

## Everything in Its Right Place

### An Expert Guide to Searching with MathSciNet

*Edward Dunne*

Most mathematicians are familiar with MathSciNet and have some idea how to use it. However, we are generally self-taught. A few graduate programs will go over MathSciNet with new students, but such introductory courses are rare. I work at Mathematical Reviews, where we make MathSciNet and use it a lot. Since coming here, I have learned some really great things about searching the literature with this tool. With this article and its sequel, I will share some of the most useful things I have learned. The column turned out to be longer than initially planned. As a result, the column will be published in two parts. This first part will cover some generalities and the most popular type of search. The second part (which will appear in October) will describe Author Searches and Journal Searches, including descriptions of some big changes in our Journal Profile Pages.

MathSciNet is the user interface for querying the Mathematical Reviews Database (MRDB). The database has been built up from the editorial work done at Mathematical Reviews ever since its first publication in 1940. The MRDB has been supplemented by data from various retrodigitization projects, with the oldest entries dating from 1810. In this article, I provide an overview of how to use MathSciNet. It seems fair to assume that most readers are familiar with searching databases, such as Google, amazon.com, library

catalogues, or the arXiv. Many of the features of MathSciNet searches echo searches provided by other databases. I try to go into detail on topics that are distinctive and provide sketches on topics that are more self-evident. There is more information about MathSciNet in some of my blog posts:

<https://blogs.ams.org/beyondreviews>

There are three primary searches in MathSciNet, corresponding to the three major parts of the database: authors, journals, and publications (papers and books). Each type of search works somewhat differently and returns different results. By far, the most common search is for publications. Indeed, over 80% of the initial searches on MathSciNet are publication searches. Author searches represent about 15% of all initial searches. Journal searches make up the rest. You initiate one type of search or the other by starting at one of the first three tabs in the main search page, seen in Figure 1.

Note: in what follows, I will provide counts of matches resulting from searches. We update the MRDB hourly, so these counts will change with time. The counts provided here are for searches done in May 2019.

#### Publication Search

A publication search looks for journal articles, conference proceedings articles, theses, books, and collections. It is a fielded search with 14 possible fields: **Author, Author or Related, Title, Review Text, Journal, Institution, Series, MSC Primary, MSC Primary/Secondary, MR Number, DOI, Reviewer, Anywhere, and References.**

Publication searches are finicky by design. For instance, they are unforgiving with regard to misspellings. (The

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DOI: <https://dx.doi.org/10.1090/noti1932>

Figure 1. Screenshot of the publication search page, with other search tabs identified.

searches do match regular plurals and singulars, but not irregular plurals.) However, you can use the wildcard (\*) in most of the fields. The exceptions are **MR Number** and **DOI**, since these fields are searching for a very precise locator ID. A wildcard (\*) can be used anywhere in a search term except the beginning. It will match any character string, i.e., one, two, three, or more characters, but also the empty string. Thus, **colo\*ring** will match both **coloring** and **colouring**.

Words entered in any search field other than the author field are assumed to be separate terms, that is, separated by a Boolean AND. In other words, the default search is not for the phrase but for the individual terms. Consequently, a search for **hyperbolic manifolds** would look for items that have the word **hyperbolic** somewhere and the word **manifolds** somewhere but not necessarily right next to each other. So, you would find papers about **hyperbolic manifolds** but also a paper about **hyperbolic equations on manifolds**.

If you want to look for an exact phrase, you need to enclose the search phrase in double quotes. For example, a search for **"group cohomology"** anywhere will find more than 700 items where this exact phrase occurs somewhere in the item: in the title, in the review text, in the name of the journal. The words have to be in order. So, this search will not look for the phrase **cohomology group**. The search for **"cohomology group"** anywhere will match 3,000+ items with exactly that phrase. Note that the search

for **"cohomology group"** will not match items that only have the phrase **cohomology groups**, since plural/singular matching is turned off inside double quotes. To match both, use the wildcard search **"cohomology group\*"**. This matches 7,000+ items.

It is possible to fine-tune a publication search by using a *proximity operator*. Specifically, you can allow some distance between terms in an exact search by enclosing the terms in double quotes, then appending the tilde (~) and a single-digit (positive) number. The number determines how many terms can be in between the search terms you have specified. For instance, if you want to search for papers discussing **harmonic functions**, including those that discuss **harmonic univalent functions**, use the search **"harmonic functions"~1**. You can include a wildcard too, as in **"harmonic function\*"~1**. The number you provide is an upper bound. That is to say, the search **"integrable systems"~2** will find results having two, one, or no terms in between **integrable** and **systems**, such as **integrable and superintegrable systems**, **integrable Hamiltonian systems**, and just **integrable systems**.

**Here are descriptions of the possible fields:**

**Author:** This field looks for papers, books, etc., where at least one of the authors matches the search term. (Note: if you want to search for an author, not just their publications, use the Author Search described in Part II of this article (in the October issue of *Notices*). Author searches lead to Author Profile pages, which contain a lot of information

about the author.) For the author field in a publication search, you need to enter the name as last name, first name, middle name(s) or initial(s)—with or without commas and periods. Searching for **Tate John** turns up about 100 results. Searching for **John Tate** turns up none. If you just enter one name, it is assumed to be a last name. Thus, if you search on **John**, you will receive almost 800 matches, all of which have an author with last name John, including more than 100 items by Fritz John. The results will also include one paper, MR0953284, by an author with first *and* last name John. The wild card (\*) can be used anywhere within the string, except at the beginning. For instance, if you want to search for **Cheng, Chang, Chung, or Cheung** in the Author field, the search term **Ch\*ng** will get the job done, though it will also match on **Ching** and **Channing**, for instance.

It is important to distinguish the **Author** search field from the next field.

**Author or Related:** Now, the search will include papers matching the author but also will include matches with other sorts of names associated with the document, for example, editors, translators, and contributors who are not listed as authors, such as someone who wrote an appendix or foreword to a book. For instance, a search for **Morawetz** in the **Author or Related** field and **Works** in the **Title** field would find volumes for which Cathleen Morawetz was an editor of someone else's Selected Works or Collected Works. **Author or Related** also includes names that represent the subject of the paper or book, such as when it is a biography, an obituary, a conference in honor of someone, or a Festschrift. For example, a search for Kodaira in the Author Related field would turn up articles about him but not necessarily about the Kodaira embedding theorem or Kodaira dimension. These extended affiliations with an item are what are listed under **Related Publications** in an Author Profile page on MathSciNet.

**Title:** This field contains the original title and, if appropriate, an English translation of the original title. It does not include subtitles. The same rules about word order and proximity operators apply here.

**Review Text:** You can search for keywords or phrases found in the text of reviews, including those where the author summary was used as the review. Again, the rules about word order and proximity operators apply here. So, for instance, if you are curious about wrong proofs, you could try searching for **Review Text = wrong proof**. But that will give you too many matches (more than 1,000) to be useful, and the words **wrong** and **proof** need not be close to each other. A better search is **Review Text = "wrong proof"~2**. This produces 57 matches, including

MR3725869

Dieks, Dennis (NL-UTRE-HQ)

Von Neumann's impossibility proof: mathematics in the service of rhetorics.

*Stud. Hist. Philos. Sci. B Stud. Hist. Philos. Modern Phys.* 60 (2017), 136–148.

The review of this paper contains the passage:

According to what has become a standard history of quantum mechanics, in 1932 von Neumann persuaded the physics community that hidden variables are impossible as a matter of principle, after which leading proponents of the Copenhagen interpretation put the situation to good use by arguing that the completeness of quantum mechanics was undeniable. This state of affairs lasted, so the story continues, until Bell in 1966 exposed von Neumann's **proof** as obviously **wrong**.

**Journal:** You can specify that the results must come from a particular journal. The journal field contains full and abbreviated journal names, as well as ISSNs. Original and translated journal names are searched. Note: this field can be particularly finicky, as it is trying to match against the exact name of the journal or the abbreviation of the journal name in MathSciNet or the ISSN. If you are unsure of the name or abbreviation, it is good to use wildcards in this field. You should put something in this field only if you are entering other information in another field, such as a subject class or a keyword. If you are looking for the journal itself, you should use the Journal Search, which is described in Part II of this column. A Journal Search leads you to the profile page of the particular journal and a wealth of information gathered from the MRDB.

**Series:** The Series field contains full series titles or abbreviations for book series. Book series include monograph series, such as Springer's *Grundlehren der Mathematischen Wissenschaften* and Cambridge University Press's *Cambridge Tracts in Mathematics*, as well as proceedings series, such as the AMS's *Contemporary Mathematics* and Springer's *Lecture Notes in Mathematics* and *Lecture Notes in Computer Science*. You can search on all or part of the series title.

**Institution:** You can enter either an institution code or part of the institution name in this field. Initially, institutions were created for internal use at Mathematical Reviews to help us to identify authors. Our catalogers include codes for institutions, which are a great shorthand. These codes show up as the strings in parentheses after the author's name when displaying the MathSciNet record for an item. Hovering over the code with the cursor will give you an expansion of the institution name. You can look up codes by going to <https://mathscinet.ams.org/instcode>. Alternatively, you can look for a paper by someone at the institution and crib the code from the MathSciNet listing for that paper. The institution codes provide a specificity that keywords do not. For instance, searching for **Oxford** in the **Institution** field produces more than 13,000 items with one or more authors from a department or college



at the University of Oxford in the UK (institution codes of the form 4-OX\*). However, it also matches 28 items from authors at Oxford College of Emory University in Oxford, Georgia, in the United States (institution code 1-EMRY-OX), as well as a few items with authors from institutions in Taipei.

Institution codes are granular, identifying departments. For instance, the Department of Mathematics at Brown University has the institution code 1-BRN. The Division of Applied Mathematics has the institution code 1-BRN-A. Some authors from the Division of Applied Mathematics list their affiliation as Department of Applied Mathematics, which we have coded as 1-BRN-AM. Since MathSciNet is a database of the mathematical literature, we use the affiliation that is given on the paper, which can be different from the official name. As a result, when searching, it is often best to use wildcards, in particular, of the form "1-BRN-\*". There are exceptions to the granularity, including some of the mathematics institutes, such as AIM and SAMSI, which don't have departments.

Using institution codes can facilitate some interesting searches that are not just about the literature. For instance, someone considering graduate school in algebraic geometry might want to check to see how many papers in algebraic geometry have come from a particular institution in recent years. Do this by entering the Institution Code or name of the university, set **MSC-Primary** to 14 (the class for algebraic geometry), and pick a relevant **Time Frame**, such as >2013, to ensure that you are seeing recent papers.

**MSC Primary:** This searches on the primary classification codes from the Mathematics Subject Classification (MSC) assigned to an item by the Mathematical Reviews editors. The Primary Classification is selected by the editors as being the most appropriate, among the possible classifications, for the principal contribution of the item. Every classified item has a primary classification. Many items have one or more secondary classifications. To search for primary or secondary classifications, use the **MSC Primary/Secondary** field. You can search using 2-digit (e.g., 35 for Partial differential equations), 3-digit (e.g., 35J for Elliptic equations and systems), or 5-digit (e.g., 35J60 for Nonlinear elliptic equations) codes, with no need for wildcards.

**Hack alert:** The database includes more than 85,000 items that are PhD theses. These items use bibliographic data that have come from external sources, such as ProQuest and NumDam. To search for theses, enter **Thesis** in the **MSC Primary** field.

**Reviewer:** Entering a term in this field searches on the name of the person who wrote the review of the item, returning a list of those items. The syntax for entering names is the same as for the Author field. Not many people use this search, but it is useful in some special settings. For instance, it can be useful to editors considering referees.

**References:** MathSciNet includes reference lists from some articles. It is possible to search just within the refer-

ence lists by including search terms in this field. If you are looking for all the citations of a particular author, it is better to do an Author Search and use the citations link from there. When we match citations to an author, we match against all known variants of the author's name. Also, if you want to find all the citations of a particular paper, those are given in a box in the top right-hand area of the listing of that item. Again, our matching tries to account for variants of citation styles and will even try to match the published version of a paper with a citation to a version from the arXiv.

I find this search useful when looking for citations to books or papers that pre-date the MRDB, i.e., before 1940. For instance, I could look for Cauchy's "Recherches sur les nombres," which was published in the *Journal de l'École polytechnique* in 1813, by entering "Cauchy Recherches sur les nombres" in the **References** field. This search produces 103 matches, including

**MR2225493**

Bourgain, J.(1-IASP-SM); Glibichuk, A. A.(RS-MOSC-MM); Konyagin, S. V.(RS-MOSC-MM)  
Estimates for the number of sums and products  
and for exponential sums in fields of prime  
order. *J. London Math. Soc.* (2) 73 (2006), no. 2,  
380–398.

If I check this item's entry in MathSciNet, I do indeed find Cauchy's paper as entry number 7 in the reference list for the article by Bourgain et al.

**MR Number:** All items in the MR Database have a unique seven-digit accession number of the form **MR0053338** referred to as an **MR Number**. These numbers are searchable in the **MR Number** field. Leading zeros in this seven-digit number may be omitted. The "MR" prefix may also be omitted. For the example, searching on 53338 in this field will find the item just as well as searching on **MR0053338**. Wildcards do not work in this field—they are ignored.

**DOI:** You can search for an item by entering the DOI for the paper. You can include the DOI resolver, such as doi.org, or leave it out. You can include the full URL, such as <https://doi.org/10.1090/S0273-0979-1992-00266-5>, or just include the DOI itself, **10.1090/S0273-0979-1992-00266-5**. Wildcards do not work in this field.

**Anywhere:** This field is used to search across all of the fields already mentioned, except the reference lists.

## Working with the Search Results

### Sorting the results

The list of headlines of results from a publication search are sorted newest first by default. However, you can re-sort the results of a publication search by using the button after "Sort by:" in the top left of the screen. The options for sorting are: **Newest** first, **Oldest** first, number of **Citations**, and number of authors, abbreviated as **#Authors**.



### Search within results

Typing a search term in this box will run an **Anywhere** search on that term among the results from your just executed search. You can do it from any page of results, and it will run the search from that point. Also, the proximity operator mentioned earlier works in the “Search within results” box, as do wildcards.

### Filter using the facets

On the results pages from a publication search, there are six facets in the left-hand sidebar that you can use to refine your search: **Item Type**, **Institutions**, **Authors**, **Primary Classification**, **Journal**, and **Year**.

#### Item Type

- **Reviewed.** An item that has a review attached to it, either a signed review by one of our 21,000+ reviewers or the author summary.
- **Indexed.** An item that has received the full bibliographic treatment, including author authority work and MSC Classification, but that will not receive a review.
- **Expansion.** Also known as “Database Expansion,” these items are not classified and do not have reviews. In every other respect they are treated just like all other items in the Mathematical Reviews Database. In particular, the authors are identified, and the items have journal linking and original item linking (when available).
- **Thesis.** These are doctoral theses whose bibliographic data have been contributed by an external source. Authors have been identified for about two thirds of the theses. We do not add classifications (MSCs) to theses.
- **DML = Digital Mathematics Library.** These items come from various digitization projects, such as de Gruyter’s project that digitized all the early issues of Crelle’s Journal, *Journal für die reine und angewandte Mathematik*.
- **Prelim.** These are Preliminary Data items, which we have created using the bibliographic metadata provided by the publisher. Our work on the item is not yet complete; for example, our author identification work may not have been done. The purpose is to get these items into the MRDB as quickly as possible but with the proviso that some of the bibliographic details may be corrected by our catalogers.
- **Pending.** These are regular items for which the bibliographic work has been done—i.e., they have passed the possible Preliminary Status—and a review is planned, but the review is not yet complete. The reasons for being incomplete include: we have not sent it to a reviewer yet; we have sent it to a reviewer, but have not received the review back yet; we have received the review back, but our editors are still checking it over.

**Institution.** Short forms of the institutions attached to the papers in the search results are listed in this facet. They are in decreasing order of frequency. Selecting an institution adds it to the search and refines the results. You can iterate this process, which is useful since many papers have authors from more than one institution.

**Authors.** The names of the authors of the items in the search results are listed in this facet in decreasing order of frequency. As with the Institution facet, you can iterate this process.

**Primary Classification.** Using this facet will refine the search using the primary MSC code attached to the paper. Since every regular item has a unique primary class, it is not possible to iterate this filter.

**Journal.** Mathematicians often think of someone’s paper in a particular journal. This facet allows you to filter for papers appearing in a particular journal. You cannot iterate this filter, as each paper is normally published in a unique journal.

**Year.** This facet filters for the publication year (not the year it first appeared in MathSciNet). It is not possible to iterate this filter.

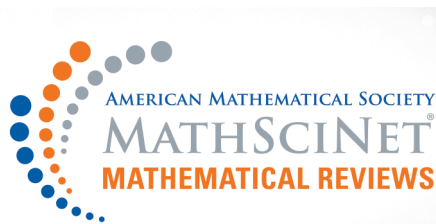
In the October issue of *Notices*, I will describe the Author Search and the Journal Search. There is less to say about the searches themselves, as they are more direct searches. However, I will have more to say about the Author Profile Pages, which are the endpoints of Author Searches, and the newly revised Journal Profile Pages, which are the endpoints of Journal Searches.



Edward Dunne

### Credits

Author photo is courtesy of the author.



## Everything in Its Right Place: Part II

### An Expert Guide to Searching with MathSciNet

*Edward Dunne*

This column is a continuation of the guide to searching with MathSciNet in last month's *Notices*. That article discussed some generalities, then focused on publication searches, including working with the results of publication searches. The two topics I discuss below are **Author Searches** and **Journal Searches**. Author searches lead to **Author Profile Pages**, while journal searches lead to **Journal Profile Pages**. The author profile pages have evolved over the years. The journal profile pages went through a major overhaul this year, so there is more to say about them.

#### Author Search

The second most common type of search in MathSciNet is an **Author Search**. Like many of the sciences, we often identify results with people.<sup>1</sup> Consequently, we often search for authors.

As of this writing, we have 954,984 authors in the database. We add more than 50,000 new author profiles each

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<sup>1</sup>Of course, we often get it wrong. In mathematics this is known as *Arnold's Principle*. But, following *Berry's Corollary*, it is also known as *Stigler's law of eponymy*. See [https://en.wikipedia.org/wiki/Stigler%27s\\_law\\_of\\_eponymy](https://en.wikipedia.org/wiki/Stigler%27s_law_of_eponymy).

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DOI: <https://dx.doi.org/10.1090/noti1961>

year. Our catalogers spend considerable time ensuring that the identification of an author on a paper corresponds to the appropriate author in the database. In 2018 our catalogers processed and verified 317,315 new and existing authors on more than 125,000 publications.


If you are trying to find a particular author, this is usually the best search to use. As you start typing a name, MathSciNet starts suggesting completions based on the names in our database. The suggestions are offered up based on a weighted sum of values, including how close the match is, number of papers by the suggested author, citations to the suggested author, and so on. Clicking on a suggestion will autofill the search box with that suggestion. In many cases, that sends you to a unique answer. However, sometimes you still have a few results to choose from, such as when typing "Wong" and then choosing "Wong K. K." from the suggestions. There are three authors who match that search. Or typing "Stein" and choosing the suggestion "Stein Erwin." There are two authors in the database with that name. Minor misspellings are overlooked in the autosuggest, such as "Ulenbeck" instead of "Uhlenbeck." That is to say, if you start typing "Ulenbeck," we will suggest "Uhlenbeck George E" and "Uhlenbeck Karen Keskulla," as well as "Klembeck Paul F." and others. However, if you type "Ulenbeck," then hit Enter, we will search against "Ulenbeck" with no fudge factors, resulting in no matches.

Often when you run a search on a name you may find yourself with too many results. MathSciNet helps you filter them. For a simple example, search for “Paul Smith.” There are twenty author results for that name, sorted alphabetically. Four are just “Smith Paul.” Others have middle names or middle initials supplied. For each author you can also see other names that the author has published under. For an extreme example, try searching for the name “Zhang.” There are more than 14,000 matches. Notice that many of them are listed as Chang, not Zhang. This is because we keep track of different spellings and transliterations of names that have been used. The author search is over all names under which the person has published a paper.

The matches are sorted by Profile Name by default. You can re-sort the matches by number of publications, number of citations, or reverse chronologically by earliest publication. You can also search within the results. This will add search terms to the author search. So, using this box to search for a topic, such as “Galerkin methods,” is not going to help. Adding an alternative spelling, such as “Chzhan,” or another part of the name, such as “Ming,” can pare down the list significantly.

A sidebar offers top-level subject classes for faceted search. Choosing one of these will restrict the results to authors who have at least one paper in the database that has that class as Primary Class. In the search results for Zhang, filtering for *Partial differential equations* reduces the list from 14,000+ to 1,045. Since many authors have papers in various subject classes, you can iterate the filtering, now selecting, say, *Probability theory and stochastic processes* to reduce the list to 73 authors. Of course, you can change the sorting of results after any of these refinements.

When you find the person you are looking for, you will end up at their **Author Profile Page**. Here is the top of the author profile page for Cathleen Morawetz:



**Morawetz, Cathleen Synge**

Website: <http://www.ams.org/about-us/presidents/53-morawetz>

MR Author ID: **126830**

Earliest Indexed Publication: **1951**

Total Publications: **82**

Total Related Publications: **13**

Total Citations: **1096**

Published as: Moravec, K. S. (1)

[Share](#) [Edit Author Profile](#)

The top of the page begins with basic data: Author Name, MR Author ID, date of the earliest publication indexed in MathSciNet, total number of publications by the author in the MRDB, total number of related publications in the database, total number of citations, and a list of other names under which the author has published. Authors can supply certain supplements to the profile page: a photograph, an email address, the URL for a website, and the author's name in its native script, such as Chinese or Cyrillic. The main author name displayed is the name that is most useful for

cataloging purposes. If you make a significant change to your name, it is helpful if you let us know. Changing the Profile Name will help users identify your new papers and will help our catalogers find them too.

Related publications are items where the person's relation to the publication is something other than as an author, for example, editors, translators, and contributors who are not listed as authors. Related publications include items for which the person is the subject of the paper or book, such as when it is a biography, an obituary, a conference in honor of someone, or a Festschrift. Unlike the **Author or Related** search field in a publication search, the Related Publications count does not include items for which the person is an author.

The author profile page also has links to results in MathSciNet and to external sites. The **Publications** link takes you to a list of all items in MathSciNet authored by the person. The list is in the form of the results of a publication search, so the tools for working with such results are available here, as described in the first part of this column. The **Related Publications** link takes you to a list of all related items, as just described. Again, the list is in the form of the results of a publication search. If the person is a reviewer, then there is a **Reviews** link, which takes you to a list of all the items that the person has reviewed. It, too, is in the form of results of a publication search. **Refine Search** sets up a new publication search, but with the author already hard-coded into the search. The **Co-Authors** link takes you to the list of the person's co-authors, in the form of the results of an author search. The **Collaboration Distance** link takes you to a page where you can compute the distance from this author to another author, as measured by the number of co-authored papers. The Erdős number is a special case. Indeed, the Erdős number query is so popular, we have included a button from this page that will set you up for just that. The **Citations** link produces a list of the author's publications, sorted by the number of citations. The top of the page also gives the number of citations and the number of different authors who have cited the person's work. The external links on the author profile page are to the corresponding entries at the Mathematics Genealogy Project and the MacTutor History of Mathematics Archive, when available.

The author profile page also has three *word clouds*. One is of the person's co-authors, scaled by the number of collaborations. Clicking on a name brings you to a list of the papers co-authored with that author, presented in the form of the results of a publication search. There is also a word cloud of mathematics subject areas, scaled by the number of publications the person has in the area. Finally, there is a word cloud of subject areas scaled by number of citations to the person's papers and books in the subjects. Clicking on the name of a subject area brings you to a list of papers in the area (using primary MSCs only).



## Journal Search

The third primary search is a **Journal Search**: a query of our journals database. I will say a little about the searches themselves. But the real news is about the endpoints of such searches: the revamped Journal Profile Pages.<sup>2</sup> First, to state the obvious, journal searches will not match books, conference proceedings in book form, or book collections, nor will they match individual articles. They look for journals as a whole. You can search for the journal name (all or part), the journal abbreviation, or an ISSN. The result of one of these searches is either a journal profile page (if the search result is unique) or a list of journals by abbreviation and title.

We use the information in the database to help you enter the query with autosuggest. The suggestions are based on a weighted sum of how close the suggestion matches what you have typed, the number of citations to the journal, number of papers in the journal, whether the journal is still active, and other criteria. If you start entering “proc...,” the software begins suggesting “Proceedings of the London Mathematical Society,” “Stochastic Processes and their Applications,” and so on. When you select one of the suggestions the software enters it in the search box and executes the search. Thus, for instance, if you choose “Proceedings of the American Mathematical Society” as the completion for “proc...,” the result will be **both** the regular *Proceedings of the American Mathematical Society* and *Proceedings of the American Mathematical Society, Series B*, the Open Access mirror journal. We do not try to autocomplete ISSNs. If, instead, you type out “proceedings,” then hit return, you will receive a list of more than one hundred journals with the word “proceedings” in their titles. The list will include both current and historical journals.

Journal searches lead to journal profile pages. As hinted above, we have significantly updated the content on these pages. The new journal profiles still contain the basic bibliographic information, such as the publisher, the ISSN, and so on. There are still links to the publishers’ websites for the journals. But there is now much more. The Mathematical Reviews Database contains considerable information about the mathematics research literature, which has been used to create these pages.

The journal profile pages consist of several cards, each of which has related information. In what follows, I will use various journals as examples to highlight various features that don’t necessarily show up for every journal.

To start, the basic information is in the **Journal Details** card.

Journal Details		Recent Issues		
<b>Abbreviation</b>	Duke Math. J.	<b>Volume</b>	<b>Issue</b>	<b>Year</b>
<b>Publisher</b>	Duke Univ. Press	168	9	2019 <a href="#">View</a>
<b>Websites</b>	<a href="http://projecteuclid.org">projecteuclid.org</a>	168	8	2019 <a href="#">View</a>
<b>ISSN (Print)</b>	0012-7094	168	7	2019 <a href="#">View</a>
<b>ISSN (Online)</b>	1547-7398	<a href="#">List All Issues</a>		
<b>Frequency</b>	18 issues/vol./yr.	Concise History		
<b>Publications Listed</b>	6,296	<b>Title</b>	<b>Start</b>	<b>End</b>
<b>Reference Lists</b>	Since 1997	Duke Mathematical Journal	1935	-
<b>Publications Cited</b>	4,992 (79.3% of publications)	<a href="#">Journal Title History</a>		
<b>Citations</b>	89,388 from 65,477 publications			
<b>Latest Issue</b>	2019, vol. 168, iss. 9			
<b>Earliest Issue</b>	1935, vol. 1, iss. 1			
<b>Coverage</b>	Cover-to-cover			

The title of the journal is at the top of the page. Some publisher information is at the top of the card, along with one or more links to the publisher’s website for the journal. The number after **Publications Listed** tells how many items (articles) from the journal have been included in the Mathematical Reviews Database and uploaded to MathSciNet. The number is actually a link that will take you to a listing of all 6,296 items, displayed as in the results of a MathSciNet publication search. The number for Publications Cited tells how many of the articles have been cited from the reference lists in MathSciNet. In this case, that number is 4,992, which is 79.3% of all the 6,296 articles we have from the journal in the database. The total number of citations in MathSciNet to *Duke Mathematical Journal* is 89,388. Apparently, some of the items are receiving a lot of multiple citations! These 89,388 citations come from 65,477 items (articles) in the database, as shown in the card. Since this number is smaller than 89,388, the pigeonhole principle tells us that some of these items are citing more than one article in *Duke Mathematical Journal*.

The **Journal Details** card includes information about the **Latest Issue** we have, including a link to the contents of that issue in MathSciNet. It also includes information about the **Earliest Issue** that we have in the database, including a link to the contents of that issue in MathSciNet. The earliest issue is from 1935, which is before *Mathematical Reviews* started. We received bibliographic data for the journal from Duke University Press that allowed us to backfill those years.

The **Recent Issues** card provides a quick way of seeing the contents of the three latest issues. Clicking **List All Issues** will do just that: list all the issues. Clicking on any entry in the list of issues will take you to a listing of the publications in that issue in MathSciNet. Of course, by the time this column is published, the number of Matches (Issues) is likely to have grown from the 546 shown here.

<sup>2</sup>In June 2019, I posted information about the new profile pages to the *Mathematical Reviews / MathSciNet* blog Beyond Reviews. There is a lot of repetition between this column and that post. See <https://blogs.ams.org/beyondreviews/2019/06/10/journal-profile-pages>.

The publishing history of the *Duke Mathematical Journal* is rather straightforward, meaning there isn't much to show in the **Concise History** card.<sup>3</sup> Let's look, instead, at the famous journal Успехи математических наук, known colloquially as Uspekhi, but known for cataloging purposes as *Rossiiskaya Akademiya Nauk. Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk*.

Concise History		
Title	Start	End
Rossiiskaya Akademiya Nauk. Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk	1992	-
Akademiya Nauk SSSR i Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk	1982	1991
Akademiya Nauk SSSR i Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk	N/A	N/A

[Journal Title History](#)

At a minimum, you can see that the title of the journal has changed three times. Around 1991 the title changed from being a publication of the USSR Academy of Sciences to a publication of the Russian Academy of Science. From a cataloging perspective, these are three different journals. We have collected them into a single group. Clicking on **Journal Title History** provides more detail.

1992 to 2019 - Uspekhi Mat. Nauk	
Journal	Related Issues Changes
Title	Rossiiskaya Akademiya Nauk. Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk (formerly Akademiya Nauk SSSR i Moskovskoe Matematicheskoe Obshchestvo. Uspekhi Matematicheskikh Nauk)
ISSN	2305-2872
(Online)	(formerly N/A)

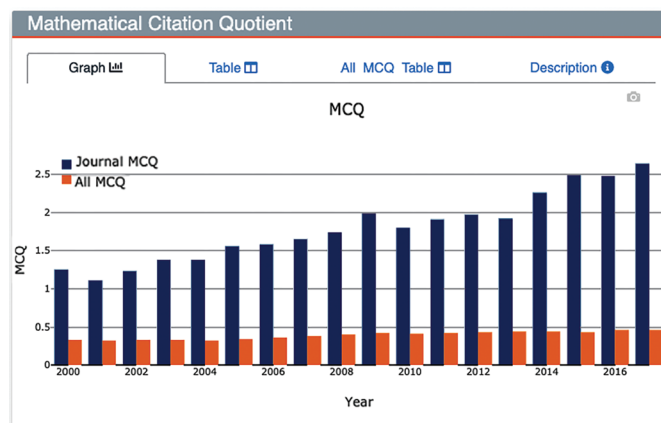
The first card inside the **Journal Title History** page tells you about the most recent version of the journal. The grey and italicized text tells you what is different from the previous version. Besides the title change already mentioned, the journal also picked up an ISSN. The link **Journal** provides more detailed bibliographic information about this version of the journal. **Related** has information about related journals, in this case, about the English translation,

<sup>3</sup>The actual founding of the journal is an interesting story, which you can find on the Duke University Press's website: [https://www.dukeupress.edu/Assets/Downloads/Notes\\_on\\_the\\_Founding\\_of\\_DMJ.pdf](https://www.dukeupress.edu/Assets/Downloads/Notes_on_the_Founding_of_DMJ.pdf).

*Russian Math Surveys*. Finally, **Issues** takes you to a listing of the issues of the journal.

### Mathematical Citation Quotient (MCQ)

The **Mathematical Citation Quotient (MCQ)** for a given year is defined as the number of times the items published in the journal in the previous five years were cited by items in reference list journals published in the given year, divided by the number of articles the journal published in that same five-year period. The **All MCQ** is the MCQ computed as if every item (every journal article, proceedings article, book, and thesis) had been published in one big journal. It provides a benchmark by which to understand the MCQ of a journal. In the new journal profile pages, the MCQ for each year can be seen graphically all at once, along with the **All MCQ** for each year. (Note that we don't compute MCQs before the year 2000.) Here is the graphical representation of the MCQ data for the *Duke Mathematical Journal*.



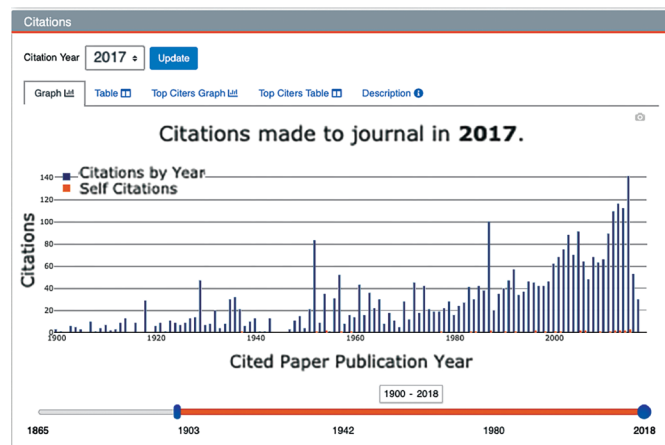
If you prefer numbers, clicking on the table tab provides the yearly MCQ data for the journal: the MCQ, the number of relevant citations, and the number of relevant publications in the journal. You can also see the table for the MCQ via its tab.

**Pro Tip:** In the bar graphs, clicking the small camera icon in the upper right-hand corner will download a PNG image of the graph to your desktop. For the tables, you can highlight the table to copy and paste to a text document or a spreadsheet.

### Citations

This card presents data on the citations to the journal. The first tab shows a bar graph of the citations, broken down by the publication year of the cited papers. You can choose whether the citing articles have been published in a particular year or look at the data over all time. The default is to use all time. Change it by selecting a year from the **Citation Year** box and clicking **Update**. The horizontal axis shows the publication years for the particular journal. The default range of years is from 1990 to the present. However, if the journal started publishing after 1990, the graph is adjusted accordingly. There is a slider below the graph that allows

you to adjust the left and right endpoints of the year range being displayed. Here is the bar graph for citations from articles published in 2017 to articles in the *Proceedings of the London Mathematical Society* in the year range 1900 to 2018:



We use orange to count self-citations, that is, citations from the journal to itself. If you want to see the data in tabular form, just click **Table**. Here are the top few rows of the tabular form of the data in the above bar graph:

Citations				
Citation Year <span>2017</span> <span>Update</span>				
<a href="#">Graph</a>	<a href="#">Table</a>	<a href="#">Top Citers</a>	<a href="#">Top Citers</a>	<a href="#">Description</a>
Citations made to journal in 2017.				
Year	Citations by Year	Self Citations	Total Publications	% of Pub. Cited
2017	<a href="#">30</a>	0	<a href="#">67</a>	77.6%
2016	<a href="#">53</a>	0	<a href="#">59</a>	86.4%
2015	<a href="#">141</a>	3	<a href="#">89</a>	93.3%
2014	<a href="#">112</a>	2	<a href="#">95</a>	94.7%
2013	<a href="#">116</a>	2	<a href="#">86</a>	96.5%
2012	<a href="#">109</a>	2	<a href="#">78</a>	96.2%
2011	<a href="#">89</a>	1	<a href="#">64</a>	98.4%
2010	<a href="#">66</a>	0	<a href="#">56</a>	92.9%
2009	<a href="#">63</a>	1	<a href="#">55</a>	100%
2008	<a href="#">68</a>	0	<a href="#">53</a>	98.1%
2007	<a href="#">48</a>	0	<a href="#">51</a>	96.1%
2006	<a href="#">64</a>	2	<a href="#">55</a>	96.4%
2005	<a href="#">91</a>	2	<a href="#">52</a>	100%

The last column tells you what percentage of the articles in that year of the journal have been cited in MathSciNet. You can have a year like 2015 where there are more citations than papers published in the journal but still have 6.7% of the papers uncited. Clearly this means that some articles have multiple citations. The entries in the second and fourth columns are links. The links in the second column

take you to the citing papers as listed in MathSciNet. When you click through to citing papers and continue to particular items citing the journal, the relevant citations are boxed:

21. Gutman, Y.: Embedding topological dynamical systems with periodic points in cubical shifts. *Ergodic Theory Dynam. Systems*, available on CJO. doi:10.1017/etds.2015.40 (2015) [MR3614036](#)
22. Gutman, Y.: Mean dimension and Jaworski-type theorems. *Proc. Lond. Math. Soc.* **111**(4), 831–850 (2015) [MR3407186](#)
23. Higson, N.: Counterexamples to the coarse Baum–Connes conjecture. Unpublished note (1999)

You may encounter a list of fewer items than the number of citations in the table, since it is possible for one paper to cite more than one article in the journal. In the results list, those papers are noted with the phrase *Multiple citations from this item to Proc. Lond. Math. Soc.* (using the abbreviated name of the journal in question). **Note:** The link specifies a particular publication year for the journal; citations to a different year of the journal will not be boxed.

### Top Citing Publications

You can also see the journals that are citing this journal most frequently, either in a bar graph or in a table. Clicking on the name of the journal takes you to its Journal Profile Page. Here is the table for the *Proceedings of the London Mathematical Society* for the citing year 2017:

Citations	
Citation Year <span>2017</span> <span>Update</span>	
<a href="#">Graph</a>	<a href="#">Table</a>
Top Citing Publications	
Publication	Citations
<a href="#">J. Algebra</a>	102
<a href="#">Adv. Math.</a>	100
<a href="#">J. Math. Anal. Appl.</a>	59
<a href="#">Trans. Amer. Math. Soc.</a>	53
<a href="#">Proc. Amer. Math. Soc.</a>	49
<a href="#">Comm. Algebra</a>	48
<a href="#">Int. Math. Res. Not. IMRN</a>	41
<a href="#">Math. Z.</a>	38
<a href="#">J. Number Theory</a>	37
<a href="#">J. Funct. Anal.</a>	31



Classifications

It is possible to see the distribution of MSCs (Mathematics Subject Classifications) in the journal using either a three-year window or over all time. By default, just the top ten classes are displayed, but clicking **Show All** displays all of them. Here are the top ten for the *Proceedings of the London Mathematical Society* over all time:

Classifications		
<div>Last 3 YearsAll Time</div>		
MSC*	Description	Count
	Other	2464
20	Group theory and generalizations	542
11	Number theory	279
46	Functional analysis	278
14	Algebraic geometry	230
10	Number theory	170
30	Functions of a complex variable	155
16	Associative rings and algebras	154
47	Operator theory	133
58	Global analysis, analysis on manifolds	111
<div>Show All</div>		
*MSC= Mathematics Subject Classification		

Notice that **Other** is the most common class that occurs. The Mathematics Subject Classification has not existed for as long as the *Proceedings of the London Mathematical Society* has been publishing. Indeed, the journal began publishing papers in 1865, before there was an American Mathematical Society and long before there was a *Mathematical Reviews*! We received bibliographic data from the journal that allowed us to backfill those years. The items that come from the contributed data do not have classes attached to them and are marked as **Other**. Clicking on the two-digit MSC brings you to a full description of the subject class. Clicking on the number in the **Count** column takes you to a listing of all the items in the journal with that class as primary class from the time period selected.

Authors

The last feature I want to point out is the table of the authors most frequently appearing in the journal. As with the MSCs, you can look either at the most recent three years or over all time. Here is the table for the *Proceedings of the London Mathematical Society* over all time.

Top Authors	
Last 3 YearsAll Time	
Name	Papers
Hardy, Godfrey Harold	65
Littlewood, John Edensor	42
Titchmarsh, Edward Charles	28
Liebeck, Martin W.	16
Huxley, Martin N.	15
Rogers, C. Ambrose	15
Davenport, Harold	14
Fröhlich, Albrecht	14
Edge, William Leonard	14
Praeger, Cheryl E.	13
<div>Show All</div>	

Clicking on the author's **Name** takes you to his or her Author Profile Page in MathSciNet. Clicking on the number in the **Papers** column takes you to the MathSciNet listing of the author's papers in the journal.

There is more that could be said about any of these searches, but the best way to learn more from this point is to try things out.



Edward Dunne

Credits

Author photo is courtesy of the author.

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We had a prototype of the Journal Profile Pages at the Joint Mathematics Meetings in Baltimore (January 2019). We received valuable suggestions from quite a few mathematicians, librarians, and publishers at the JMM. Some of the librarians, especially Lauren Gala and Anya Bartelmann, took extraordinarily close looks at the prototype and provided insightful comments. We are especially grateful for the time they devoted to helping improve the pages.