Google Scholar Indexing for DSpace Repositories

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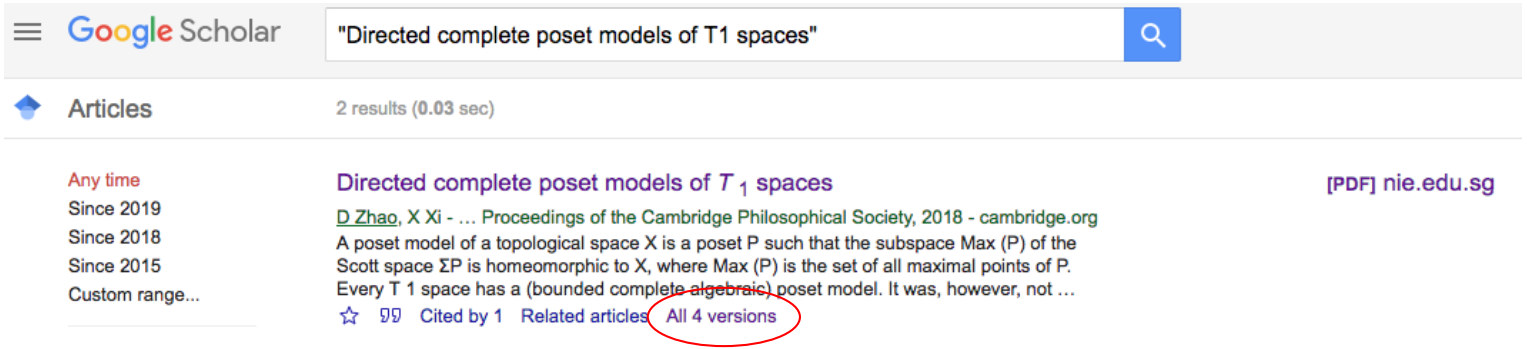
Overview

1. How the Google Scholar indexing system works
2. Common repository indexing problems
3. Suggested fixes
4. How to check your repository’s coverage in Scholar
5. Resources and troubleshooting guidelines
6. Discovery for research data
7. Questions

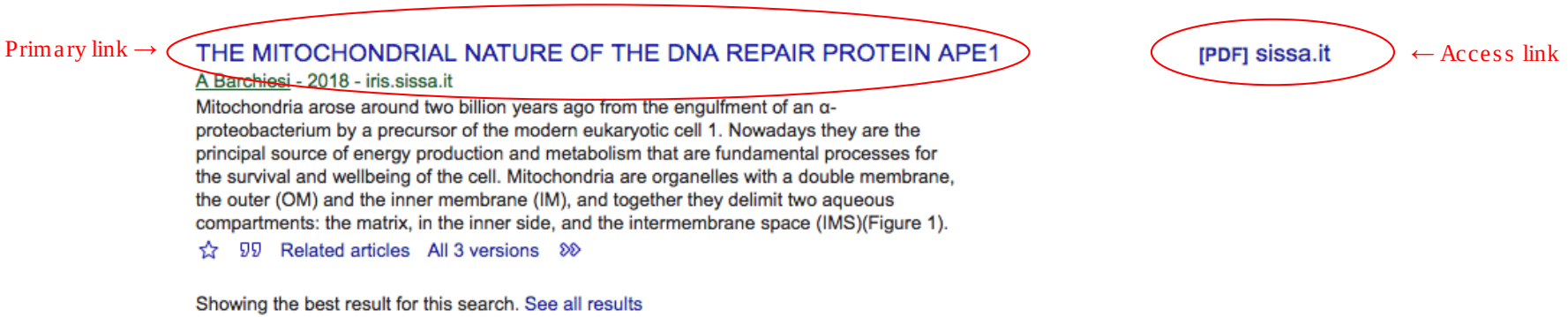
How the Google Scholar indexing system works

- Google Scholar crawls the entire web looking for scholarly publications: articles, books, reports, theses, conference proceedings, preprints ...
- The indexing system identifies scholarly content, determines each item's bibliographic metadata, and groups all versions of an item together with this metadata in search results

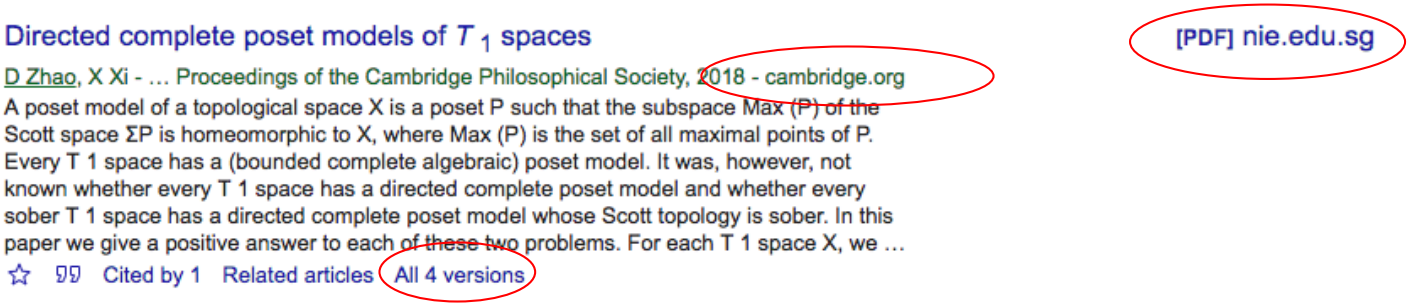


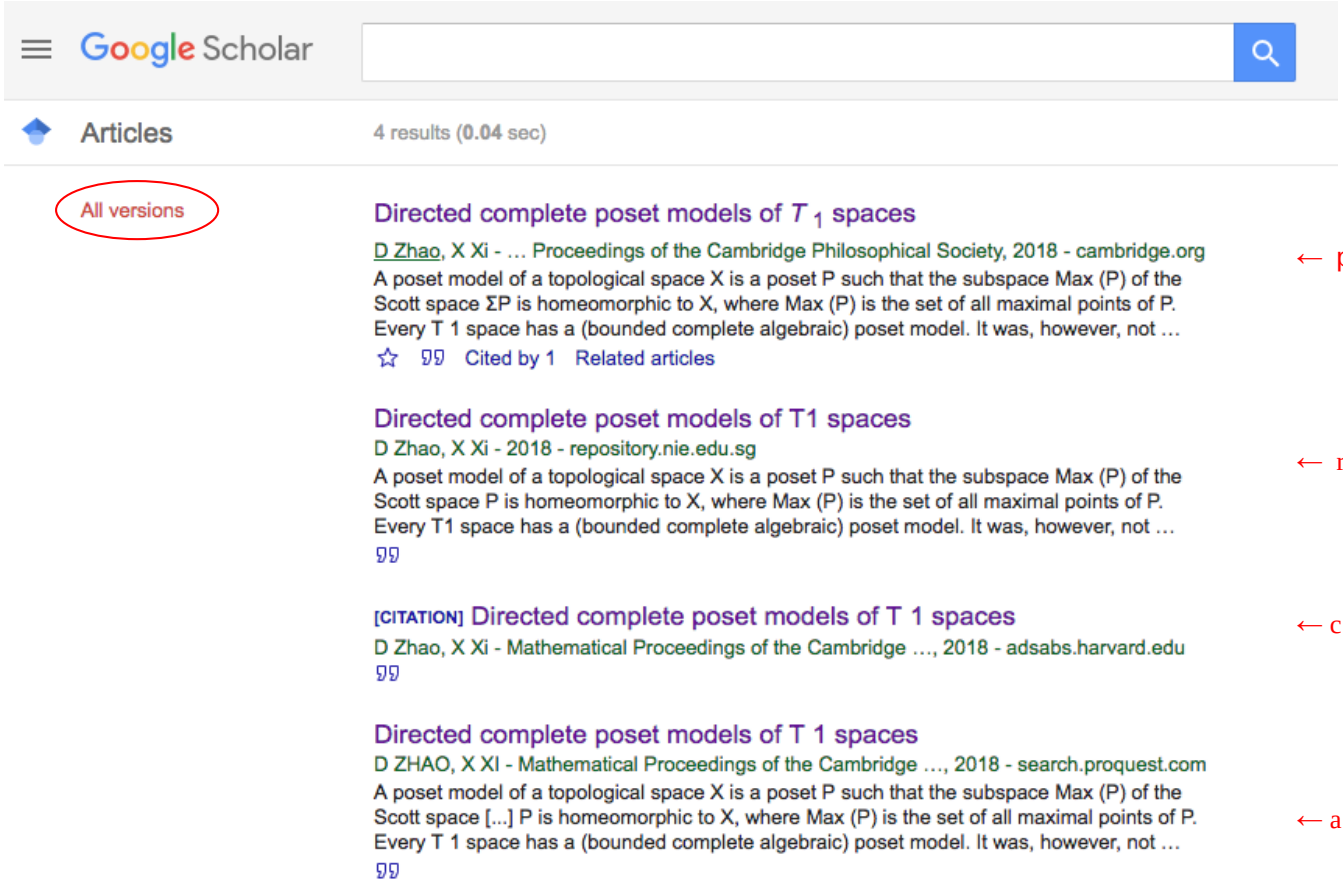
We try to make repositories visible worldwide

- For uniquely held items (e.g. dissertations), repository content is the primary link



- For formally published articles, repository content appears as the access link and/or in “All XX versions”




Google Scholar
Articles
4 results (0.04 sec)
All versions
Directed complete poset models of T_1 spaces
D Zhao, X Xi - … Proceedings of the Cambridge Philosophical Society, 2018 - cambridge.org
A poset model of a topological space X is a poset P such that the subspace Max (P) of the Scott space ΣP is homeomorphic to X, where Max (P) is the set of all maximal points of P. Every T 1 space has a (bounded complete algebraic) poset model. It was, however, not …
Cited by 1
Related articles
← publisher version
Directed complete poset models of T1 spaces
D Zhao, X Xi - 2018 - repository.nie.edu.sg
A poset model of a topological space X is a poset P such that the subspace Max (P) of the Scott space P is homeomorphic to X, where Max (P) is the set of all maximal points of P. Every T1 space has a (bounded complete algebraic) poset model. It was, however, not …
← repository version
[CITATION] Directed complete poset models of T 1 spaces
D Zhao, X Xi - Mathematical Proceedings of the Cambridge …, 2018 - adsabs.harvard.edu
← citation
Directed complete poset models of T 1 spaces
D ZHAO, X XI - Mathematical Proceedings of the Cambridge …, 2018 - search.proquest.com
A poset model of a topological space X is a poset P such that the subspace Max (P) of the Scott space [...] P is homeomorphic to X, where Max (P) is the set of all maximal points of P. Every T 1 space has a (bounded complete algebraic) poset model. It was, however, not …
← aggregator version

What Scholar needs for indexing

- Access to crawl the site
- Way to find all urls for articles -- sitemap or browse by date
- Bibliographic information in the form of machine-readable metadata tags ("metatags"), on by default for DSpace repositories past version 1.7

Bibliographic metatags tell the Scholar indexing system what the metadata for a repository item is: title, author, publication date, etc.

"Citation_pdf_url" metatag tells the indexing system which file to associate with this metadata

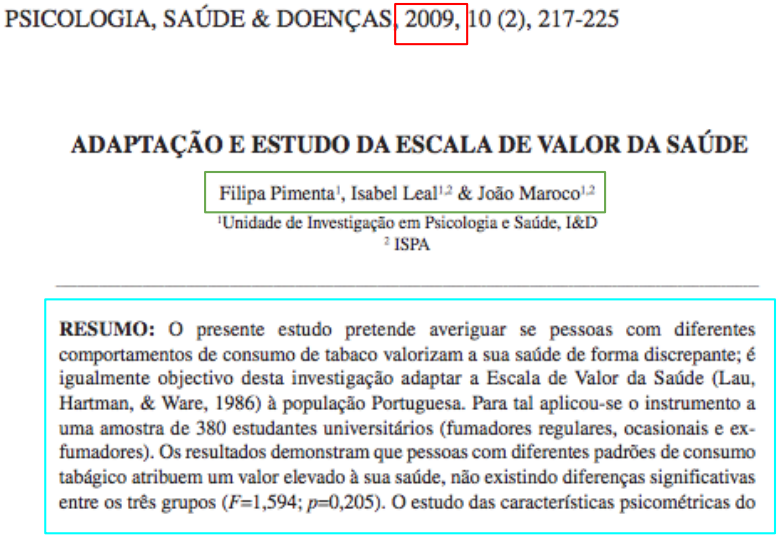
```
<meta name="citation_title" content="The testis isoform of the phosphorylase kinase
    catalytic subunit (PhK-T) plays a critical role in regulation of glycogen
    mobilization in developing lung">
<meta name="citation_author" content="Liu, Li">
<meta name="citation_author" content="Rannels, Stephen R.">
<meta name="citation_author" content="Falconieri, Mary">
<meta name="citation_author" content="Phillips, Karen S.">
<meta name="citation_author" content="Wolpert, Ellen B.">
<meta name="citation_author" content="Weaver, Timothy E.">
<meta name="citation_publication_date" content="1996/05/17">
<meta name="citation_journal_title" content="Journal of Biological Chemistry">
<meta name="citation_volume" content="271">
<meta name="citation_issue" content="20">
<meta name="citation_firstpage" content="11761">
<meta name="citation_lastpage" content="11766">
<meta name="citation_pdf_url"
    content="http://www.example.com/content/271/20/11761.full.pdf">
```

View source code from repository item page to view metatags

Right click or keyboard command to "View Page Source," depending on your browser

Search HTML source for "citation_" to view metatags

Metatags should match the version of record:



PSICOLOGIA, SAÚDE & DOENÇAS, 2009, 10 (2), 217-225

ADAPTAÇÃO E ESTUDO DA ESCALA DE VALOR DA SAÚDE

Filipa Pimenta[1], Isabel Leal[1,2] & João Maroco[1,2]
[1]Unidade de Investigação em Psicologia e Saúde, I&D
[2] ISPA

RESUMO: O presente estudo pretende averiguar se pessoas com diferentes comportamentos de consumo de tabaco valorizam a sua saúde de forma discrepante; é igualmente objectivo desta investigação adaptar a Escala de Valor da Saúde (Lau, Hartman, & Ware, 1986) à população Portuguesa. Para tal aplicou-se o instrumento a uma amostra de 380 estudantes universitários (fumadores regulares, ocasionais e ex-fumadores). Os resultados demonstram que pessoas com diferentes padrões de consumo tabágico atribuem um valor elevado à sua saúde, não existindo diferenças significativas entre os três grupos (F=1,594; p=0,205). O estudo das características psicométricas do

view-source:http://repositorio.ispa.pt/handle/10400.12/1089

```
<meta name="citation_author" content="Pimenta, Filipa" />
<meta name="citation_author" content="Leal, Isabel Pereira" />
<meta name="citation_author" content="Maroco, João" />
<meta name="citation_issn" content="1645-0086" />
<meta name="citation_journal_title" content="Psicologia, Saúde &amp;amp; Doenças" />
<meta name="citation_date" content="2009" />
<meta name="citation_abstract_html_url" content="https://repositorio.ispa.pt/handle/10400.12/1089" />
<meta name="citation_lastpage" content="225" />
<meta name="citation_language" content="por" />
<meta name="citation_pdf_url" content="https://repositorio.ispa.pt/bitstream/10400.12/1089/1/PSD%202009%2010%282%29%20217-225.pdf" />
<meta name="citation_keywords" content="Valor; Saúde; Fumadores; Ex-fumadores; Escala; Value; Health; Smokers; Ex-smokers; Scale; article" />
<meta name="citation_publisher" content="Sociedade Portuguesa de Psicologia da Saúde" />
<meta name="citation_title" content="Adaptação e estudo da escala de valor da saúde" />
```

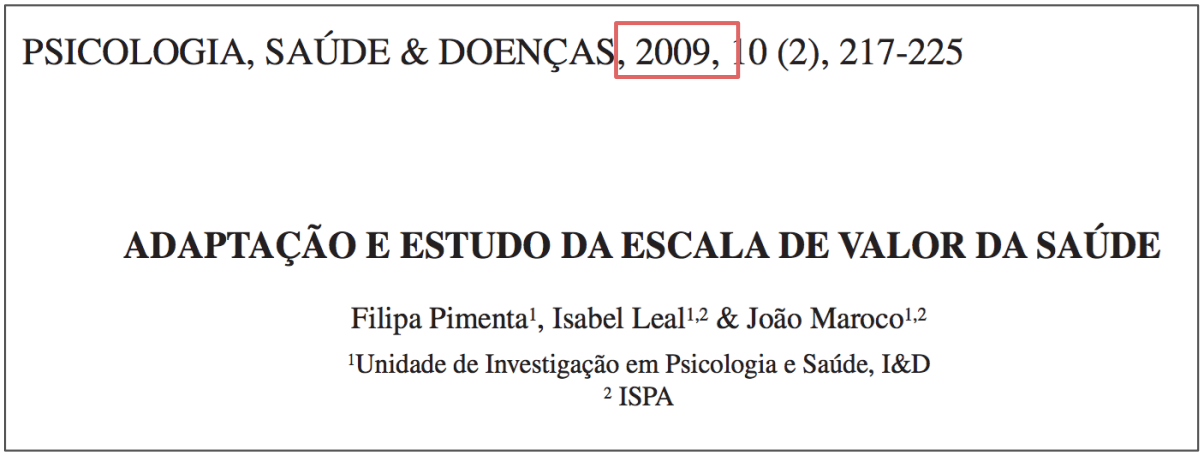
Repository indexing errors

- Commonly: Incorrect bibliographic metatags
  - Sites with widespread metadata errors can’t be indexed
- Occasionally: Site outages that occur while the indexing system is looking for publications in your repository
- Occasionally: crawler issues, including blocking the Googlebot crawler, slow responsiveness or errors to crawlers, or limiting the crawl speed.

Incorrect publication dates in citation_date metatag

- Occurs most commonly when upload/online date is given as publication date when no publication date exists, often via batch uploads, e.g.
  - <meta name="citation_date" content="2014"/>

  versus publication date in version of record:



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Fix: Incorrect publication dates in citation_date metatag

- Test by comparing date citation_date tag with date in the version of record. If date listed in citation_date tag is later than the version of record, likely online date is being used as publication date.

- Fix: patch for DSpace repositories available at https://github.com/DSpace/DSpace/pull/2294.patch

    - More information here: https://jira.duraspace.org/browse/DS-4104

Incorrect author order in citation_author metatags

- Occurs when the author metatags are listed out of order in the source code, e.g.
  - <meta name="citation_author" content="Leal, Isabel" />
  - <meta name="citation_author" content="Pimenta, Filipa" />
  - <meta name="citation_author" content="Maroco, João" />

versus author order in version of record:

Filipa Pimenta[1], Isabel Leal[1,2] & João Maroco[1,2]

Fix: Incorrect author order in citation_author metatags

- Fix: If using DSpace versions 5.0, 5.1, 5.2, and 5.3, patch for DSpace repositories available at https://github.com/DSpace/DSpace/pull/999
  - More information here: https://jira.duraspace.org/browse/DS-2679
  - Upgrading to DSpace v5.4 or above will also fix this problem

- Fix: Adjust author metatag order to match author order in the version of record
  - <meta name="citation_author" content="Pimenta, Filipa" />
  - <meta name="citation_author" content="Leal, Isabel" />
  - <meta name="citation_author" content="Maroco, João" />

Filipa Pimenta[1], Isabel Leal[1,2] & João Maroco[1,2]

Missing authors in metatags

- Most commonly only including authors from institution or only listing the first author of a publication, e.g.
  - <meta name="citation_author" content="Leal, Isabel" />

    vs. 

- Fix: Include all authors listed in the version of record in author metatags, not just authors from your own institution. (And again, list authors in the order that they appear in the published version.)

Too many authors in metatags

- Most commonly listing the advisor as an author for a thesis/dissertation, e.g.
  - <meta name="citation_title" content="Jungian approaches to underwater basketweaving”/>
  - <meta name=”citation_author” content="Sara Student”/>
  - <meta name=”citation_author” content="Professor Patricia”/>
- Fix: Only include one author of a thesis or dissertation in author metatag—the student who wrote it
  - <meta name="citation_title" content="Jungian approaches to underwater basketweaving”/>
  - <meta name=”citation_author” content="Sara Student”/>

Trailing information in metatags

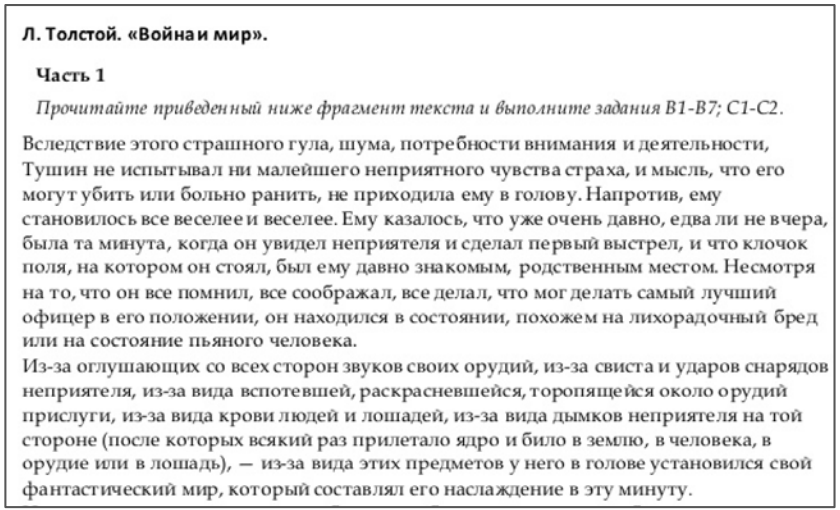
- Most commonly repository name or article type appended to title metatag, e.g.
  - <meta name="citation_title" content="Jungian approaches to underwater basketweaving Northern California College Repository/>
  - <meta name="citation_title" content="Jungian approaches to underwater basketweaving Thesis" />
- Fix: (1) Avoid adding any elements other than article bibliographic information, (2) Remove non-bibliographic information from metatags
  - <meta name="citation_title" content="Jungian approaches to underwater basketweaving" />

Multilinguals in metatags

- Combining different scripts in metatags results in mixed bibliographic information that prevents the item from being ranked in Scholar search results —and is misleading for users
- ex: including the translated version of the title in title metatags, e.g.
  - <meta name="citation_title" content="War and Peace == Война и мир" />
- ex: listing authors in native script of home institution when it is not the language in which the article was written, e.g.
  - <meta name="citation_author" content="Толстой, Лев Николаевич " />
  - <meta name="citation_author" content="Tolstoy, Lev Nikolayevich "/>

Fix: Multilinguals in metatags

- Fix: use the language of the full text/abstract for all metatags. Don’t duplicate metatag information in multiple scripts



Л. Толстой. «Война и мир».

Часть 1

Прочитайте приведенный ниже фрагмент текста и выполните задания B1-B7; C1-C2.

Вследствие этого страшного гула, шума, потребности внимания и деятельности, Тушин не испытывал ни малейшего неприятного чувства страха, и мысль, что его могут убить или больно ранить, не приходила ему в голову. Напротив, ему становилось все веселее и веселее. Ему казалось, что уже очень давно, едва ли не вчера, была та минута, когда он увидел неприятеля и сделал первый выстрел, и что клочок поля, на котором он стоял, был ему давно знакомым, родственным местом. Несмотря на то, что он все помнил, все соображал, все делал, что мог делать самый лучший офицер в его положении, он находился в состоянии, похожем на лихорадочный бред или на состояние пьяного человека.

Из-за оглушающих со всех сторон звуков своих орудий, из-за свиста и ударов снарядов неприятеля, из-за вида вспотевшей, раскрасневшейся, торопящейся около орудий прислуги, из-за вида крови людей и лошадей, из-за вида дымков неприятеля на той стороне (после которых всякий раз прилетало ядро и било в землю, в человека, в орудие или в лошадь), — из-за вида этих предметов у него в голове установился свой фантастический мир, который составлял его наслаждение в эту минуту.

<meta name="citation_title" content="Война и мир" />

<meta name="citation_author" content="Толстой, Лев Николаевич "/>

Other repository errors

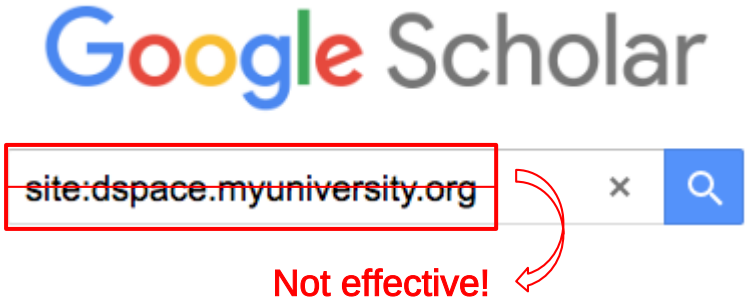
- Extended or repeated site outages blocks the indexing system's crawler and results in search results leading users to the wrong pages
  - **Fix:** Don't keep site down for extended periods of time, e.g. multiple days
- Occasionally crawler access is blocked by other site configurations
  - **Fix:** Keep default crawler settings for DSpace sites
- Repository moved without redirects, or items renumbered without redirects.
  - **Fix:** Set up redirects whenever URLs for publications in the repository change.

Other repository errors

- Adding an interstitial for accessing fulltext
  - **Fix:** Skip interstitials for users clicking on search results
- Adding a cover page to fulltext articles
  - **Fix:** Host PDFs articles as-is

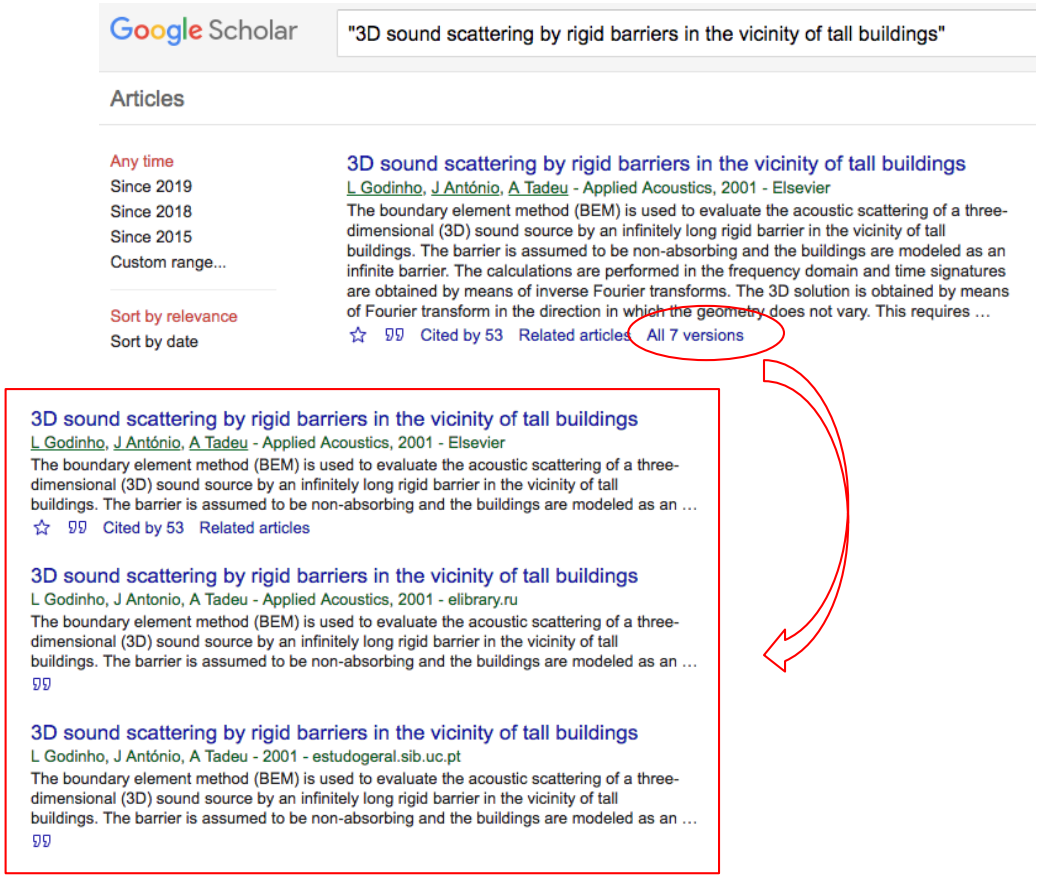
How to do a Scholar coverage check for your repository: What **doesn't** work

- The result count of searching your repository site ("site:XXX") is not an accurate indicator of Scholar coverage
- This is because the number listed in Scholar search results for a site only applies to the primary links —and as described earlier, the repository content is often not the primary link (in "All XX versions")



How to do a coverage check for your repository: what **does** work

- Search in Scholar for titles of several dozen **randomly** selected items across the repository and see if these papers are included
- Be sure to check the “All XXX versions” link as well, as often the repository version will not be the primary link



Google Scholar guidelines and resources for repositories

1. Google Scholar inclusion guidelines &troubleshooting guidelines

https://scholar.google.com/intl/en/scholar/inclusion.html#indexing

https://scholar.google.com/intl/en/scholar/inclusion.html#troubleshooting

1. “Indexing Repositories: Pitfalls &Best Practices” presentation from 2015 Open Repositories conference

https://www.or2015.net/wp-content/uploads/2015/06/or-2015-anurag-google-scholar.pdf

3. German DSpace User Group

https://wiki.duraspace.org/display/DSPACE/German+DSpace+User+Group

Discovery for research data: best practices for indexing

- Google Scholar indexes scholarly publications, not the underlying research data.
- Datasets are indexed by Google principally in web search.
  - For more on being indexed in web search, see Search Console help: https://support.google.com/webmasters/answer/6259634?hl=en&ref_topic=9128571
- Google Dataset Search, currently in Beta, pulls results from web search.
  - For more on Google Dataset Search setups, see https://support.google.com/webmasters/thread/1960710
- Publishing research data to data-only repositories usually works well for indexing.

Thank you for joining us!

Questions?