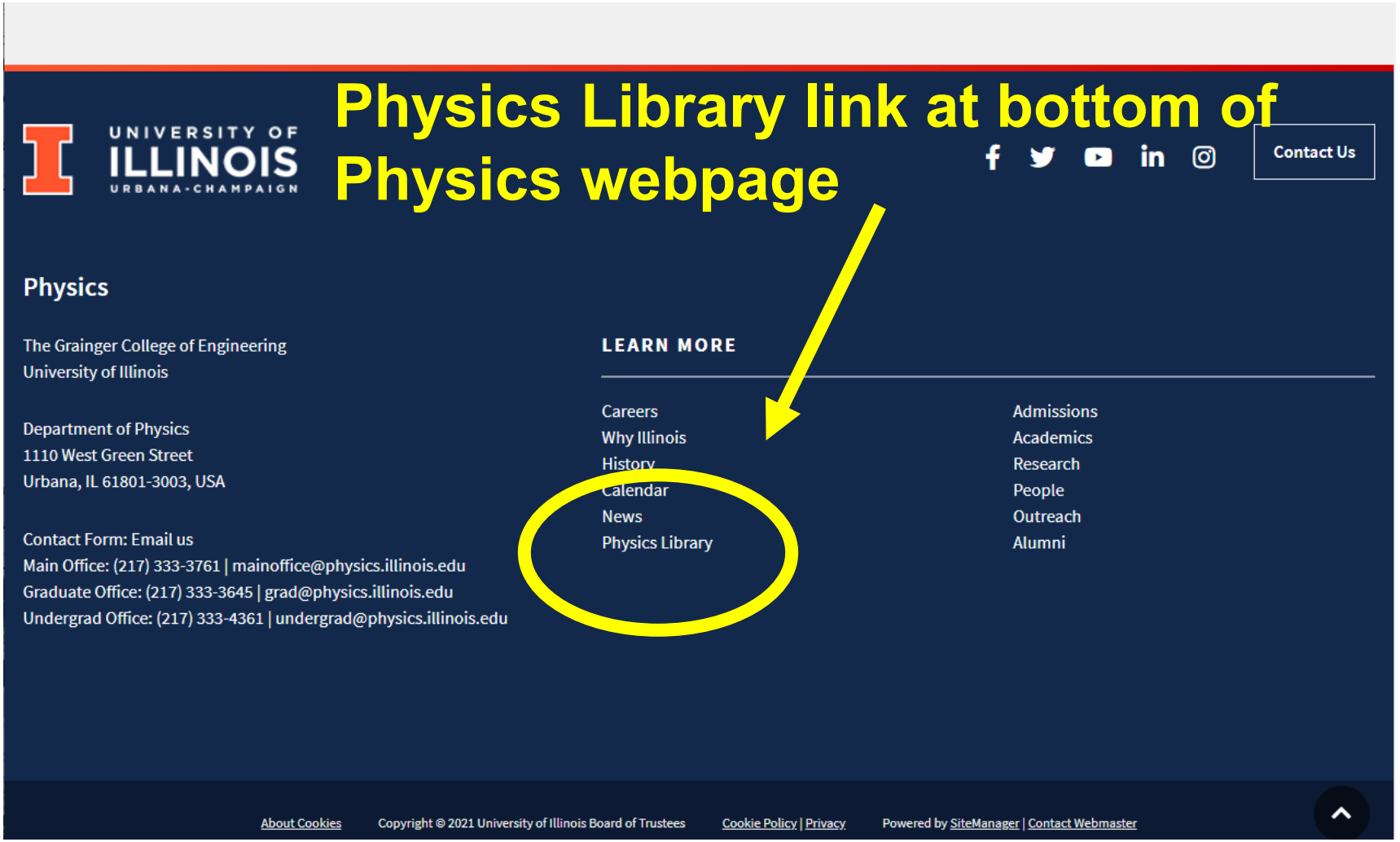
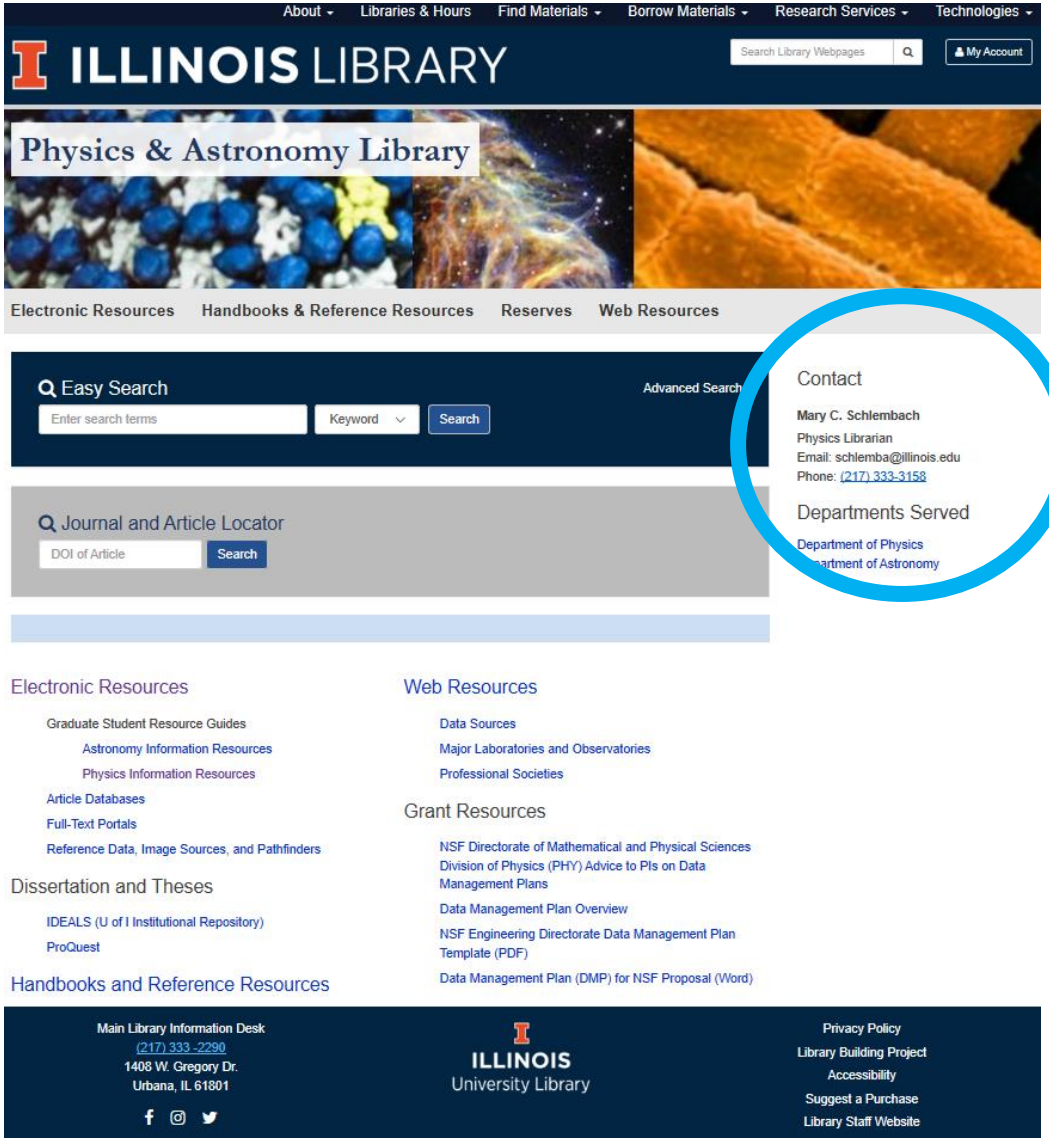
Online Scientific Resources and Performing Scientific Literature Searches

The place to start: http://www.library.illinois.edu/phx/



Mary Schlembach: http://www.library.illinois.edu/phx/

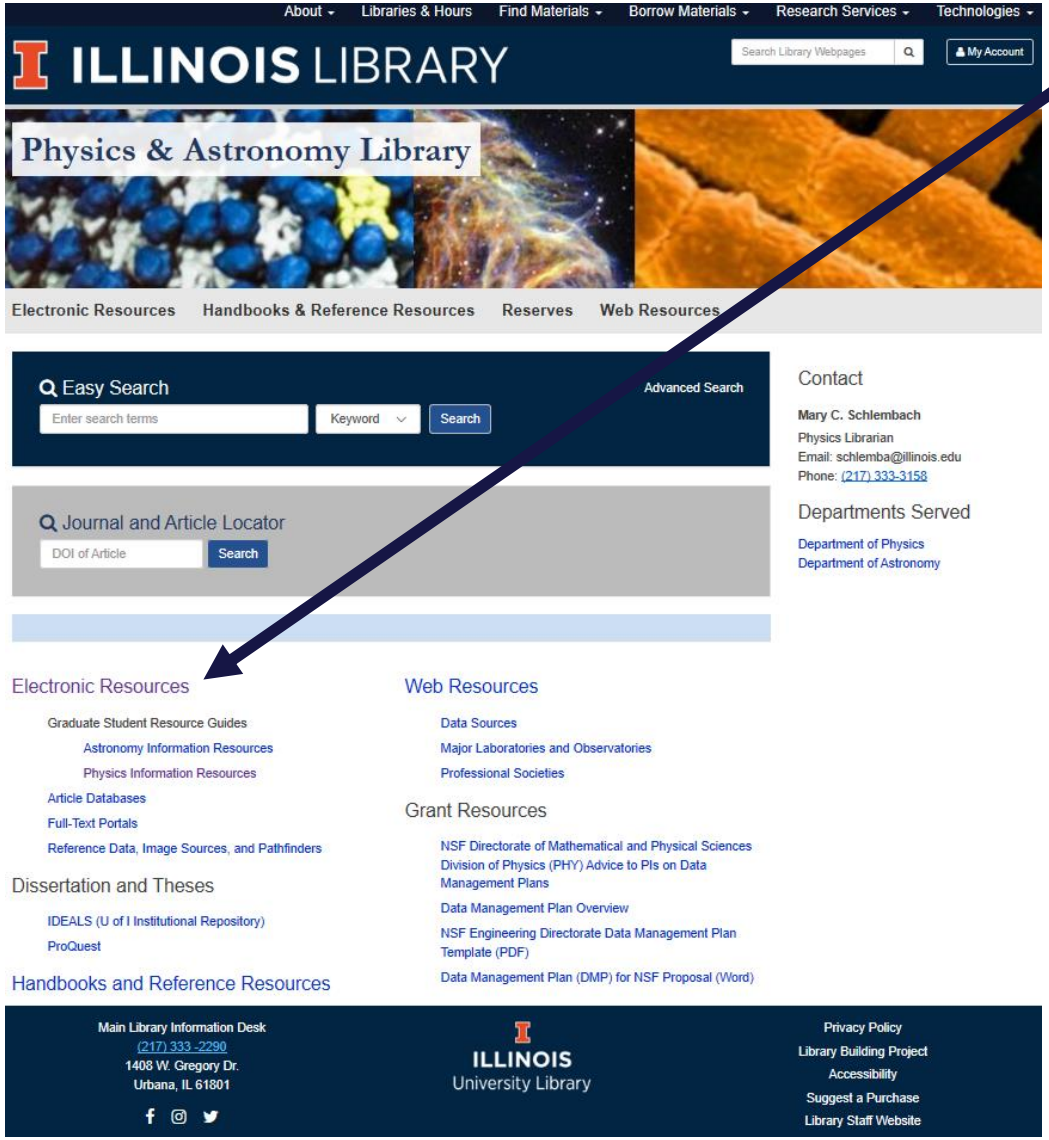


Physics Librarian

Mary Schlembach

Introduce yourself to Mary and make her your friend—she can find *anything*!

Electronic resources: http://www.library.illinois.edu/phx/



Electronic Resources

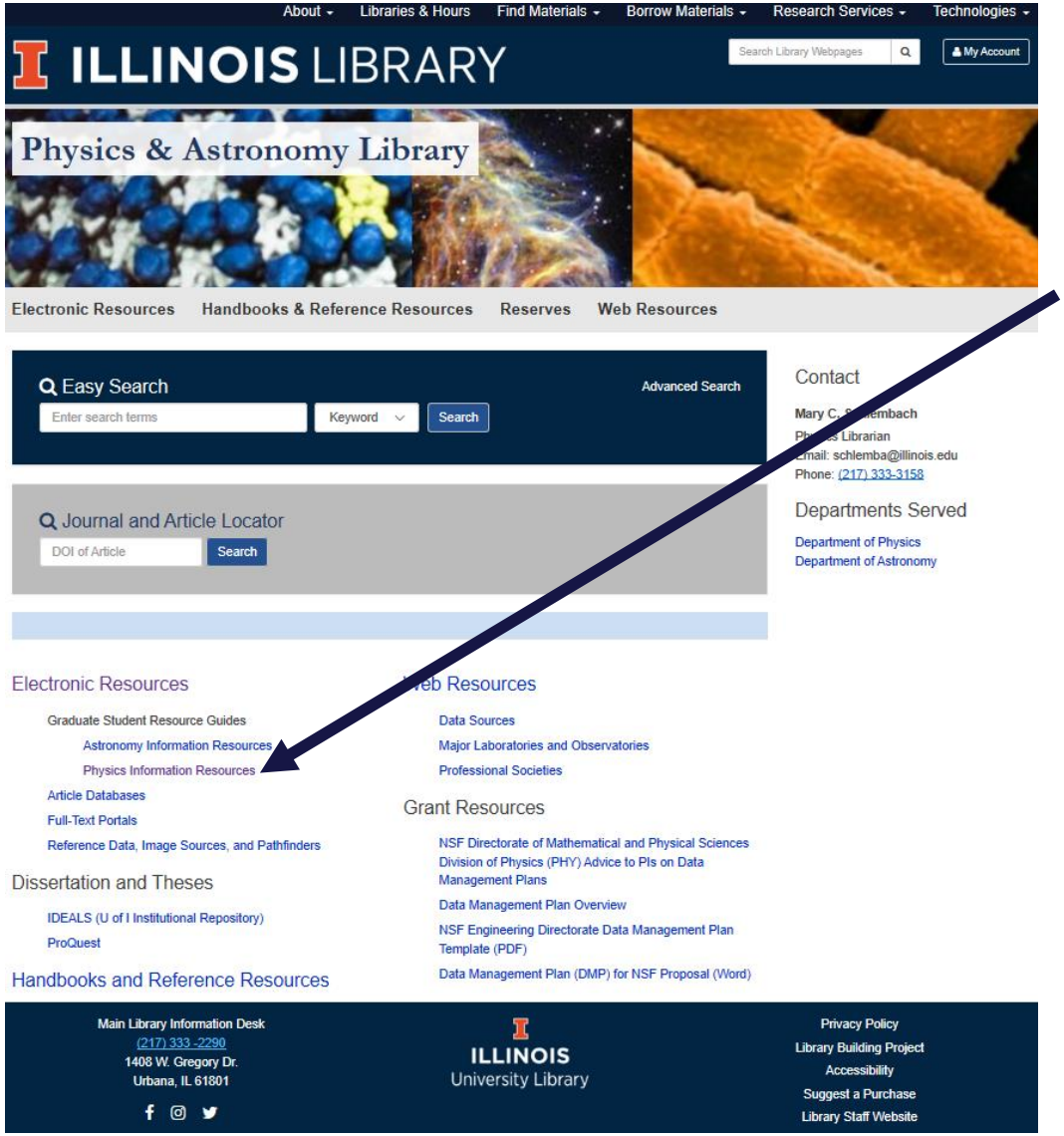
[New Graduate Student Resource Guide]

[Article Databases]

[Full-Text Portals]

[Reference Data, Image Sources, and Pathfinders]

Electronic resources: http://www.library.illinois.edu/phx/



Electronic Resources

New Graduate Student Resource Guide

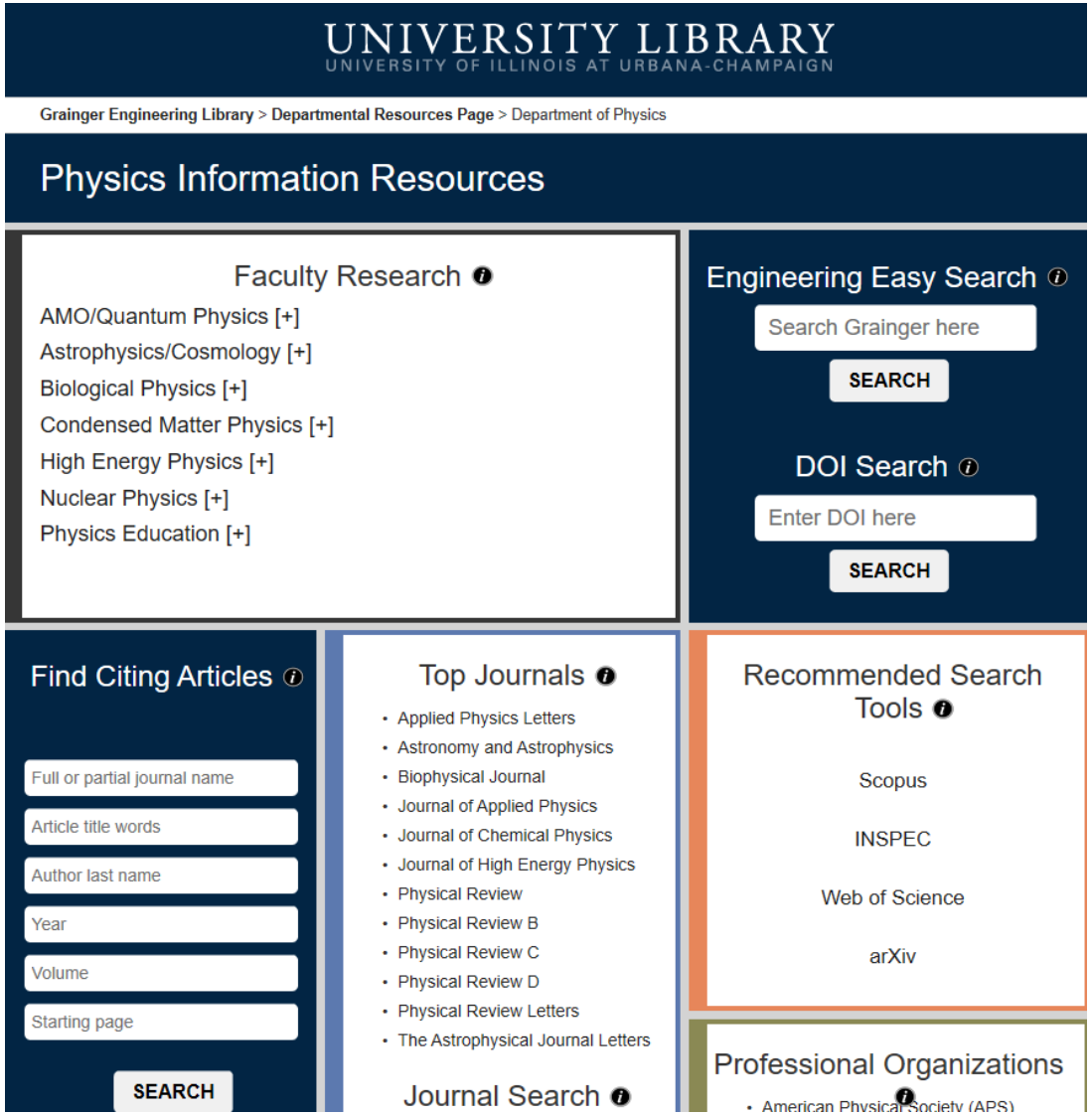
Article Databases

Full-Text Portals

Reference Data, Image Sources, and Pathfinders

Grad Resource Guide: http://www.library.illinois.edu/phx/

New Graduate Student Resource Guide



Finding Scientific Papers

Article Databases

Article Databases

SCOPUS (see Celia Elliott's presentation on Using the Scopus Database)

ARIBIB (**A**stronomisches **R**echen-**I**nstitut **BIB**liographical Database for Astronomical References)

arXiv.org E-Print Archive

Astrophysical Data System (ADS)

INSPEC (Physics Abstracts: 1895-)

inSPIRE High Energy Physics Database

Web of Science

Database of Observatory Publications

SciTech Connect

Department of Energy Pages: Public Access Gateway for Energy & Science

Finding Scientific Papers

Full-Text Portals

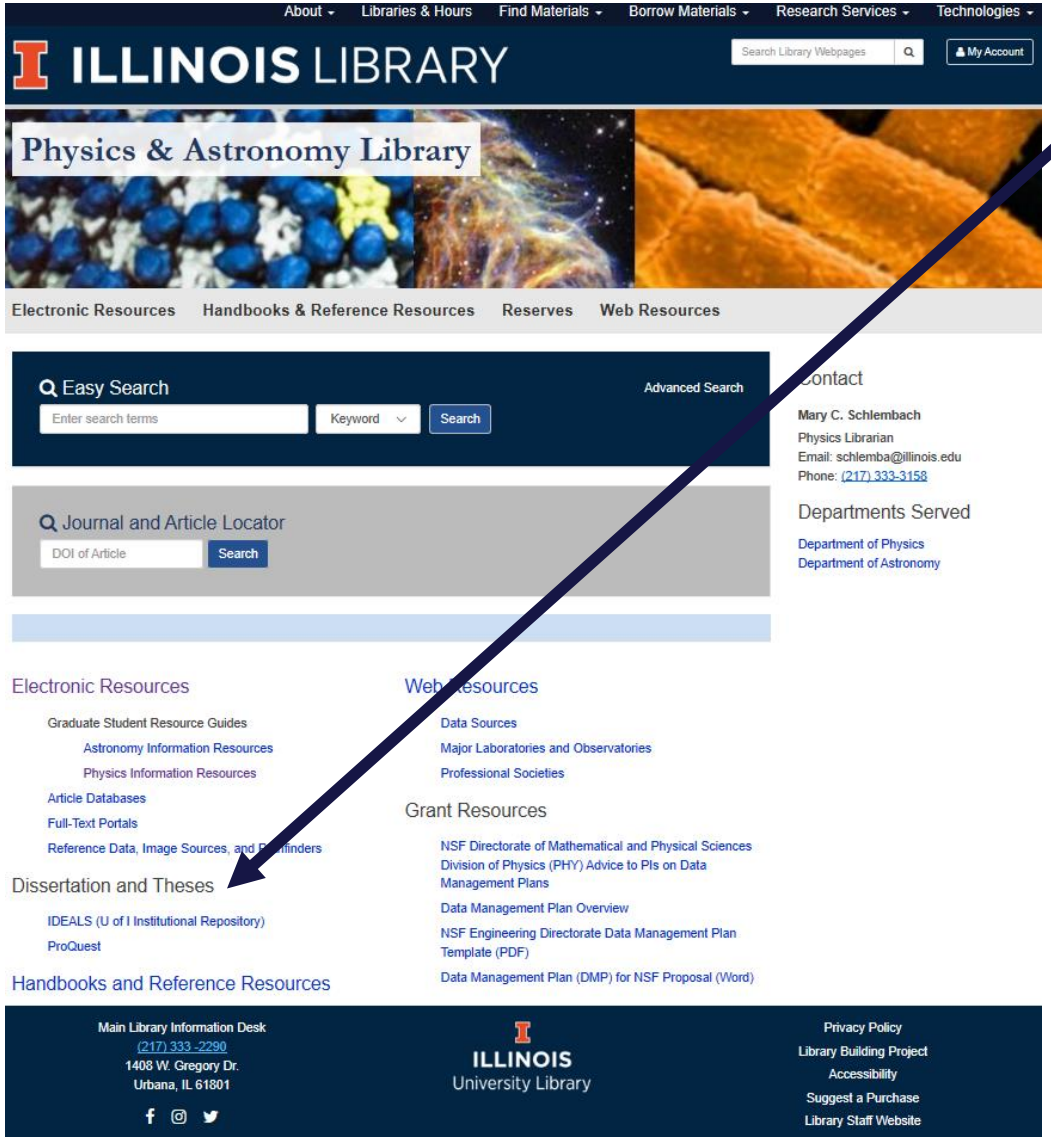
Full-Text Portals

IEEE/IEE Full-Text

AIP Scitation

AIP Scitation User Guide (pdf)

Dissertations: http://www.library.illinois.edu/phx/

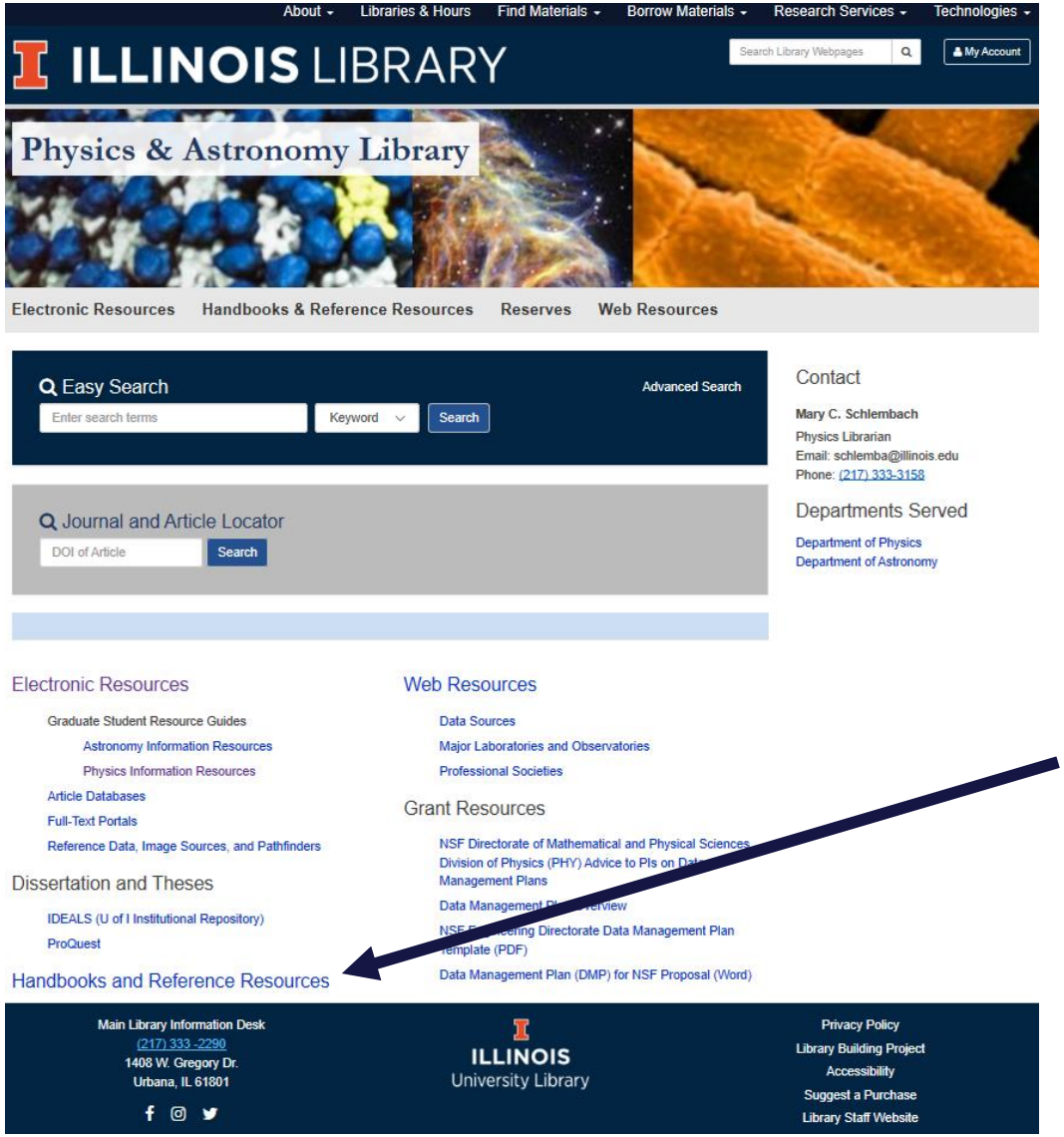


Dissertations and Theses

[IDEALS (U of I Institutional Repository)]

[ProQuest]

Handbooks: http://www.library.illinois.edu/phx/



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ProQuest

Handbooks and Reference Resources

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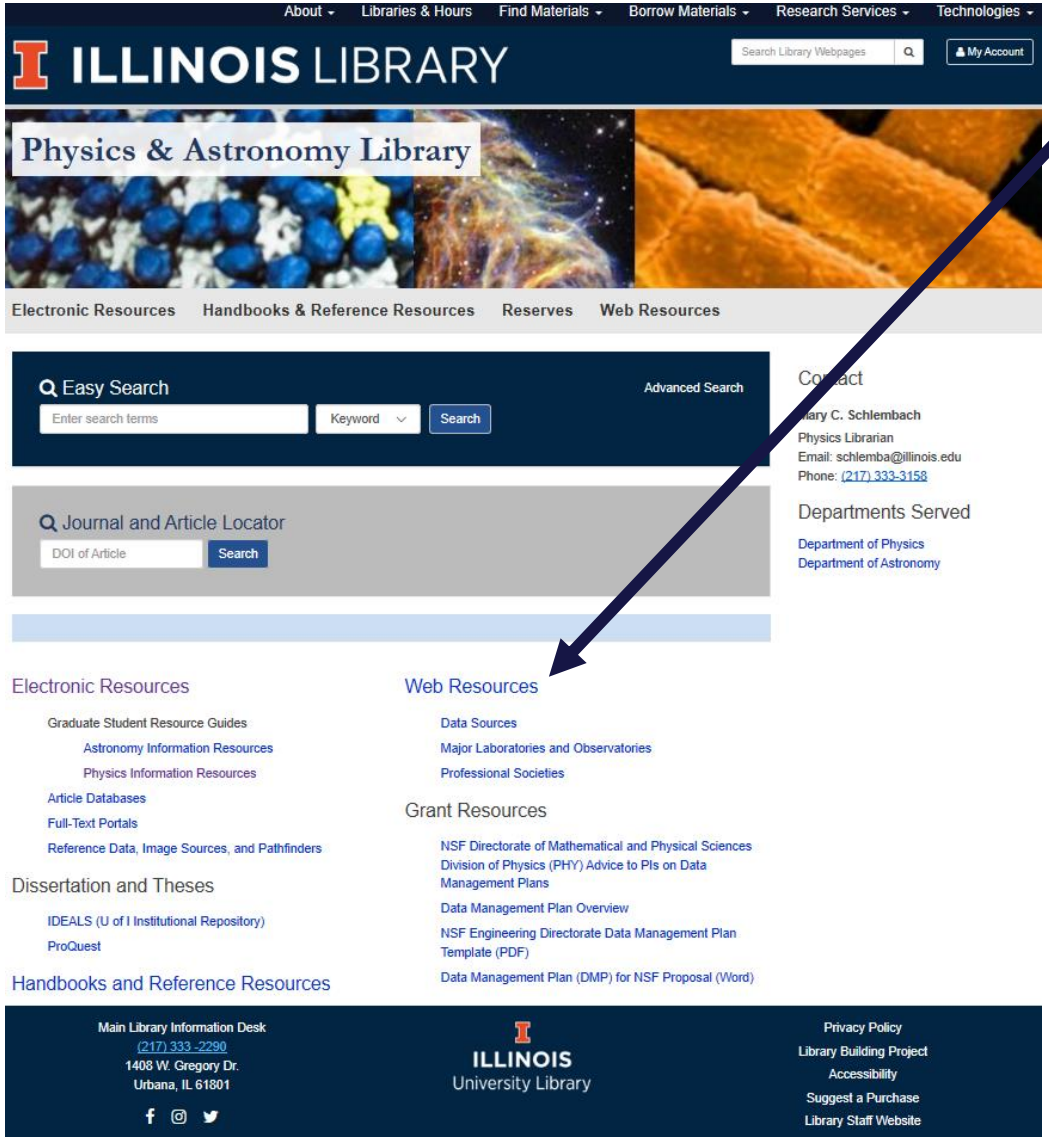


Web Resources

[Data Sources]

[Major Laboratories and Observatories]

[Professional Societies]

Where to download published scientific papers:

Go to Physics Library: http://www.library.illinois.edu/phx/

Select "Electronic Resources (ORR)" link

Search on Title of Journal, follow "Full Text Available" links

Phys. Rev. Lett.: http://prl.aps.org/ (general physics)

Phys. Rev. A: http://pra.aps.org/ (atomic, mol., optical)

Phys. Rev. B: http://prb.aps.org/ (condensed matter)

Phys. Rev. C: http://prc.aps.org/ (nuclear physics)

Phys. Rev. D: http://prd.aps.org/ (particle/cosmology)

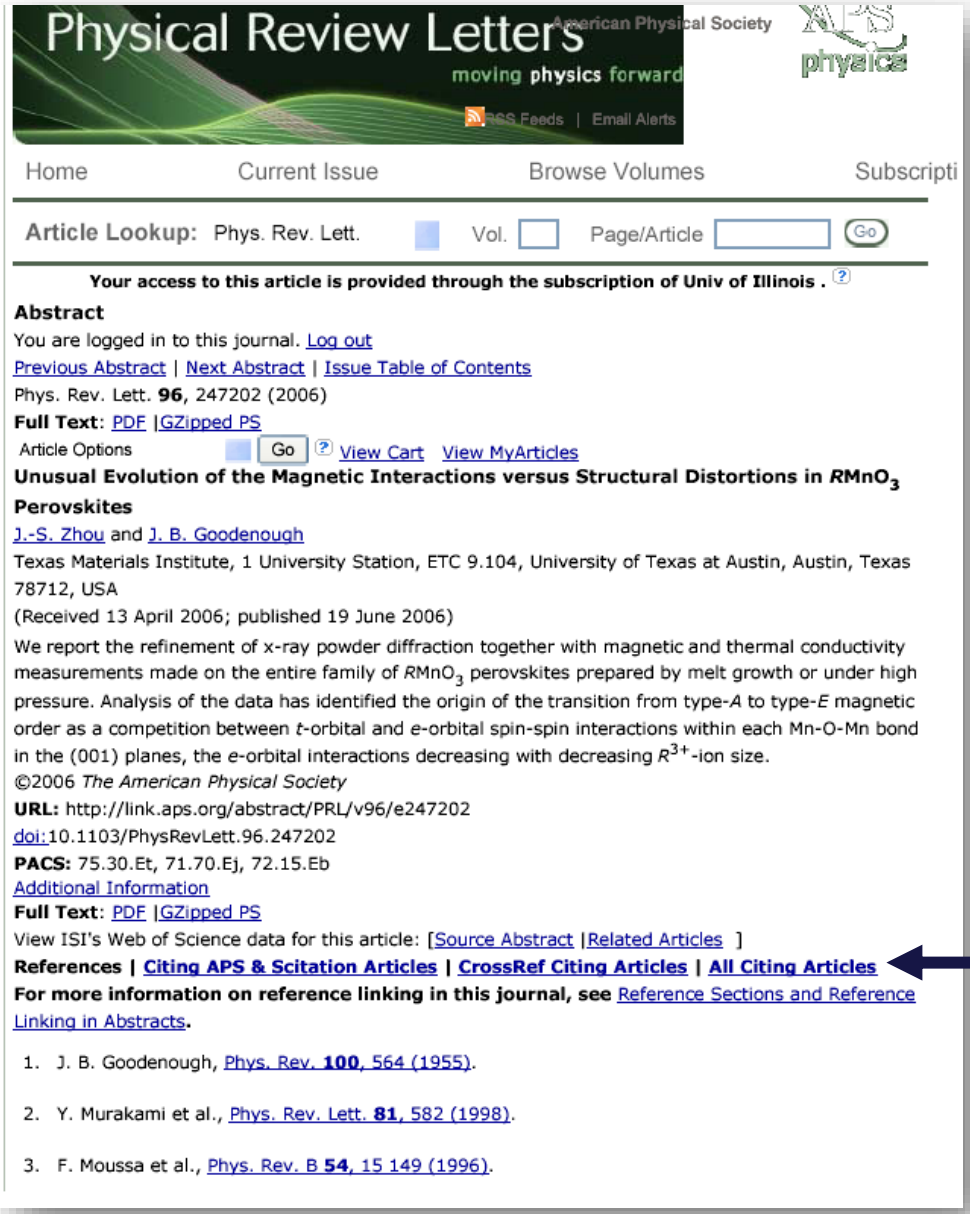
Phys. Rev. E: http://pre.aps.org/ (soft matter, statistical)

Science: http://www.sciencemag.org/

Nature: http://www.nature.com/nature/index.html

Where to download published scientific papers:

Where to download published scientific papers:



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Abstract

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Phys. Rev. Lett. **96**, 247202 (2006)

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Unusual Evolution of the Magnetic Interactions versus Structural Distortions in RMnO$_3$ Perovskites

J.-S. Zhou and J. B. Goodenough

Texas Materials Institute, 1 University Station, ETC 9.104, University of Texas at Austin, Austin, Texas 78712, USA

(Received 13 April 2006; published 19 June 2006)

We report the refinement of x-ray powder diffraction together with magnetic and thermal conductivity measurements made on the entire family of RMnO$_3$ perovskites prepared by melt growth or under high pressure. Analysis of the data has identified the origin of the transition from type-*A* to type-*E* magnetic order as a competition between *t*-orbital and *e*-orbital spin-spin interactions within each Mn-O-Mn bond in the (001) planes, the *e*-orbital interactions decreasing with decreasing R^{3+}-ion size.

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URL: http://link.aps.org/abstract/PRL/v96/e247202

doi:10.1103/PhysRevLett.96.247202

PACS: 75.30.Et, 71.70.Ej, 72.15.Eb

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References | Citing APS & Scitation Articles | CrossRef Citing Articles | All Citing Articles

For more information on reference linking in this journal, see Reference Sections and Reference Linking in Abstracts.

1. J. B. Goodenough, Phys. Rev. **100**, 564 (1955).

2. Y. Murakami et al., Phys. Rev. Lett. **81**, 582 (1998).

3. F. Moussa et al., Phys. Rev. B **54**, 15 149 (1996).

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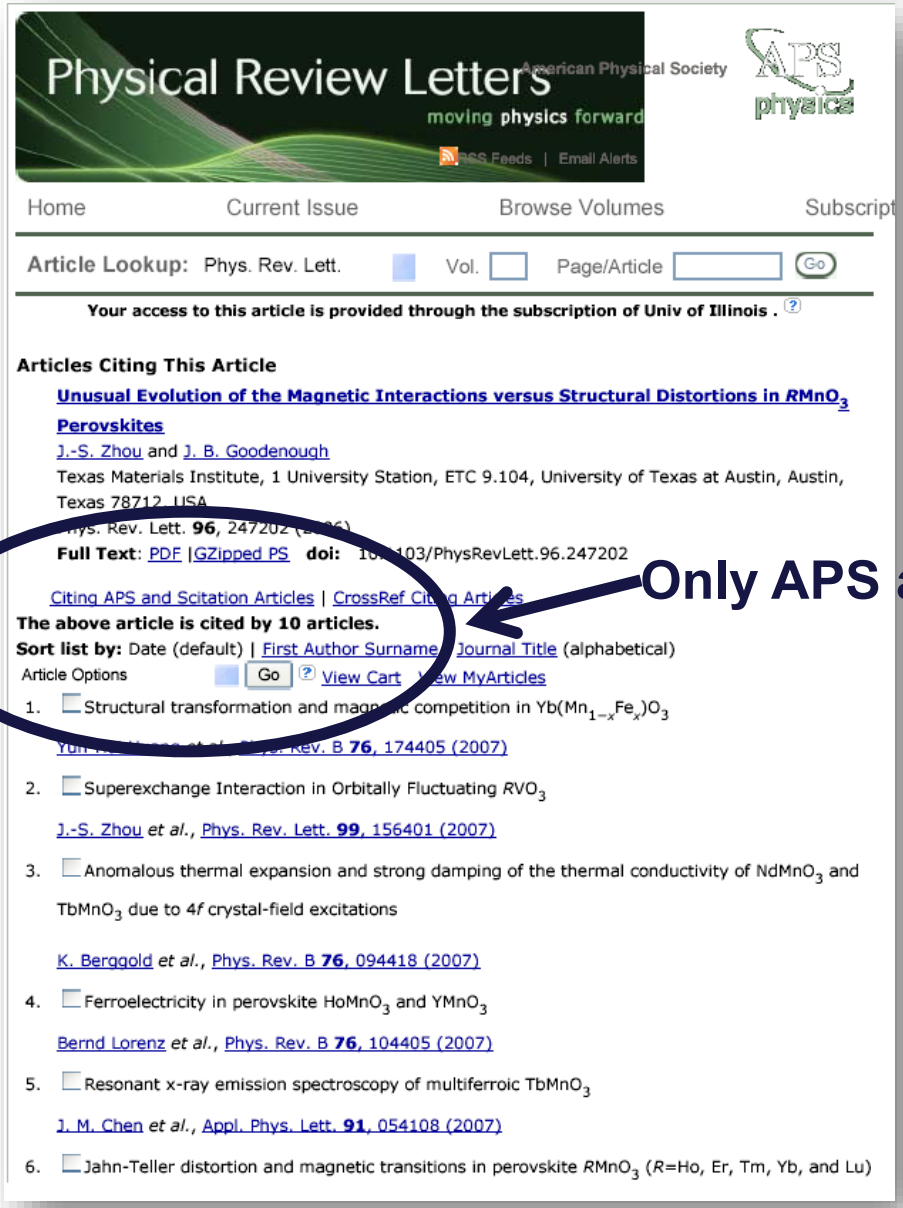
Where to download published scientific papers:

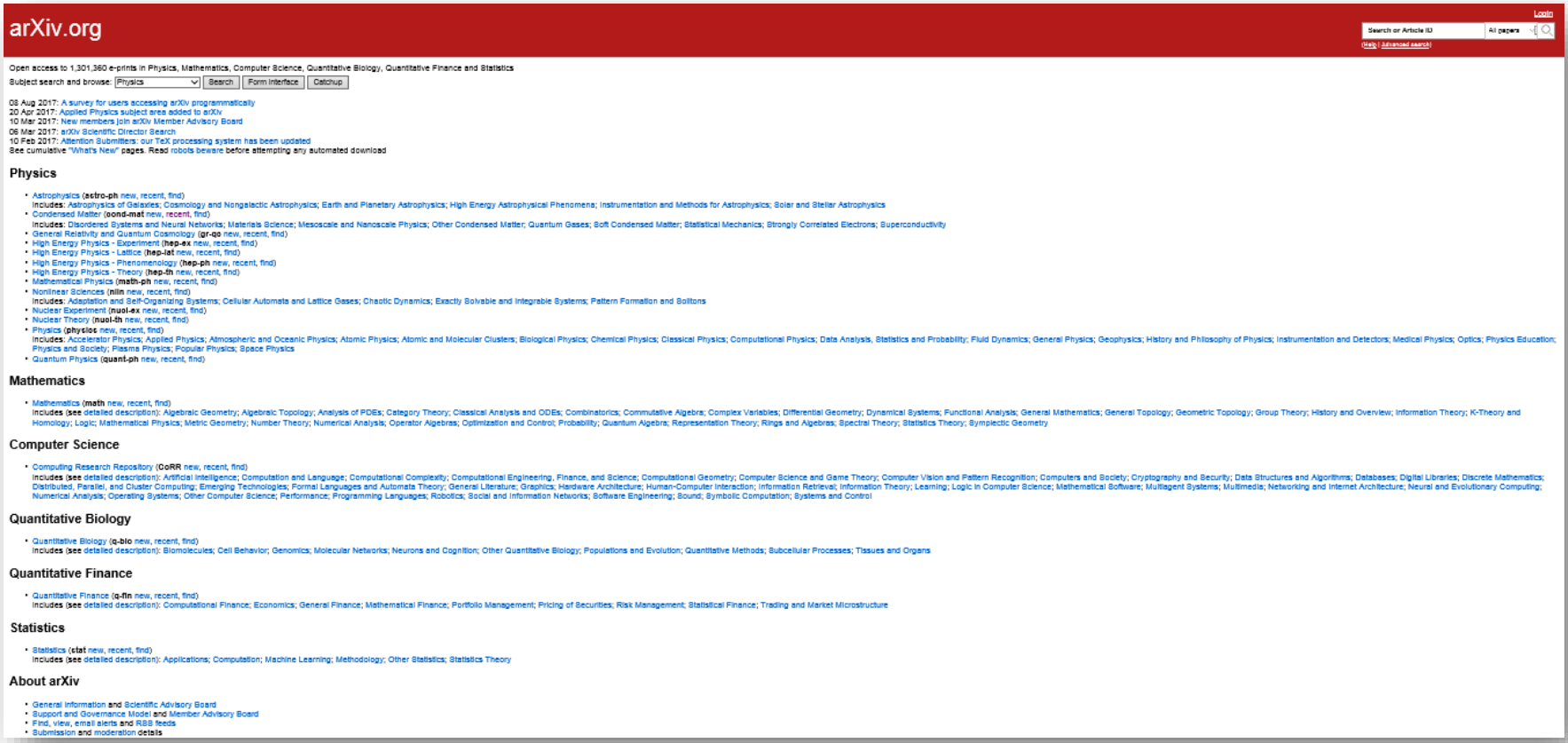


Only APS and affiliated articles!

Where to download published scientific papers:

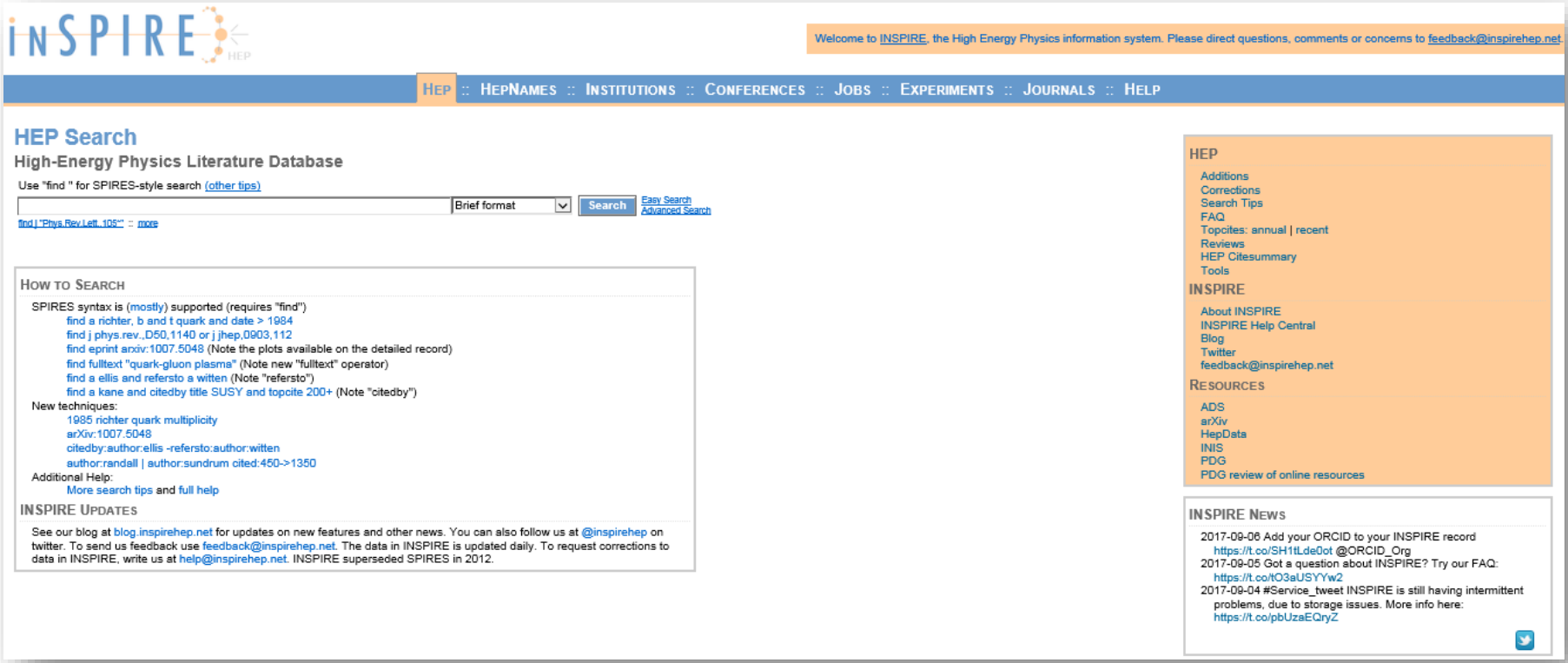
Where to download published scientific papers:

http://www.arXiv.org
Preprint server—NOT peer-reviewed



Where to download published scientific papers:

http://inspirehep.net/
inSPIRE: High-Energy Physics Literature



Keeping track of scientific papers:

Choosing a citation manager

- EasyBib

  Automatic works cited and bibliography formatting for MLA, APA, and Chicago/Turabian citation styles.

- Mendeley

  Mendeley is a free reference manager and academic social network. Make your own fully-searchable library in seconds, cite as you write, and read and annotate your PDFs on any device.

- Zotero

  Zoero is a free, easy-to-use tool to help you collect, organize, cite, and share your research sources.

More information on citation managers

Citation Management Overview—University Library

Comparison of Reference Management Software

Other Useful Bibliographic Resources for Researchers:

Google Scholar (scholar.google.com): A widely used search engine for scholarly literature across various disciplines, including articles, theses, books, and conference papers.

JSTOR (www.jstor.org): A digital library providing access to thousands of academic journals, books, and primary sources in many fields.

PubMed (pubmed.ncbi.nlm.nih.gov): A free resource that provides access to a vast database of references and abstracts on life sciences and biomedical topics.

Scopus (www.scopus.com): A comprehensive abstract and citation database of peer-reviewed literature, including scientific journals, books, and conference proceedings. See Celia Elliott's presentation on Using the Scopus Database.

Web of Science (www.webofscience.com): A multidisciplinary citation database that provides access to research articles and citation indexing across various fields.

Other Useful Bibliographic Resources for Researchers:

ERIC (eric.ed.gov): The Education Resources Information Center provides access to educational literature and resources, including journal articles and reports.

WorldCat (www.worldcat.org): A global catalog of library collections that allows users to search for books, articles, and other resources available in libraries worldwide.

Project MUSE (muse.jhu.edu): Provides access to humanities and social sciences content from scholarly journals and books.

Open Library (openlibrary.org): An initiative of the Internet Archive that offers access to millions of books and bibliographic information.

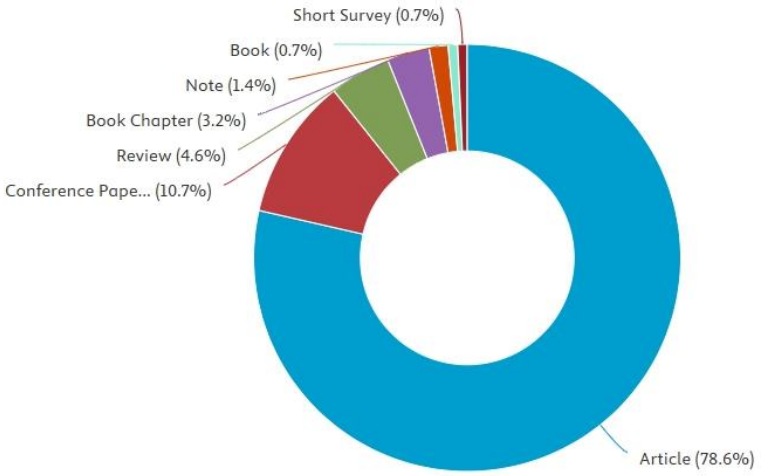
CiteSeerX (citeseerx.ist.psu.edu): A digital library and search engine for scientific and academic papers, particularly in computer and information science.

Familiarize Yourself with Useful Search Practices and Capabilities

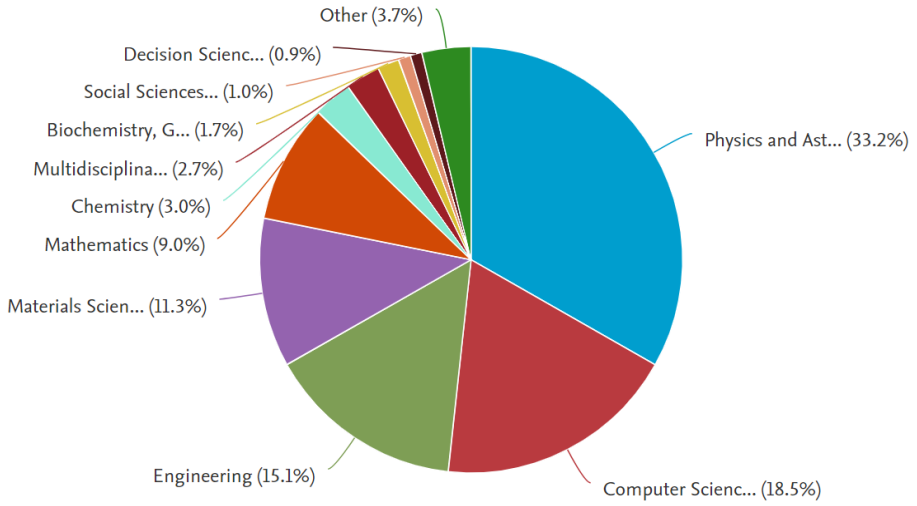
- Explore capabilities of bibliographic resources to identify connections with different fields or papers

"Quantum supremacy using a programmable superconducting processor," F. Arute *et al., Nature* **574**, 505 (2019).

Scopus "Document by Type"



Scopus "Document by Subject Area"



Familiarize Yourself with Useful Search Practices and Capabilities

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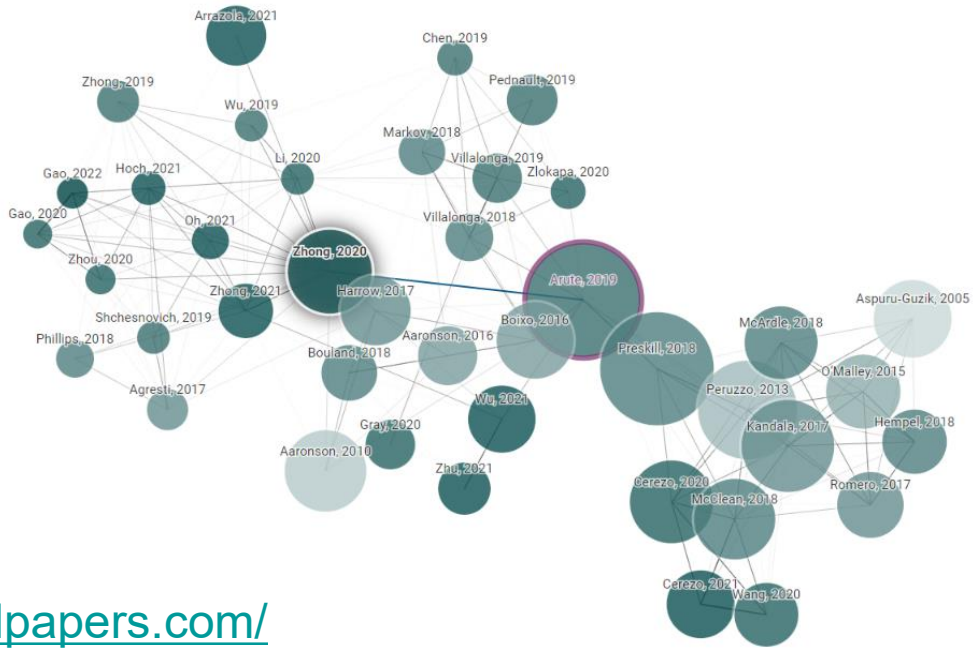
Visualize connections between papers



https://www.connectedpapers.com/

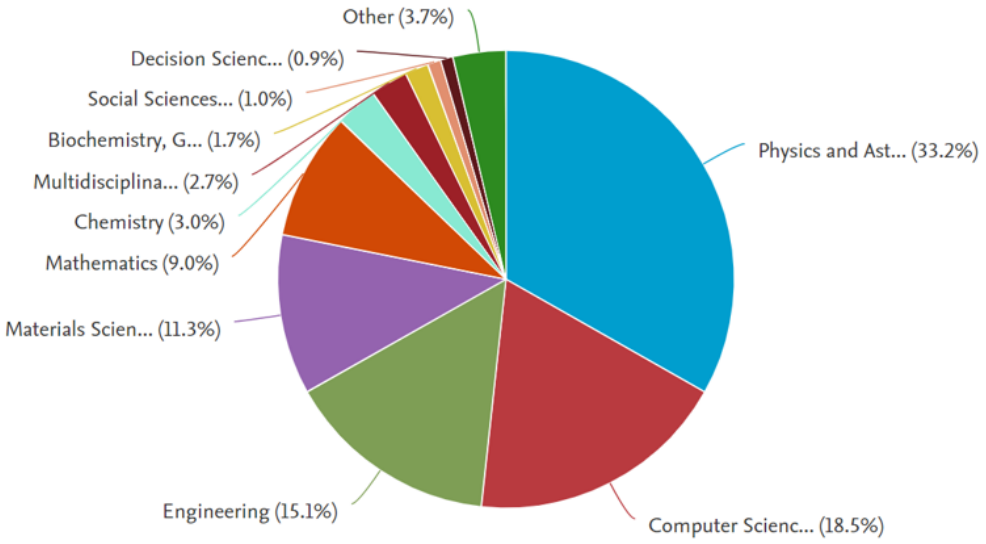
Example Journal Club Citation Evaluation from 2023

Quantum Supremacy Using a Programmable Superconducting Processor

Daren Chen, Cianan Conefrey-Shinozaki, Rupsa De, Emily Dillingham, and Marshal Dong
December 1st, 2023 Physics 596

Arute, F., et al.(2019). Nature, 574(7779), 505–510. https://doi.org/10.1038/s41586-019-1666-5

Breaking the citations down by field



Other

- Chemical Engineering - 59 documents
- Business, Management and Accounting - 35 documents
- Energy - 29 documents
- Medicine - 27 documents
- Earth and Planetary Sciences - 24 documents
- Environmental Science - 22 documents
- Arts and Humanities - 21 documents
- Economics, Econometrics and Finance - 18 documents
- Pharmacology, Toxicology and Pharmaceutics - 11 documents
- Neuroscience - 8 documents

Plus 5 additional sources.
Click chart segment to view document list.

Example Journal Club Citation Evaluation from 2023

Citations from unexpected fields:

Medicine:
Uthamacumaran, A. (2021). A review of dynamical systems approaches for the detection of chaotic attractors in cancer networks. Patterns, 2(4), 100226. https://doi.org/10.1016/j.patter.2021.100226

International Security:
Derian, J. D., & Wendt, A. (2020). 'Quantizing international relations': The case for quantum approaches to international theory and security practice. Security Dialogue, 51(5), 399–413. https://doi.org/10.1177/0967010620901905

Physics Education:
Fox, M. F. J., et. al. (2020). Preparing for the quantum revolution: What is the role of higher education? Physical Review, 16(2). https://doi.org/10.1103/physrevphyseducres.16.020131

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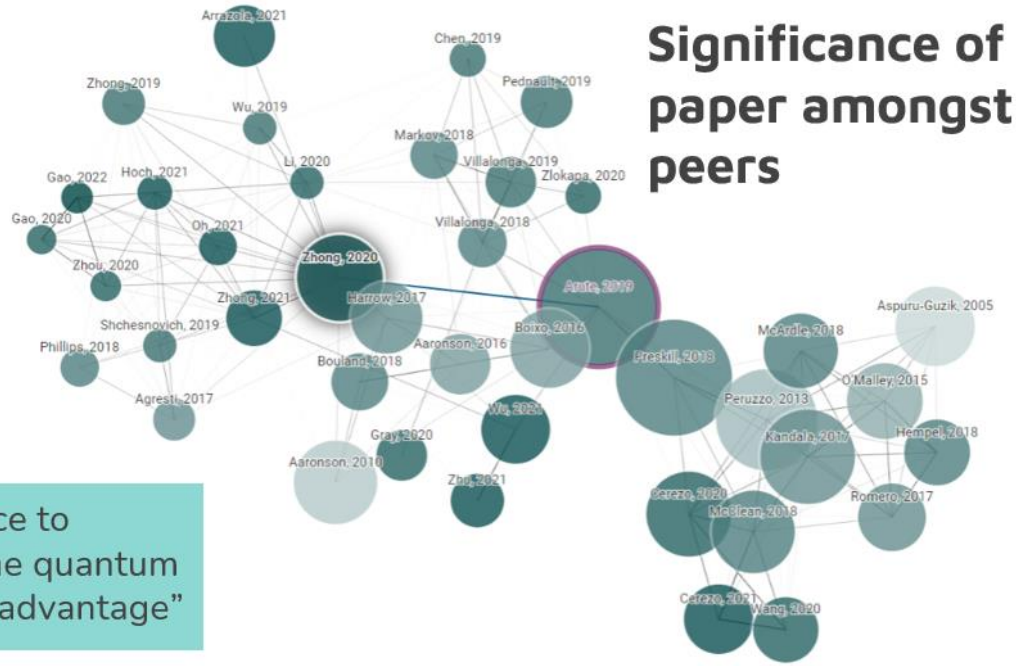

Significance of this paper amongst its peers

"strong evidence to demonstrate the quantum computational advantage"

Wu, Y., et. al. (2021). Strong quantum computational advantage using a superconducting quantum processor. Physical Review Letters, 127(18). https://doi.org/10.1103/physrevlett.127.180501

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Example Journal Club Citation Evaluation from 2023

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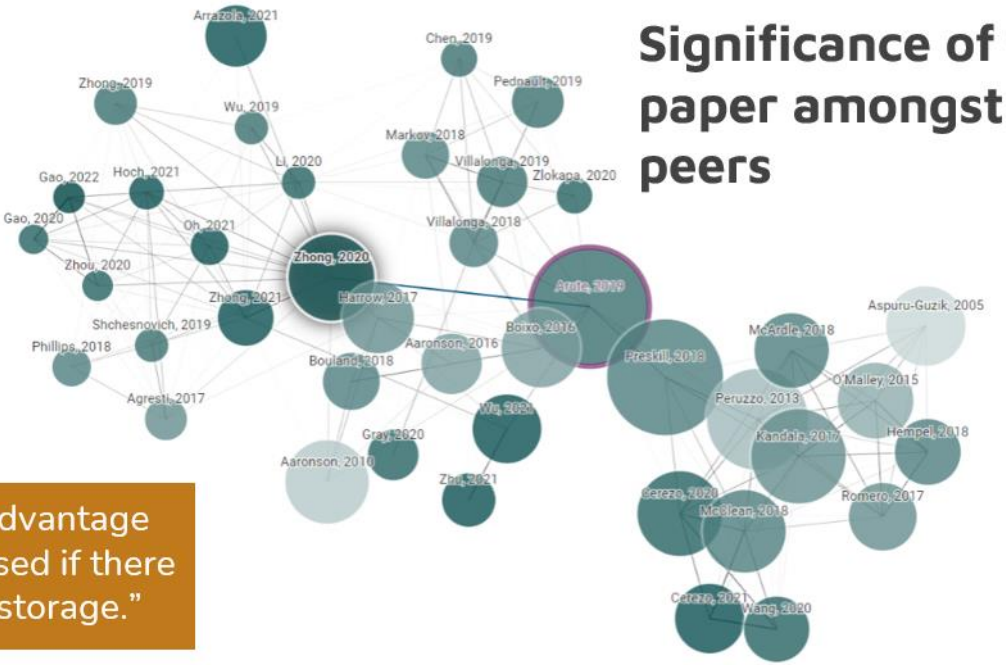

"the quantum advantage would be reversed if there were sufficient storage."

Zhong, H., et. al. (2020). Quantum computational advantage using photons. Science, 370(6523), 1460–1463. https://doi.org/10.1126/science.abe8770

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Example Journal Club Citation Evaluation from 2023

Quantum Supremacy Using a Programmable Superconducting Processor

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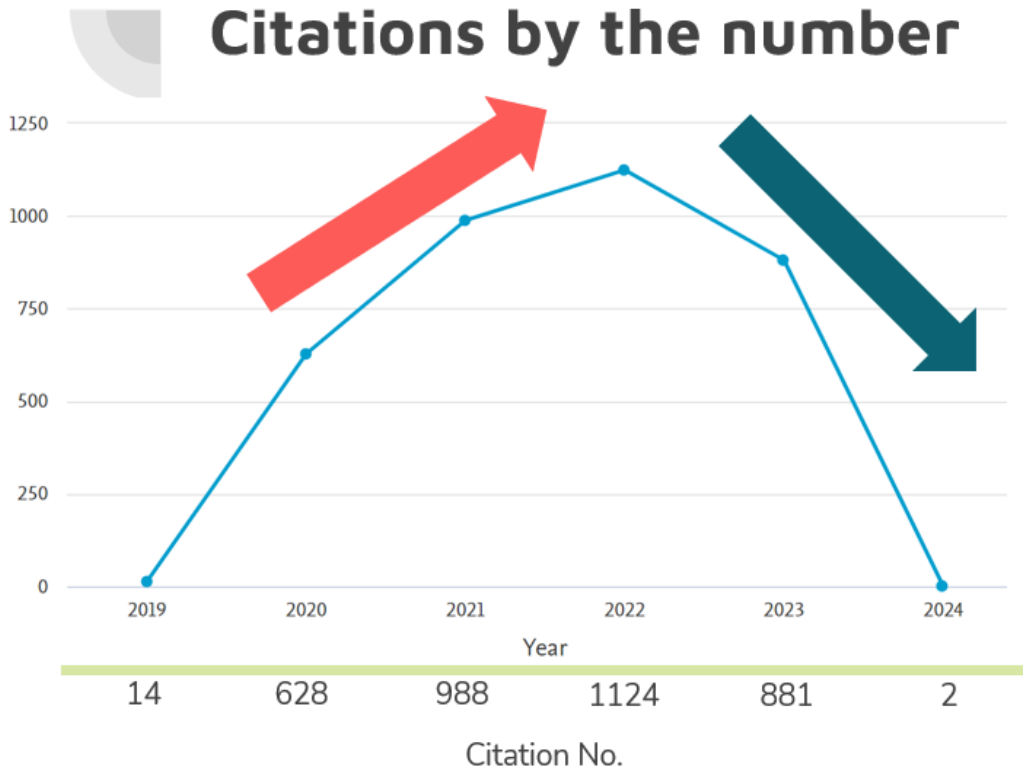
Arute, F., et al.(2019). Nature, 574(7779), 505–510. https://doi.org/10.1038/s41586-019-1666-5



Potential Problems with Bibliometric Assessments of Research

- Over reliance on bibliometric measures to evaluate research performance and importance
- Potential for citation manipulation
- Citation/h-index anxiety, impact factor obsession

The Leiden Manifesto for research metrics

Use these ten principles to guide research evaluation, urge **Diana Hicks**, **Paul Wouters** and colleagues.

Data are increasingly used to govern science. Research evaluations that were once bespoke and performed by peers are now routine and reliant on metrics[1]. The problem is that evaluation is now led by the data rather than by judgement. Metrics have proliferated: usually well intentioned, not always well informed, often ill applied. We risk damaging the system with the very tools designed to improve it, as evaluation is increasingly implemented by organizations without knowledge of, or advice on, good practice and interpretation.

Before 2000, there was the Science Citation Index on CD-ROM from the Institute for Scientific Information (ISI), used by experts for specialist analyses. In 2002, Thomson Reuters launched an integrated web platform, making the Web of Science database widely accessible. Competing citation indices were created: Elsevier's Scopus (released in 2004) and Google Scholar (beta version released in 2004). Web-based tools to easily compare institutional research productivity and impact were introduced, such as InCites (using the Web of Science) and SciVal (using Scopus), as well as software to analyse individual citation profiles using Google Scholar (Publish or Perish, released in 2007).

In 2005, Jorge Hirsch, a physicist at the University of California, San Diego, proposed the *h*-index, popularizing citation counting for individual researchers. Interest in the journal impact factor grew steadily after 1995 (see 'Impact-factor obsession').

Lately, metrics related to social usage ▸

ILLUSTRATION BY DAVID PARKINS

D. Hicks and P. Wouters, *Nature* 520, 429 (2015)

To recap:

Huge resources are available on your desktop

Get familiar with the Physics Library website

Make friends with Mary Schlembach

If you need help finding something, ASK!

Figure out how you're going to keep track of all those papers

Questions?
slcooper@illinois.edu