ADVISOR REVIEWS—STANDARD REVIEW

MathSciNet

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Composite Score: ★★★ 7/8

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Abstract

MathSciNet is a database for mathematics publications, and reviews of these publications. In addition to providing access to math publications and reviews, MathSciNet provides author and journal profiles, citation mapping and counts, and several search options to be able to discover content, authors, and journals. These features provide a lot of value to mathematics researchers, but could be improved with several changes to the search interface. Once a user is able to figure out how to use MathSciNet and all of the features available in the database, it will be a valuable tool.

Pricing Options

Access to MathSciNet requires a subscription, and there are a variety of subscription options for academic and corporate institutions. The 2017 list price is $13,243 but American Mathematical Society institutional and corporate members can subscribe at the rate of $11,136. Consortia pricing rates are also an option. MathSciNet advertises that there are over 120 consortia subscriptions worldwide, allowing 2,000 academic institutions to have access to the database. MathSciNet consortia pricing principles state that the consortia should benefit all users, with no member paying less than the minimum price of $339, and no more of the maximum price of $11,887. Contact the American Mathematical Society for guidance on assignment of consortia fees.

There is also an EBSCO*host* version of MathSciNet, which provides the option to obtain access to mathematics publications and reviews as part of EBSCO*host* packages. The MathSciNet and EBSCO*host* versions have different search functionality and features. This review will focus on the MathSciNet search interface.

There are several free MathSciNet tools available to any user, including the option to search the Mathematics Subject Classification, current journals and publications, and collaboration distance between two authors.

Product Overview/Description

Starting in 1940, Mathematic Reviews began publishing reviews of the current literature. The print *Mathematic Reviews* publication developed into the MathSciNet database in the late 1990s, and since then has provided access to both the original mathematical books, journals, and proceedings and the reviews written for those original publications. Over 80,000 reviews, written by approximately 19,000 active professional mathematician reviewers, are added to the database each year. To date, MathSciNet includes over 3.3 million publications, including current and historical mathematical science literature and literature from other disciplines that contain new mathematical results or give novel and interesting applications of known mathematics. Additionally, MathSciNet provides access to the mathematical subject classification (MSC), maps and counts citations, and provides mathematical journal and author profiles. This database is a vital resource for math researchers, professors, experts, and students to access mathematics literature and reviews of that literature. The many features of MathSciNet help users understand the impact and context of mathematics publications.

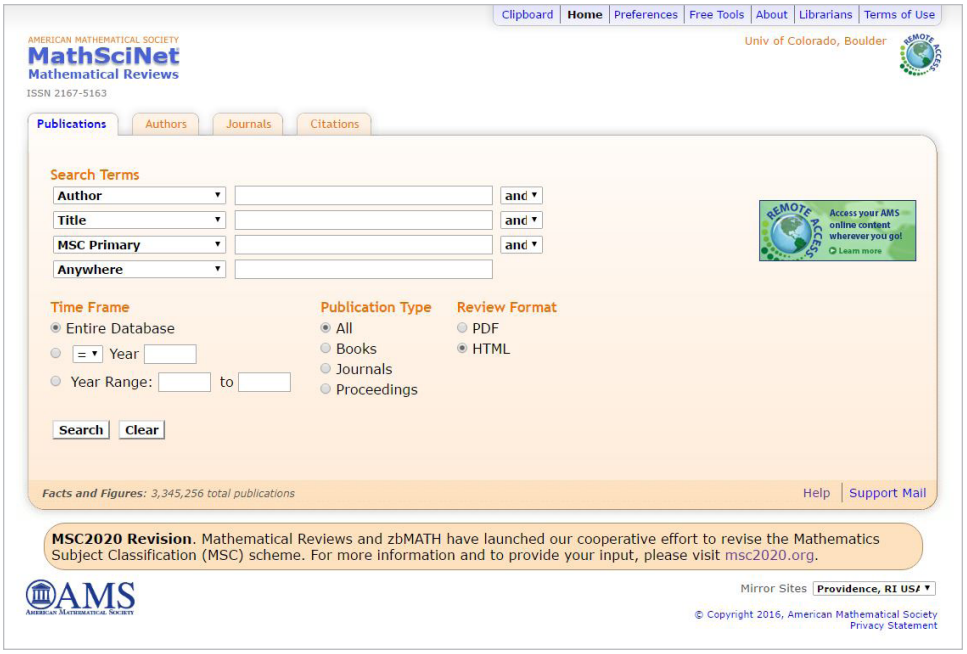

FIGURE 1 MathNetSci Search Interface Page

User Interface/ Navigation/Searching

The MathSciNet search interface has four tabs allowing users to search for publications (to find mathematics papers and other publications), search for authors, search for journals, and search for citations (see Figure 1).

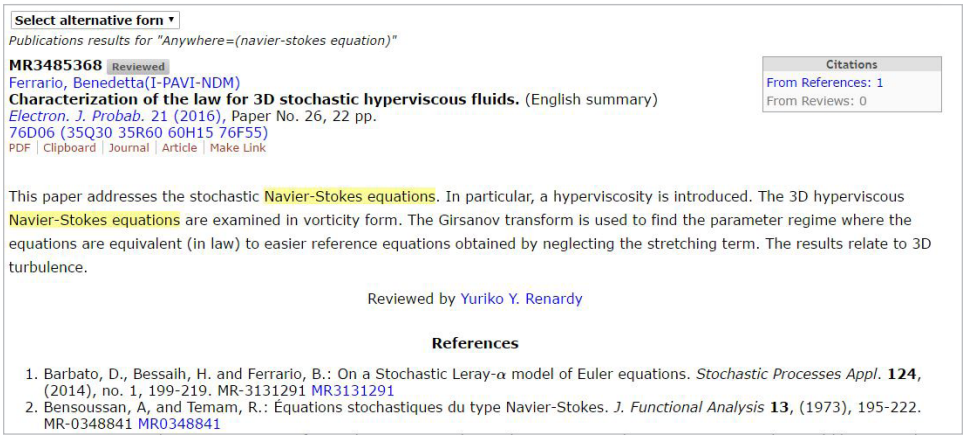

FIGURE 2 **MathNetSci Search Results, Full Record**

The publications search tab has multiple search boxes, and the ability to search within a number of fields, including author, title, review, journal, institution, series, Mathematical Subject Classification (MSC), Mathematical Review (MR) number, reviewer, references, or anywhere (keyword search). The publications search tab also has the ability to limit the search by date and by publication type. Once a publications search is run, the results page lists each publication, starting with the unique MR number for the publication, a badge describing the stage the review is in, complete bibliographic data, and when available, the reviewer's name and the MSC. Some of the bibliographic information may be linked to author or journal profiles. Links for PDF, Clipboard (a feature described in the next section), journal, and article are included. Clicking on the MR number for an individual result will bring up the full record for the publication, including all the features in the results page plus citation counts, reference lists, and the full text of the review (see Figure 2). The citation count will link to a list of the citing publications. The results list or individual results can be batch downloaded as HTML, PDF, or to several reference management tools.

Clicking on the author's name in the results list, or doing an author search on the Author tab from the main search page, will bring up an author profile (see Figure 3). Author profile pages include links to see the author's publications, reviews, their co-authors, and how many times and by whom the author has been cited. MathSciNet is integrated with the Mathematics Genealogy Project (MGP). For authors who have MPG entries, a link to the entry will appear on the author's profile page. You can click on this link to view the MGP profile of the mathematician, which will list the mathematician's adviser, as well as students they advised.

Clicking on the journal title in a result or performing a search on the Journal tab brings up a detail page for the journal. Journal details include the full and abbreviated journal title, changes in journal title (especially useful in this discipline), ISSN, how long the journal has been published, and more. The link for journal at the bottom of the result will lead to the publisher's page for the journal.

The Citation tab search page allows users to search for author citations, journal citations, or for the most highly cited items by subject or by year. An author, subject, or year citation search will list relevant publications in order of citation counts, so researchers can see the most highly cited items for that category (see Figure 4). A journal citation search will list the Mathematical Citation Quotient and the Citation History.

Critical Evaluation

This database requires a steep learning curve. Many features will be unfamiliar to users, and often explanations of features are difficult to locate. However, once the user discovers what each feature does, there are some very useful tools in this database. It provides one place for the mathematics researcher to find all the information

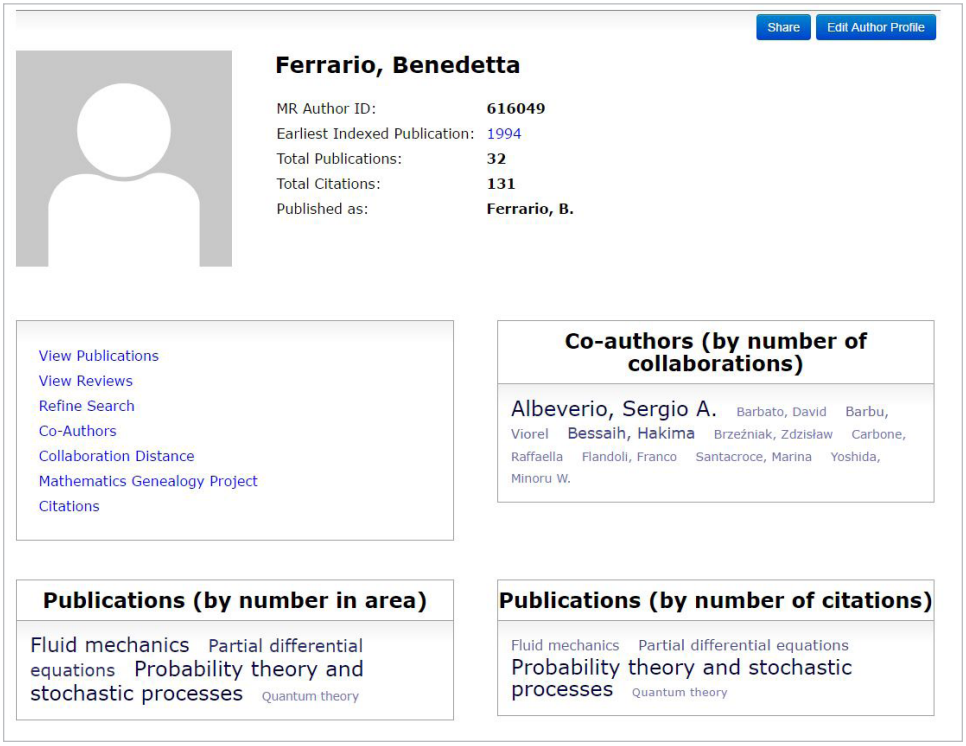

FIGURE 3 **MathNetSci Author Profile**

FIGURE 4 MathNetSci Citation Record Example

they would need, including publications, reviews, author profiles, co-author information, citation counts, detailed journal information, and more. These database features will help researchers find the information they need, and efficiently get to other information that will help provide some context and impact for a mathematical work. For example, researchers exploring a new subject area can use the citation search features to find the most highly cited papers on that subject. If researching a specific author, the co-author feature and Mathematics Genealogy Project integration would help a researcher discover the influences researchers might have on each other's work, or other mathematicians who might write about the topic of interest. In addition, content is excellently indexed to aid discoverability. There are however several ways MathSciNet could be improved in order to help users more easily use the database and all of its valuable features.

MathSciNet uses Mathematics Subject Classification (MSC), which are assigned by *Mathematics Review* editors. This classification system may be very useful to researchers, however the database makes it very difficult to access the classification scheme. Users unfamiliar with the MSC would not be able to learn about it to perform a MSC search from the homepage. The database could be improved by adding features that allowed users to link to or look up the classification, especially at the point where an MSC filtered publication search is conducted. The MSC appears in the bibliographic data for a result, and users unfamiliar with even the existence of the MSC would be confused by the sequence of letters and numbers. When you click on the MSC for an individual result the classification is broken out, so that the user sees what each part of the code means, but this page still does not list a full explanation or link to the complete MSC.

Contact Information

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Phone number(s): (734) 996-5250
Product URL: <http://www.ams.org/mathscinet/index.html>
Producer URL: <http://www.ams.org/home/page>

The marked list and clipboard features seem to be redundant, and neither offers all the features users may want for a saved list feature. To mark items, the user can click in the check box next to the results they are interested in. To see a list of all the items marked, Retrieve Marked just above the results list is clicked. This just pulls up a view of all the items, with no options to export or download just the marked items. (Downloading and exporting features are available on the top of the results page.) Each result also has a clipboard link to place items on a virtual clipboard, however there is a glitch in the page which makes the button to go to the clipboard visible only after items have been placed there and the browser page has been refreshed. However, only the bibliographic information of items on the clipboard is available in the clipboard, not full results. The clipboard does allow citation export. Usage would be improved if the marked item and clipboard features were combined, as neither has all the functionality a user would want, and because having two features that do such similar things is confusing to the user.

The Help page itself, where useful explanations of confusing features exist, was difficult to navigate and use. The link for Help moves—the link is in the lower right on the home page and moves to the upper-right on a search results page. In addition, only the help topics that are most relevant to the page the user was on when they clicked Help appear, not a complete list of topics. There is a link to get to the full Help Index, but this is easy to miss or misunderstand (the term Index is a jargon term). Providing the Help Index along the left side of the page while the user views in-depth help topics based on the page they were viewing might help users find the help topics they need.

Several needed improvements to MathSciNet are coming in January 2017. According to releases from the publisher, these include the ability to change how search results are sorted, the ability to search and filter within the results, autosuggestions, and search alerts. Currently, results are sorted by date newest to oldest, but with the coming enhancements users will be able to choose how to sort results. The enhancement will also include a search box on the results page to allow users to search within the results, and filter the results by author, journal, and year, helping users refine their searches based on the results they receive. Further enhancements announced by MathSciNet include autosuggestions in search boxes, and the ability to set up alerts for saved searches.

Competitive Products

The database zbMath is quite similar in scope and function to MathSciNet, and is the main competitive product. Zentralblatt fur Mathematik was the first publisher of mathematical reviews, but world tensions in the 1930s encouraged the American Mathematical Society to found *Mathematical Reviews* in 1940. Zentralblatt fur Mathematik became

MathSciNet Review Scores Composite: ★★★ 7/8

The maximum number of stars in each category is 5.

Content: ★★★★ 1/2

The content is excellent. This database provides mathematics researchers with a wide scope of current and historical publications and reviews, as well as features such as citation counting and searching, author profiles, journal profiles, and more, in order to provide context and related information.

User Interface/Searchability: ★★★

This database requires a steep learning curve, and will be confusing to users first encountering the database. Help pages could also be improved to further assist users new to all MathSciNet has to offer.

Pricing: ★★★★

Pricing is relatively transparent, with discounts available and flexibility in choosing consortia agreements.

Purchase/Contract Options: ★★★★

The terms and conditions of the contract are in standard language, and allow for unlimited simultaneous users as well as interlibrary borrowing.

the database zbMath, much in the way *Mathematical Reviews* has become MathSciNet. MathSciNet and zbMath together develop and maintain the MSC, and classify their resources according to it. Both resources include historical content dating from the early 1800s to the present. The two databases are comparable in scope, with zbMath including content from about 3,000 journals, and MathSciNet content from about 2,770 journals. Author and journal profiles in both databases include similar content. Both offer citation counts and profiles.

Users can access the Mathematics Subject Classification much more easily with zbMath than they can with MathSciNet. The zbMath homepage includes a tab for the MSC, where users can see the classification and click on the different subjects to find more specific topics. However the MSC is freely available with both tools. The zbMath homepage is similar to the MathSciNet homepage, offering tabs with similar search options. However, there are several features in zbMath not offered by MathSciNet. These include a software search feature allowing searching of a collection of mathematics software publications, and a mathematics formuae search. The software search feature is free to use, so a subscription to the database is not required to use this aspect of zbMath. In addition, zbMath allows users to search the database for free, offering a very limited number of results to users without subscriptions. Subscription prices to zbMath vary by institution size, so it is not possible to compare the cost of these two databases, but libraries can probably expect to pay more for zbMath than for MathSciNet. Mathematics researchers can find the information they would need using one of these databases, a subscription to both is probably not necessary.

All content included in MathSciNet is published literature, in contrast to preprint databases such as arXiv.org, which may be another search tool used by mathematics researchers.

Free Text Keywords: MathSciNet | Mathematics | Mathematic Reviews | American Mathematical Society

Primary Category: Science, Technology, Computers, Engineering (including Environment)

Type of product being reviewed: Abstracting & Indexing; Other - Reviews

Target Audience: Undergraduate (including community colleges); Graduate/Faculty/Researcher

Access: Subscription

Purchase & Contract Provisions

There are no limits on simultaneous users or time use of the database. Mathematical reviews can be copied and delivered through Interlibrary Loan. MathSciNet provides usage statistics to subscribing intuitions based on COUNTER standards. A fairly standard four-page license agreement is required for subscribing institutions.

Authentication

Subscribing institutions have site wide access via IP authentication, or via proxy server authentication.

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Emily Dommermuth is Science & Engineering Librarian at the Gemmill Library of Engineering, Mathematics, and Physics, University Libraries, University of Colorado Boulder. Emily serves as liaison librarian to Math and Applied Math, Physics, and several Engineering departments. Emily holds a B.S. from Colorado State University and an M.L.I.S. from the University of Denver. ■