

### **Mathematical Reviews on the Web**

# **Guiding you through the literature of mathematics**



### www.ams.org/mathscinet/



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### **AMERICAN MATHEMATICAL SOCIETY**

### *Mathematical Reviews*: Some history, some background

### What do you think of when you hear the words "*Mathematical Reviews*"?

When they hear the phrase *Mathematical Reviews*, many people immediately think of the classic orange paper journal; many others today think of the Web-based product MathSciNet, while others may think of MathSci Disc or MathSci Online. All these products are generated from a single, carefully constructed database of bibliographic information and reviews covering the world's mathematical literature of the past 60 years. That database is assembled in the Ann Arbor offices of the

Current

Mathematical

Publications



Otto Neugebauer

American Mathematical Society, and making it available to the mathematical community in its many forms is one of the key publishing activities of the entire Society. These opening pages will give you some idea of how *Mathematical Reviews* (MR) has developed from its founding in 1940 into the complex operation it is today.

In 1931, the reviewing journal *Zentralblatt für Mathematik und ihre Grenzgebiete* (Zbl) was established in Germany with Otto Neugebauer as editor. During the 1930s, as a consequence of German National Socialism, an increasing number of mathematicians were barred from reviewing for Zbl. In response to this situation, in the late 1930s, the AMS undertook the sponsorship of a new international reviewing journal, *Mathematical Reviews*, and appointed Neugebauer (who by then had accepted an appointment at Brown University) as its first editor.

The first issue appeared in January 1940; it had 32 pages and 176 reviews. Initially, the staff consisted of Neugebauer, W. Feller, and two others, but the journal always relied on the volunteer services of distinguished mathematicians to write the reviews. The list of reviewers in the first issue reads like a *Who's Who* of US mathematics and also includes distinguished mathematicians from elsewhere. The initial budget was \$20,000 (but considerably less was spent) and the subscription price was \$13.

Over the next 60 years, *Mathematical Reviews* grew dramatically (see page 4). There was a 25-fold increase in the annual number of reviews. The 3-person editorial board, which began work in 1942, grew to a 6-person board today. And the original 4-person staff became a

staff of 70 in the Ann Arbor office, as well as many others in the Providence





Michigan Union Brewing Co., now home of the Mathematical Reviews offices.

office who work on development and distribution. There are over 10,000 mathematicians around the world who are reviewers for MR.

The editorial office was initially at Brown University in Providence, Rhode Island, but moved to the nearby AMS

office in 1951 when the AMS moved from New York to Providence. Since 1965, the editorial office has been in Ann Arbor, in several different locations, including its present home in a suitably colored orange brick building, built as the Michigan Union Brewery in 1902.

### First-generation production methods and subsidiary products

In the early days, much of the production was done by hand. As MR grew, keeping track of reviewers, what they had in hand, and the progress of reviews from receipt of the original to publication of the review was done with card files.

From quite early on, subsidiary products were offered, mostly as an offshoot of the production of the MR journal. As the number of MR volumes grew, the need for cumulative indexes to search the growing number of reviews became apparent. The first such index was an author index covering the 1940–59 volumes of MR, produced in 1961. Later cumulative indexes were published covering the periods 1960–64, 1965–72, 1973–79, and 1980–84. Cumulative subject indexes have also appeared.

The current awareness journal *Contents of Contemporary Mathematical Journals*, founded in 1969, was a biweekly that consisted of facsimiles of tables of contents from recently received journal issues together with a listing of the authors and their addresses. In mid-1974 the format changed: the contents now consisted of author and subject indexes with full bibliographic information for each item. In 1975, to reflect the new format, the name changed to *Current Mathematical Publications* (CMP), a journal which continues today as an early awareness journal.



Brewery wagon



### **AMERICAN MATHEMATICAL SOCIETY**

### The move to computers

The bibliographic data for items in MR and CMP appeared several times: with the review, in various indexes, and in MR card files. Initially, ditto sheets were

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Staff of Ann Arbor Brewery, 1936

In 1934, the Ann Arbor Brewery began operation at the facility at 416 Fourth Street. Brewing is a complicated process which brings together ingredients from diverse geographical areas and which requires careful attention to details. used to save typing the same information multiple times, but clearly MR was an ideal candidate for computerization. The huge task of converting from card files to electronic storage of structured information on computers was started in the mid 1970s. Several generations of production databases have been used—housed first on a mainframe at the University of Michigan, then at the AMS headquarters in Providence (connected to MR by a telephone line), and since 1991 at the MR office in Ann Arbor.



The staff in Ann Arbor, MI who maintain and develop the MR Database.

### **Electronic products**

For its first 40 years, the traditional hot-lead method was used for typesetting the MR journal. From 1980 on, however, both the bibliographic information and the review texts have been created and stored in electronic format. The 1973–79 cumulative index was produced from an electronic bibliographic file in the early 1980s. This, together with the ongoing current production, formed the backbone of the



first electronic MR-related product, MathFile, which was released in 1982. Over the next 18 years, efforts were concentrated on electronic products. MathSci Disc first appeared in 1989, and MathSciNet went online in 1996. Now in 1999, the full MR data from 1940 is available in multiple electronic formats, with MathSciNet representing the best access ever. To accomplish this, the older data was recreated in electronic format—first the bibliographic data for 1959–72, then the bibliographic data for 1940–58, and finally the reviews for 1940–79. Every year MathSciNet incorporates changes and new features that make accessing the database easier and more effective.

### The production process today

As the MR database has expanded in size (see graph on page 4) and the number of products has grown, so has the complexity of the operation needed to generate them. But the basic underlying production process has remained the same:

*Acquisition*: each year, over 10,000 journal issues, monographs, and collections are acquired from over 1,000 sources.

*Selection*: the editors scan over 100,000 items (journal articles, proceedings articles, and monographs) and select about 65,000 for coverage.

*Bibliographic data entered*: each working day, over 260 new items are entered into the database.



*Review processing:* reviews are copy-edited and edited and have references checked and put in uniform format; they are keyboarded (if necessary), proof-read, and corrected.

*Generating the paper issue*: monthly, the reviews that are ready are collected into an issue, paginated, and scanned one last time for errors.

**MathSci<sup>®</sup>** *format:* files of data in MathSci format are created regularly for MathSciNet, MathSci Disc, and MathSci Online.

**Development:** throughout the year, staff continues work on development of the next version of MathSciNet, improving it and accommodating changes in technology.

The entire AMS staff takes great pride in the high quality of the MR Database and the related products as we step into the twenty-first century.

If you would like to read more about the history of *Mathematical Reviews*, two excellent articles can be found in:

□ [1] PDF 90i:01060 Pitcher, Everett American Mathematical Society centennial publications. Vol. I. A history of the second fifty years, American Mathematical Society, 1939--1988. American Mathematical Society, Providence, RI, 1988. viii+346 pp. ISBN: 0-8218-0125-2 (Reviewer: Albert C. Lewis) 01A74 (01A60 01A80)

[2] PDF <u>1 435 207</u> Jackson, Allyn Chinese acrobatics, an old-time brewery, and the "much needed gap": the life of Mathematical Reviews. <u>Notices Amer. Math. Soc.</u> 44 (1997), no. 3, 330--337. <u>01A74 (01A80)</u> To Journal

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1999 *Mathematical Reviews* Editorial Committee

*Front Row* (l-r): Jean-Louis Loday, Hugh L. Montgomery, Yuji Ito

Second Row (l-r): Jon L. Alperin, Clarence Wilkerson, Joyce R. McLaughlin



# What is in the MR Database?

### **Mathematical Reviews**



There is an enormous amount of information in the MR Database. In the early days, of course, this information was strictly in the form of the paper issues of Mathematical Reviews. Now the information is held in an electronic database. This database can be accessed in a number of ways: through the traditional paper Mathematical Reviews issues, through the MathSciNet Web interface, and through MathSci Disc from SilverPlatter<sup>®</sup>. This booklet is primarily concerned with access through MathSciNet, but you should realize that each form of access is a different window on the same set of information. As a relational database, the MR Database has the capability of establishing connections between data items in many ways. Some of the information in the database is in the form of pointers to other

information in the database. It would take a document much larger than this booklet to describe in detail the complete contents of the MR Database. Here we give an overview.

### Bibliographic information

The MR Database contains all the information that you would expect to put in the bibliography of your paper, together with other useful information:

- Author information
  - Name variations
  - Institution of author as listed on publication
  - All the other publications by the author
- Title
  - English translations of titles
  - Subsidiary title information
- Document type: journal, book, collection
- Pages on which the item appears
- · Year of publication
- Publisher information
  - Address
  - Web site, if available

#### • Journal information

- Title
- Publisher
- Frequency of publication
- Links to papers published in the journal and indexed in the MR Database

<sup>®</sup> SilverPlatter is a registered trademark of SilverPlatter International N.V.

- ISSN, ISBN, CODEN (as appropriate)
- Historical information

#### • Institution information

- Name and code for institution
- Department names
- Address

#### • Reviews

### Review

Signed reviews are the namesake of *Mathematical Reviews*. As you can see, the MR Database consists of far more than reviews, but these are the heart of the mission of MR. The reviews are written by mathematicians around the world, each with expertise in the area of the item under review. Your access to this collection of reviews can be thought of as forming the ultimate virtual university, in which you can at any time stroll down the hall and ask a group of colleagues what is happening in some area of mathematics. And—because a reviewer may refer to earlier items indexed in MR, and those references correspond to links in the database—you are consulting with a web of colleagues over time as well.

#### Index-only items

*Mathematical Reviews* currently enters over 50,000 new reviews each year into its ever-growing database. Although the number of papers in all mathematical sciences is considerably larger, this number represents about the limit of what the staff and worldwide reviewers of MR can reasonably accomplish in a timely and cost-effective way. In fact, the total number of items entered into the MR Database each year is around 66,000. We can do this by entering some items "index only", which is to say that everything described here, except a review, is entered for those items. In every other way these items are treated the same as those with a review. Deciding which papers to review and which to index is a difficult job for the editors.

### Reviewer information

Sum\_Lan

- Name of reviewer
- Other items reviewed by the reviewer
- Papers and books published by the reviewer

### • Mathematics Subject Classification (MSC)

The Mathematics Subject Classification (MSC) has been developed since 1940 as a way of organizing mathematical literature by subject area. The most current revision of the scheme is MSC2000. The system is used to categorize items covered in the MR Database. See pages 9, 11 and 19 for more details on how you can use the MSC as a tool to find items in your area of interest.

- Links to original articles
- Links to other MR entries

#### Citations

If the review of an item mentions previous items in the MR Database, there are new forward links constructed from each previous item to the new item. This means that an item anywhere in the database can have forward links to items that mention it in their review text.

### How do I get my hands on all this information?

At the top of the MathSciNet search screens, and throughout MathSciNet, are 9 buttons-the Toolbar-offering a clearinghouse of activities that you might perform. Let's look at some questions that might inspire you to push each of the 9 buttons.

AMERICAN MATHEM	atical society CINGT Ma	thematical Reviews on the	e Web		
Full Search Basic Search	Search Author Database Search Journals Database		Browse Cur Browse Curr	rrent Books ent Journals	
Search CML	Search	Search MSC by Keyword		by MSC	
		Q: Was there a pape around 1981?	er on group theor	y by Jones that wa	as published
		Full Search combining search fi	Full S and al elds. It is describ	earch is the defat lows the greatest f eed in detail on pa	ult search in MathSciNet, flexibility in specifying and ges 10 through 13.
		Q: Can I get a list o	f joint papers by	Anderson and Bel	1?
		Basic Searcl	n You m majori	hay find the Basic ty of your initial s	c Search sufficient for the searches. Since there is only
Current Sites Providence, RI USA Other Sites: Houston, TX USA	Basic Search Start Search Ck	MSN-Sup	port Help	visual distracti have selected typed your sea	to nil in, there is less on on the page. After you the search field and have rch criteria in the text field
MathSciNet 5.0 Released 9/3/1999	Author	c5 c10 ∉20 c50 c100 c	1000(max)	diately begins t Boolean conr criteria, as long	the search. You can still use nectives to combine the g as the field is the same.

#### Q: How can I contact J. Jones, who is at Sussex State University?

	Search CML	You n would
Search the CML		
HELP	Start Search Clear Screen	
Last Name:		
First Name: Position:		
State: Country:		
Member Organization:   AMS  MAA  SI	IAM 🗖 AMATYC	
Institution:		
Institution State: Institution Country:		
	Start Search Clear Screen	

nay find as you work with MathSciNet that you like to get in touch with an author whose work

is of interest to you. You might search the Combined Membership List (CML). If the author is a member of the American Mathematical Society, or of the American Mathematical Association of Two-Year Colleges, or of the Mathematical Association of America, or of the Society for Industrial and Applied Mathematics, there will be information in the CML. Rather than looking for your paper copy, click on this button to get immediate access to the Web interface on e-MATH, where you may well find an email address, for example.

#### Q: How do I find all papers by the S. Smith who works in relativity theory?

#### **Search Author Database**

The author database that MR has built up over the years is important enough to

merit a more complete discussion on pages 14 and 15. It is important to you as a user to be aware of the difference between using Search Author Database and filling in a particular author name, with or without the use of the wildcard symbol (\*), in either the Full Search or the Basic Search.

### Q: Who publishes the Ann Arbor J. Math.? And when did it start publication?

#### Search Journals Database

You may want to investigate papers published in a particular journal. Click

this button and you can find complete bibliographic information, both current and historical, for a particular journal. This search tool is discussed in detail on page 18.

#### Q: How can I find all papers on ordinal notations?

Search MSC by Keyword

Each Mathematics Subject Classification (MSC) consists of a code (of up to 5

numbers, letters, and punctuation symbols) together with a description. Items are assigned a primary classification and possibly one or more secondary classifications. Use this search to explore the structure of the MSC and to find the papers assigned particular classifications.

#### Q: What books have been published recently in combinatorics?

#### **Browse Current Books**

View a list of books from the current issue of Current Mathematical Publications or

the current issue of Mathematical Reviews (the most current online issues). From the CMP list, you can link to a book's listing in MathSciNet. This can serve as your "first alert" system for new books as they come out. Although they will typically not yet have reviews in the database, they will have complete

bibliographic information. You may get the list of all the books in the current CMP or MR, or you may select а 2-digit MSC classification and browse only those titles.

Q: Has there been an issue of the J. Excellent Math. published recently, and if so, what articles does it include?

#### Browse Current Journals

Select a journal represented in one of the two most recent issues of CMP and browse the items indexed in CMP. This mimics

going to the library and browsing the most recent issues of your favorite journals. You may elect to browse the electronic journals, which in many cases will give you immediate access to the original document.

#### Q: What's been published most recently in operator theory (Section 47)?

#### Browse by MSC

Select a 2-digit, 3-digit or full 5-digit classification and browse the items in one of

the two most recent issues of CMP or one of the two most recent issues of MR that are assigned that classification. This mimics turning directly to your sections of interest in the paper MR and CMP issues to see what has been reviewed or listed there.



### Doing a Full Search

**Full Search** 

a good bit of

Many users will find themselves doing a the time. It will be useful to consider the various fields that can be filled in from the Full Search screen and how these fields connect to each other. The Full Search screen presents a combination of pull-down menus, buttons to click, and text fields to type in. Search results display as items, or headlines.



### The ten search criteria

The text field boxes do string searches according to the criteria selected. In most cases strings match only on full words, but the wildcard symbol (\*) gives you flexibility. Normally the words within a field box are considered to be adjacent to each other, but Booleans (see page 12) and other proximity operators (see page 13) allow more flexibility.

Author: An author of an item in the MR Database; an editor of a book or journal issue of collected papers; an individual associated by MR with an item (e.g., godel, k\* in the Author field will yield the following items, among others, in the MR Database: Festschrifte for Gödel, obituaries of Gödel, items commenting on Gödel's work). While you might well search for all the papers connected with a particular author by filling in this field, on page 14 you will see that there are reasons to approach that search in a different way.

*Title*: Any word or collection of words that might be found in the title of the set of items you are interested in.

*Review Text:* Any word or collection of words that might be found in the text of the review, for items that have reviews.

Journal: Any word or words that might form part of the title of a journal, or some or all of a valid MR journal abbreviation.

*Institution Code*: The institution code of an author identifies the institution address listed for the author in a given book or article; it simplifies searches based on institutions.

Series: Any word or words that might form part of the title of a series.

*Classification*: Using the MSC system of classifying mathematical research, this could be a 2-digit code or a 3-digit code (i.e., 2 decimal digits and a letter) or a full 5-digit classification code. All items receive a primary classification. Many receive one or more secondary classifications.

*MR Number*: The items with reviews in the MR Database are given MR numbers, the identification numbers assigned to items in the paper MR. Beginning in 1980, MR numbers are connected to the year and month of the publication of an issue of the paper *Mathematical Reviews* and to the 2-digit code of the primary Subject Classification of the item.

*Reviewer:* Some or all of the name of the person who wrote the review of an item.

**Anywhere:** A very powerful search criterion! The Anywhere field allows you to search all the other 9 fields simultaneously. It even searches through fields not directly accessible as single fields in MathSciNet. Although *keyword* has specialized meanings in various research communities, many users will find it helpful to think of the word *Anywhere* (in the context of a search) as being the word *keyword*. See page 12 for more about the Anywhere field.

### 3 more sets of search criteria

*Select one*: This set has five radio buttons which allow you to narrow the range of search chronologically. For both the first two buttons, "current" is understood as "when the data is loaded in the database," which is earlier than "when a paper publication 'hits the streets'." The default selection is the entire database. You might choose to

view the database in 5-year blocks corresponding to the paper *Mathematical Reviews*. Or you might choose to narrow your search according to the nominal publication date of the items being searched.

**Document type:** Document type has four radio buttons. These allow you to narrow the search according to one of 3 document types—books, journals, and proceedings. The default is *All*, which doesn't narrow the search.

*Headlines per page*: Headlines per page has six radio buttons. You can select how many headlines will be presented on a page in the search result screens. *Headline* is the phrase used in MathSciNet to describe the basic bibliographic information about a single item that results from a search.

□ [5] **DEF** <u>51 #8378 Henrici, Peter</u> Applied and computational complex analysis. Volume 1: Power series---integration---conformal mapping---location of zeros. Pure and Applied Mathematics. Wiley-Interscience [John Wiley & Sons], New York-London-Sydney, 1974. xv+682 pp. (Reviewer: M. Marden) <u>30-02 (65E05)</u>

No matter which number of headlines per page you select, if the total number of headlines returned by a search is greater, you will be given the opportunity to cycle through blocks of headlines, where the blocks contain the number of head-

lines per page you originally selected, or to retrieve the whole list. In this example you can cycle through 6461 search result items, 20 at a time (but we would recommend clicking All Items!).



Items: 21 - 40 of 6461 <u>All Items: 1 - 6461</u>



George Boole

Author	• birkhoff	
or 💽		
Author	clifford, a*	
and 💌		X
Title	- semigroup	
not 🗾		
Review Text	🗾 universal 🔔	ノ

### **AMERICAN MATHEMATICAL SOCIETY**

### **Boolean connectives**

You may never find the need to think deeply about how all the fields are logically connected, so feel free to ignore this discussion until the need arises. The text field boxes are connected by one of the selected Boolean connectives: AND, OR, and NOT—where NOT really means AND NOT. All of the choices in the 3 sets of criteria below the text field boxes are understood to be joined by AND connectives, and the combination of these three criteria is joined to the combination containing the choice(s) in the text field boxes with another AND. If you select one of the last 3 of the 5 radio buttons (under **Select one**) you must select a value for at least one of the fields in the text field boxes. In addition to these connectives, you may also insert your own connectives within any of the text fields: *and, or, not.* The entries in each text box can be thought of as surrounded by parentheses. The top level combination of ingredients is understood to be without parentheses, with the connectives in the precedence: NOT, AND, OR, where the "NOT" part of "AND NOT" is evaluated first. Confusing? Sorry. The saving grace is that once you invoke the search, a fully parenthesized search string is presented at the top of the result window. So

if you like to learn by the empirical method, you can use this string to help. Here is an example showing the parentheses.

Matches for: Author-birkhoff OR (Author-clifford, a\* AND Title-semigroup NOT Review Text-universal)

1 Items: 1 - 20 of 312 All Items: 1 - 312

In this example, you might have thought you were choosing one or the other author possibility (we have been careless with *which* Birkhoff or *which* A\*

Clifford in this example—see the discussion on pages 14 and 15) and *semigroup* in the title and *universal* not in the review text. You were right about the title part, but not about the author part. This search produced *all* papers authored by anyone named Birkhoff, together with certain other papers authored by anyone named A\* Clifford. This is because the AND and NOT have precedence over the OR. The picture above does not show the radio button selections, but as we used the defaults, the search was through the entire database, in all document types, with the results of the search presented in 20 headlines per screen.

### What's the "Anywhere" field?

The Anywhere criterion is quite powerful. Anywhere is the ultimate wildcard in searching, because it allows you to search for all kinds of things. Use Anywhere when you have a search word in mind, but aren't sure where it might appear in the database. At the top of page 13 is a search that illustrates using lots of search criteria, among them the Anywhere field.

This search will find all articles in which P\* Erdos is an author, with the word *number* in the title, for which the primary classification or a secondary classification begins with the digits 05 (Combinatorics since 1940), where the word *birthday* appears in any of the possible fields of the database (including those that cannot be directly seen on MathSciNet), where the year of publication of the original piece was 1979 or earlier, and where that piece could be a book or in a journal or in a proceedings. If there are any items satisfying all these criteria, they will be displayed, 20 headlines at a time, on a results screen.



### Even more search possibilities

There are also proximity operators ADJ, ADJ1, ADJ2, etc., which give some flexibility in searching for phrases, where the connecting words may vary, but you want the *number* of intervening words to be the same. The ADJ operators count the number of words, *any* words, that are allowed to intervene between the words on either side of the ADJ operator. ADJ and ADJ1 mean the same thing: *no* words are allowed between, which is the default. So *prime adj1 decomposition* would yield the same results as *prime decomposition*. ADJ2 means that one word or no words are allowed between, so that *prime adj2 decomposition* in the title returns *prime ideal decomposition*, *prime tree decomposition*, as well as *prime decomposition*. ADJ3 means that two words, one word, or no words are allowed between. Get the idea? One reason to use the ADJ operators is that search strings involving explicit prepositions and/or articles such as *but*, *of*, *a*, or *the* may result in long search times.



**Basic Search** 

Start Search



Clear Streen

### How do I know which John Smith?

Frequently you will search in MathSciNet based on the name of an author. But every culture has its *John Smiths*—names that are very common. *Mathematical Reviews* has been working on this problem since its inception and through careful procedures and occasional detective work has made it possible for you to be very confident that you are finding the *John Smith* you have in mind. Contained within the database is a (hidden) mechanism to identify authors uniquely—author identification.

As an example, suppose you are interested in all of the publications of Kenneth A. Ross that are in the MR Database. You might start in the Basic Search screen, filling in the Author field in this way. The result would be:



[2] IIII 995:0001 Ress, Kenneth A.; Wright, Charles R. E. Matematyka dyskretna. (Polish) [Discrete mathematics] Translated from the 1992 third English edition by E. Sepko-Ouzicka, W. Guzicki and P. Zakrzewski Wydrawrietwo Neukowe PWN, Warzaw, 1996. 899 pp. ISEN: 83-01-12129-7 <u>00-01 (05-01 68-01)</u>

MSN-Support

Help

It is tempting to say that 53 articles by Kenneth A. Ross (who published a paper in the *Pacific Journal of Mathematics* in 1997 together with George Willis) appear in the MR Database. In fact, this is not the case. There are two different people named Kenneth A. Ross who have

published mathematical papers over the years. Although their middle names are, in fact, different, both have published using the middle initial A. How can we distinguish one from the other? This might depend on why we made the search in the first place. We might be interested in Riemann sums and know that a Kenneth A. Ross had published in this area and be interested in what else *that* Kenneth A.



[13] 201 42 07828 Hewitt, E.; Ross, K. A. The Tannaka-Kre'u'i n duality theorems. *Ber. Deutsch. Math. Ferent.* 71 1969 61–83. (Reviewer: J. Ernest) 22.60 Ross had published. We could then click on the underlined Ross, Kenneth A. in the first headline and get the results above. These 52 headlines, through the miracle of MR author identification, are "certified"

to belong to the same Kenneth A. Ross who published the first paper in the first search result screen. In fact, the 53 headlines in the original search do not all correspond to the same Kenneth A. Ross of the first headline. Only 43 of them do. Of the 52 items in the second search, 9 did not appear in the first search. That is because the Kenneth A. Ross we are interested in also published under the name K. A. Ross, K. Ross, and Kenneth Ross; our original string search did not find these. The 2 items above can be seen when we look at more of the previous headline list.

### **Search Author Database** on the MathSciNet toolbar is a different, and in

many ways, a better approach to this search. Beginning with the same search string as before we get:

From this we can now see that there are exactly two authors in the MR Database who might write papers under the name "Kenneth A. Ross." The radio buttons list names that have been selected in the database to remove ambiguities, even though they may not have ever been used by an author. The list shows us name strings associated to each of the two authors by the database. We can investigate the publications of each by clicking the appropriate radio button and "View All Items". Moreover, we can even combine this with a Full Search, specifying other search criteria, but always being assured that the Kenneth A. Ross we get is the one we are interested in. For example, we might be interested in references in the work of Kenneth A. Ross to *monotonic* functions. Using the two entries given by Search Author Database and using "monotonic" in the Anywhere field we get:

for **Kenneth Allen Ross**, who has published papers contained in the MR Database using various different name strings (but *not*, as it happens, Kenneth Allen Ross), and

for **Kenneth Andrew Ross**, who has published papers under Kenneth A. Ross (but *not*, as it happens, Kenneth Andrew Ross), respectively. In each case, you can be confident that all the items that you get are by the same person.

*Mathematical Reviews* is very proud of the work throughout 60 years of history to make this identification of authorship possible. In the early days, when MR was a paper publication only, the desire for accurate author indexes propelled the effort (on 3x5 cards in those days) to identify authors correctly. That work continues today and although the electronic tools are more sophisticated, the basic work remains remarkably similar: analyzing authors and institutions and previous papers and joint authors and, finally, using paper mail and email, to ascribe authorship definitively.





Will the *real* Kenneth A. Ross please stand up?

# Full item from headline

Once you have selected a particular item from a search by clicking on its MR or CMP number, you can link in a variety of directions from that item.



This will allow you to gain access to all 56 items authored by Kenneth Ribet, with author identification assuring you that these are all the *same* Kenneth Ribet.

where you find full bibliographic information about the journal Inventiones Mathematicae. For this journal you can link to a home page, offering further information. You can list all the issues of the journal in the database by clicking on the button, allowing you to browse other papers occurring in the same journal.

Other possibilities: links from the original review to other papers that the reviewer cited in the review; a link to the original document in selective cases, particularly in the case of electronic journals.

Inventiones Mathematicae Springer, Heidelberger Platz 3, Postf. 311340, 14197 Berlin, Germany, Springer, Journal Fulfillment Serv. Dept., P.O. Box 2485, Secaucus NJ 07096-2485. ISSN: 0020-9910. CODEN: INVMBH. 12 issues/4 vols./yr. Indexed cover-to-cover Status: Current http://link.springer.de/link/service/journals/00222/index.htm

List issues for this journal

### **Formats for viewing items**

An individual item can be retrieved in a variety of formats in addition to the default HTML: PDF, DVI, Postscript, BibTeX, and MR Citation. PDF is a sensible format for viewing items in which the review contains a lot of TeX formatting of mathematical symbols.



The DVI and Postscript formats can also be useful for such viewing, depending on the software installed on your computer. The BibTeX format is a useful system for automating the references in your own publications. Reviewers may find the MR Citation format helpful.

### Search Journals Database

**Search Journals Database** 

search journals Database is a tool for exploring within a particular publication. Suppose you are interested in all the journals that are devoted to some aspect of control theory. You might go to Search Journals Database and begin with the single word *control*.

The result would be ... a LONG list of journal titles. You might want to narrow the search by returning to the Search Journals Database screen and making *control theory* the search criterion, or you might choose to simply browse this list of 63 journals. It should be pointed out that the list is, in some sense, shorter than it looks, because of the attribute *Historical* that can be attached to a journal, allowing you to get not just the current bibliographic information, but the information that was correct at the time the paper you are interested in was published. So in the screen below, *Control Cybernet*. is listed twice, but it is really the same journal.

Now that we have headline entries for 63 journals containing the word *Control* in the title, suppose you are interested in *Automatica J. IFAC*.

Matches for: control	MSN-Support	Help
1 - 20 of 63		
[1] <u>Arch. Control Sci.</u> Polish Academy of Sciences. Committee of Auto Control Sciences [Historical]	omatic Control and Robotics. Areb	ives of
[2] <u>Arch. Control Sci.</u> Polish Academy of Sciences. Committee of Auto Control Sciences	omatic Control and Robotics. Arch	ives of
[3] <u>Automat. Control Comput. Sci.</u> Automatic Control and Computer 5 [4] Automat. Control Theory Appl. Automatic Control Theory and Appl.	Sciences [Historical] plications [Historical]	
[5] Automat, Control and Computer Sei, Automatic Control and Comp [6] Automat, Remote Control Automation and Remote Control	uter Sciences [Historical]	
[7] Automatic Control Theory Appl. Automatic Control Theory and Ap [8] Automatica J. IFAC Automatica. A Journal of IFAC, the Internation	pplications [Historical] nal Federation of Automatic Contr	ol
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<ul> <li>[12] <u>Control Cybernet</u>, Polish Academy of Sciences. Systems Research</li> <li>[13] <u>Control Theory Adv. Tech.</u> Control Theory and Advanced Techni</li> </ul>	h Institute. Control and Cybernetic tology [Historical]	s [Historical]

### Automatica J. IFAC

Automatica. A Journal of IFAC, the International Federation of Automatic Control Pergamon, Elsevier Science Ltd., The Boulevard, Langton Ln., Kidlington, Oxford OX5 1GB, England. ISSN: 0005-1098. CODEN: ATCAA9.

12 issues/vol./yr.

Status: Current

List issues for this journal

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Clicking on the underlined title brings you to the screen to the left.

From here you can get to a list of the issues of this journal in the database (basically, the issues after 1985), and then, by selecting a particular issue, to all papers indexed by MR in that issue.

# Search MSC by Keyword

The Mathematics Subject Classification (MSC) is a system of codes, together with descriptions, that is used to classify items in the database by subject area. The MSC has been revised a number of times over the last 60 years to reflect the changing nature of mathematics. As new areas develop and other areas bifurcate, new classifications are needed. The MSC currently in use is MSC2000.

Search MSC by Keyword enables you to find the classification codes, together with the description for each code and the dates for which they were valid, that match either a single word, a phrase, or a (partial) code. Once you have identified a code of interest you can go directly to a listing of the items that have been assigned that code. There are also links to browsable listings of the entire MSC and of the complete set of all classifications from 1940 to the present.

We search for the phrase *diophantine equations*.



Julia Robinson, who did important work on **Diophantine equations.** 

Now you can look for all the papers in a particular 5-digit classification, with a sense as you do so of how the classification you might be interested in fits in with other "nearby" classifications. There have been a number of adjustments to the classification scheme over the years, and you can get some information about those changes here.

Search MSC by Key	word		MSN-Support	Help
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## **Browsing options**

You may be the sort of person who appreciates the serendipity of browsing the mathematical literature. Browsing is one of the newest features of MathSciNet, and it is designed to mimic the experience of glancing through the new journals or new books section of the library.

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Browse Current Books allows you to examine all the books indexed in the most recent issues of Current Mathematical Publications or Mathematical Reviews on MathSciNet. (Typically, these will be more current than the most recent paper copies of Current Mathematical Publications and Mathematical Reviews.)

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Here you have the 78 headlines associated with all the books reviewed in issue 99j of MR. You may choose to narrow your browsing to a particular classification in the MSC.

### Browse Current Journals

allows you to browse all the journal issues with items indexed in the two most recent issues of CMP. On page 18 you will find a description of what you will see for each journal, once you bring up a list of headlines in Browse Current Journals.

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