

MathSci<sup>®</sup>**FILE DESCRIPTION**

**MathSci<sup>®</sup>**, produced by the American Mathematical Society (AMS), provides comprehensive coverage of the world's literature on mathematics, statistics, computer science and their applications in a wide range of disciplines, including operations research, econometrics, engineering, physics, biology, and many other related fields. Coverage is international, with nearly one third of the documents indexed originally published in languages other than English.

MathSci consists of six subfiles: *Mathematical Reviews* (MR), 1940-present; *Current Mathematical Publications* (CMP), a current awareness index; *Current Index to Statistics* (CIS), 1975-1994; *Index to Statistics and Probability* (TUKEY), a retrospective index to the literature from 1910-1968; *Technical Reports in Computer Science* (STR) 1954-1994; and *STRENS Recreational Mathematics* (SRM).

Abstracts of reviews are included in MR records. The complete Mathematics/Subject Classification System (codes and descriptors) is included in MR, CMP, and TUKEY records. CIS and STR records include assigned Keywords. Mathematical symbols in titles, reviews, and descriptors (except for MR 1973-1984 and STR) are encoded in TeX, a typesetting system for mathematics.

The combined coverage of the six components of MATHSCI includes approximately 600 journals reviewed cover-to-cover, and about 2,500 journals covered selectively. In addition, roughly 60,000 monographs, conference proceedings, theses and technical reports are reviewed annually.

**SUBJECT COVERAGE**

The major subjects covered are mathematics, computer science, statistics, and applications, including:

- Actuarial Science
- Astronomy and Astrophysics
- Biology and Behavioral Sciences
- Classical Thermodynamics and Heat Transfer
- Computer Systems Organization
- Economics
- Fluid Mechanics
- Hardware/Software
- Information and Communication Science
- Mechanics of Particles and Systems
- Mechanics of Solids
- Operational Research
- 

Optics and Electromagnetic Theory

- Quantum Mechanics
- Relativity
- Statistical Physics, Structure of Matter
- Survey Research
- Systems Theory and Control

**TIPS****USE FILE 239**

to find published literature on mathematics, statistics, and computer science.

**USE SF=**

to find mathematical reviews.

SELECT SF=MR

**USE RANK DE**

to find additional descriptors.

SELECT LOGARITHM?

RANK DE

**DIALOG FILE DATA**

Inclusive Dates: Mathematics 1940 to the present  
Index to Statistics and Probability  
1910-1968  
Current Index to Statistics 1975-1993  
Technical Reports in Computer Science  
1954-1994

Update Frequency:

Monthly (Approximately 6,000 records per update)

File Size: Over 2,028,000 records as of October 2000

**CONTACT**

MATHSCI is produced by the American Mathematical Society. Questions concerning file content should be directed to:

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## SAMPLE RECORD

DIALOG(R)File 239:MathSci(R)

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**AN=** 1371606 MR 90m#90225 CMP 042 815  
**/TI** Parallel bundle-based decomposition for large-scale structured mathematical programming problems.

Supercomputers and large-scale optimization: algorithms, software, applications (Minneapolis, MN, 1988).

**AU=, CS=** Medhi, Deepankar (Department of Mathematics, University of Missouri, Kansas City, Missouri, 64110)

Corporate Source Codes: 1-MOKC

**JN=, PY=** Annals of Operations Research, 1990, 22, no. 1-4,  
**SN=** 101--127. ISSN: 0254-5330

**LA=** Language: English

**DT=** Document Type: Journal

**SF=** Subfile: MR (Mathematical Reviews) AMS

**RL=** Abstract Length: MEDIUM (15 lines)

**/AB** Summary: ``We present parallel bundle-based decomposition algorithms to solve a class of structured large-scale convex optimization problems. An example in this class of problems is the block-angular linear programming problem. By dualizing, we transform the original problem to an unconstrained nonsmooth concave optimization problem which is in turn solved by using a modified bundle method. Further, this dual problem consists of a collection of smaller independent subproblems which give rise to the parallel algorithms. We discuss the implementation on the CRYSTAL multi-computer. Finally, we present computational experience with block-angular linear programming problems and observe that more than 70% efficiency can be obtained using up to eleven processors for one group of test problems, and more than 60% efficiency can be obtained for relatively smaller problems using up to five processors for another group of problems.''

{For the entire collection see MR 90j:90079}.

**RE=** Reviewer: Summary

**RT=** Type of Abstract: Abstract

**XN=, XP=** Proceedings Reference: 90j#90079; 042 809

**DC=, /DE** Descriptors: \*90C25 -Economics, operations research, programming, games-Mathematical programming (For papers emphasizing calculus of variations or involving abstract spaces, see 49Dxx. For numerical methods, see 65K05)-Convex programming ; 90C06 -Economics, operations research, programming, games-Mathematical programming (For papers emphasizing calculus of variations or involving abstract spaces, see 49Dxx. For numerical methods, see 65K05)-Large scale linear programming

## SEARCH OPTIONS

## BASIC INDEX

SEARCH SUFFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
—	—	All Basic Index Fields	Word	S PARALLEL(W)BUNDLE
/AB	AB	Abstract or Review <sup>1</sup>	Word	S CRYSTAL/AB
/DE	DE	Descriptor <sup>2,3</sup>	Word & Phrase	S ECONOMIC(W)OPERATIONS/DE S ECONOMIC(S, OPERATIONS?/DE
/ID	ID	Keyword <sup>4</sup>	Word & Phrase	S LIKE?(W)RATIO/ID S LIKELIHOOD RATIO/ID
/NT	NT	Note	Word	S SUPERCOMPUTERS/NT
/TI	TI	Title	Word	S PARALLEL(W)BUNDLE/TI

<sup>1</sup> Abstracts Available for approximately 95% of MR records since July 1979.

<sup>4</sup> Present in CIS and STR records.

<sup>2</sup> Also /DE\*, /DF, /DF\*.

<sup>3</sup> Not available for CIS or STR records.

## ADDITIONAL INDEXES

SEARCH PREFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
AB=	—	Abstract Present <sup>1</sup>	Phrase	S AB=ABSTRACT
—	AN	DIALOG Accession Number		
AN=	AN	MATHSCI Record Number <sup>5</sup>	Phrase	S AN=90M#90225 S AN=2000M#90225
AU=	AU	Author	Phrase	S AU=MEDHI, D?
BN=	BN	International Standard Book Number (ISBN)	Phrase	S BN=968-26-0110-X
CO=	CO	CODEN <sup>3,6</sup>	Phrase	S CO=CMSVAN
CS=	CS	Corporate Source or Author Affiliation <sup>7</sup>	Word	S CS=(UNIV? AND MISSOURI)
DC=	DC	Descriptor Code <sup>3</sup>	Phrase	S DC=90C25
DT=	DT	Document Type	Phrase	S DT=JOURNAL S DT=BOOK REVIEW
JA=	JA	Journal Announcement <sup>3</sup>	Phrase	S JA=90M S JA=2000M
JN=	JN	Journal Name	Phrase	S JN=ANNALS OF OPERATIONS?
LA=	LA	Language	Phrase	S LA=ENGLISH
PU=	PU	Publisher <sup>8</sup>	Word	S PU=(ADDISON(W)WESLEY)
PY=	PY	Publication Year	Phrase	S PY=1989:1990
RE=	RE	Reviewer <sup>9</sup>	Word & Phrase	S RE=(TASMANOV AND H) S RE=TASMANOV?
RL=	RL	Review Length <sup>7,9</sup>	Phrase	S RL=MEDIUM
RT=	RT	Review Type <sup>3,9</sup>	Word	S RT=(REVIEW(W)PENDING)
SE=	SE	Series <sup>3</sup>	Word & Phrase	S SE=AAAS AND SYMPOSI? S SE=AAAS SELECTED SYMPOSI?
SF=	SF	Subfile	Word	S SF=MR
SL=	SL	Summary Language <sup>3</sup>	Word	S SL=(SERBO(W)CROATIAN)
SN=	SN	International Standard Serial Number (ISSN) <sup>3,6</sup>	Phrase	S SN=0254-5330
—	SO	Source Information <sup>10</sup>		
UD=	—	Update	Phrase	S UD=9999
VO=	—	Vendor Number	Phrase	S VO=042815001
XN=	XN	Cross Reference Collection MR Number <sup>8</sup>	Phrase	S XN=90J?90079 S XN=2000J?90079
XP=	XP	Cross Reference Paper MR Number <sup>8</sup>	Phrase	S XP=042 809

<sup>5</sup> CMP, CIS, TUKEY, and STR subfile initials must precede paper number.

<sup>8</sup> Available for books and conferences only.

<sup>6</sup> Available for MR records since January 1983.

<sup>9</sup> Available for MR records only.

<sup>7</sup> Available for MR and STR records since January 1985.

<sup>10</sup> Display includes Journal Name, Volume, Issue, Pagination, and Publication Date. Publisher is included for books and conferences.

**SPECIAL FEATURES**

For command descriptions, enter HELP LIMIT, HELP SORT, HELP RANK, HELP DUP online.

<b>LIMIT</b>	/ENG -- English Language /MAJ -- Major Descriptor <sup>3</sup> /NONENG -- Non-English Language /YYYY -- Publication Year	S S6/ENG S S3/MAJ S S6/NONENG S S5/1988
<b>SORT</b>	<b>AU, JN, PY, TI</b>	SORT S5/ALL/AU PRINT S6/5/1-102/JN/PY,D
<b>RANK</b>	All phrase- and numeric-indexed fields in the Additional Indexes can be ranked. Other RANK codes include: DE, ID	RANK DE RANK AU S4
<b>RD, ID</b>	Remove duplicates (RD) or identify duplicates (ID,IDO).	RD S5

**PREDEFINED FORMAT OPTIONS**

NO.	DIALOGWEB FORMAT	RECORD CONTENT
1	--	DIALOG Accession Number
2	--	Full Record except Abstract
3	Medium	Bibliographic Citation
4	--	Full Record with Tagged Fields <sup>1</sup>
5	--	Full Record <sup>1</sup>
6	Short	Title and Publication Year
7	Long	Full Record except Indexing <sup>1</sup>
8	Free	Title, Indexing, and Publication Year
9	Full	Full Record <sup>1</sup>
K	--	KWIC (Key Word In Context) displays a window of text; may be used alone or with other formats

**OTHER OUTPUT OPTIONS**

For an explanation, enter HELP TYPE, HELP UDF, HELP TAG online.

<b>USER DEFINED FORMATS</b>	Display codes listed in the Search Options tables can be used to customize output.	TYPE S3/AU,TI,SO/1-5
<b>TAG</b>	Output can be displayed with tags identifying each display field.	TYPE S2/AN,JN,PY/1-5 TAG
<b>DIRECT RECORD ACCESS</b>	If the accession number of a specific record is known, it can be used to display the record directly.	TYPE 1371606/7 DISPLAY 1773126/AN,JN,PY PRINT 1645521/3

**FOR ONLINE HELP:**

See HELP FIELDS 239 for searchable fields; HELP FORMAT 239 for output formats; HELP LIMIT 239 for limits; HELP RATES 239 for cost information; HELP SORT 239 for sorts.