1000 dólares.

Seja agora a alternativa (ii). Suponhamos também um montante de 52000 pés quadrados-semana de Pen time disponível.

Caso o capital disponível seja maior que \$3600 o grupo de aves que constitui a solução ótima é o grupo "B".

Caso o capital disponível seja menor que \$3600 o grupo de aves que constitui a solução ótima é o grupo "E".



A linha tracejada refere-se aqui também ao lucro de 1000 dólares.

3-3) MÉTODO SIMPLEX

O método simplex é uma técnica que resolve qualquer problema de programação linear. Essa técnica verifica se a presente solu-

ção é ótima ou não. É também chamada de Método Simplex Primal .

O primeiro passo no método simplex para resolver um problema de programação linear é converter o sistema de "m" desigualdades linear para um sistema de "m" equações⁽²⁾ lineares. Nesse caso há necessidade de se introduzir as chamadas variáveis de folga x_{k+1} , x_{k+2} ,, x_{k+m} .

EX:

$$\begin{array}{r} a_{11} x_1 + a_{12} x_2 + \dots + a_{1k} x_k \leq b_1 \\ a_{21} x_1 + a_{22} x_2 + \dots + a_{2k} x_k \leq b_2 \\ \vdots \\ a_{m1} x_1 + a_{m2} x_2 + \dots + a_{mk} x_k \leq b_m \end{array} \quad (1)$$

(1) \longrightarrow (2)

$$\begin{array}{r} a_{11} x_1 + a_{12} x_2 + \dots + a_{1k} x_k + x_{k+1} = b_1 \\ a_{21} x_1 + a_{22} x_2 + \dots + a_{2k} x_k + x_{k+2} = b_2 \\ \vdots \\ a_{m1} x_1 + a_{m2} x_2 + \dots + a_{mk} x_k + x_{k+m} = b_m \end{array} \quad (2)$$

Feito isso , podemos então achar todo conjunto de pontos $(x_1, x_2, x_3, \dots, x_{k+m})$ satisfazendo (2) com cada x_j não negativo de maneira que os pontos $(\bar{x}_1, \bar{x}_2, \dots, \bar{x}_{k+m})$ maximize a função linear:

$$Z = c_1 x_1 + c_2 x_2 + \dots + c_k x_k \quad (3)$$

Existem 2 formas básicas:

- O problema de maximização
- O problema de minimização

a) O problema de maximização pode ser formulado em notação da matriz:

$$\begin{array}{ll}
 \text{Max. } c^T x & \\
 \text{suju. a :} & \\
 \quad Ax \leq b & (4) \\
 \quad x \geq 0 &
 \end{array}$$

O elemento de A , b , c são constantes, e as componentes de x são variáveis.

A solução x_0 que nos dá o valor máximo da função objetivo é chamada solução ótima. x_0 é um ponto ótimo.

b) O problema de minimização pode ser formulado de maneira similar

$$\begin{array}{ll}
 \text{Min. } c^T x & \\
 \text{suju. a:} & (5) \\
 \quad Ax \geq b & \\
 \quad x \geq 0 &
 \end{array}$$

Evidentemente é possível transformar o problema de minimização num problema de maximização.

O método simplex se baseia em 3 teoremas:

1ª) O conjunto de todas as soluções compatíveis do modelo de programação linear é um conjunto convexo, isto é, a coleção de soluções viáveis constitui um conjunto convexo.

Conjunto Convexo

- Um conjunto A é convexo se e somente se dados 2 pontos quaisquer "a" e "b"

$a \in A$

$b \in A$, o ponto $c = \lambda a + (1-\lambda) b$

$$0 \leq \lambda \leq 1 \longrightarrow c \in A$$

2ª) Toda solução básica do sistema $Ax=b$ é um ponto extremo do conjunto das soluções compatíveis. (conj. convexo)

3ª) Se a função objetivo possui um máximo (mínimo) finito, então pelo menos uma solução ótima é um ponto extremo do conjunto convexo C .

O método simplex compreenderá os seguintes passos :

- 1) Achar uma forma canônica inicial para o sistemas de equações.
- 2) Colocar a função objetivo somente em termos das variáveis não básicas.
- 3) Verificar se todos os coeficientes dessas variáveis são negativos (ou nulos)
em caso afirmativo pare, a presente solução é ótima
em caso contrário vá para 4
- 4) Colocar na base a variável não básica que possuir o maior coeficiente (em valor absoluto)
- 5) Tirar da base o menor $\frac{b_i}{a_{is}}$, $a_{is} > 0$

onde a_{is} são os elementos pertencentes a variável que vai entrar na base.

- 6) Achar uma outra forma canônica para o sistemas de equações, levando em consideração os passos 4 e 5.
- 7) Volte ao passo 2.

Na aplicação do método simplex para se chegar a solução ótima do modelo podemos utilizar quadros a fim de simplificar os cálculos algébricos do problema.