





A nonprofit that builds
infrastructure for Open Science.



unpaywall

A rad browser extension?

Information-theoretic approach to quantum error correction and reversible measurement

M. A. Nielsen, Carlton M. Caves, Benjamin Schumacher, Howard Barnum

Published 8 January 1998. DOI: 10.1098/rspa.1998.0160

Article [Info & Metrics](#) [eLetters](#)

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Abstract

Quantum operations provide a general description of the state changes allowed by quantum mechanics. The reversal of quantum operations is important for quantum error-correcting codes, teleportation and reversing quantum measurements. We derive information-theoretic conditions and equivalent algebraic conditions that are necessary and sufficient for a general quantum operation to be reversible. We analyse the thermodynamic

8 January 1998

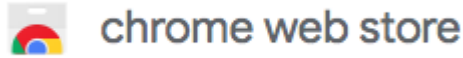
Volume 454, Issue 1998

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This means
it's free.



★★★★★ 130 | [Productivity](#) | 👤 193,467 users



30,392
Users

[121](#)
[Reviews](#)

★★★★★
4.5 Stars

The Unpaywall browser extension
has 223,859 active users

***But Unpaywall isn't a
browser extension.***



Unpaywall is this.



unpaywall

**A complete, open, and accurate
index of open access.**

Unpaywall is

1. Complete

2. Open

3. Accurate

Unpaywall is

1. Complete

2. Open

3. Accurate

Resulting in

4. Impact

5. Sustainability

6. Big Plans

Unpaywall is

1. **Complete**
2. Open
3. Accurate

Resulting in

4. Impact
5. Sustainability
6. Big Plans

Unpaywall is

1. Complete

- **Crossref**
- **Green OA**
- **Publisher-hosted OA**

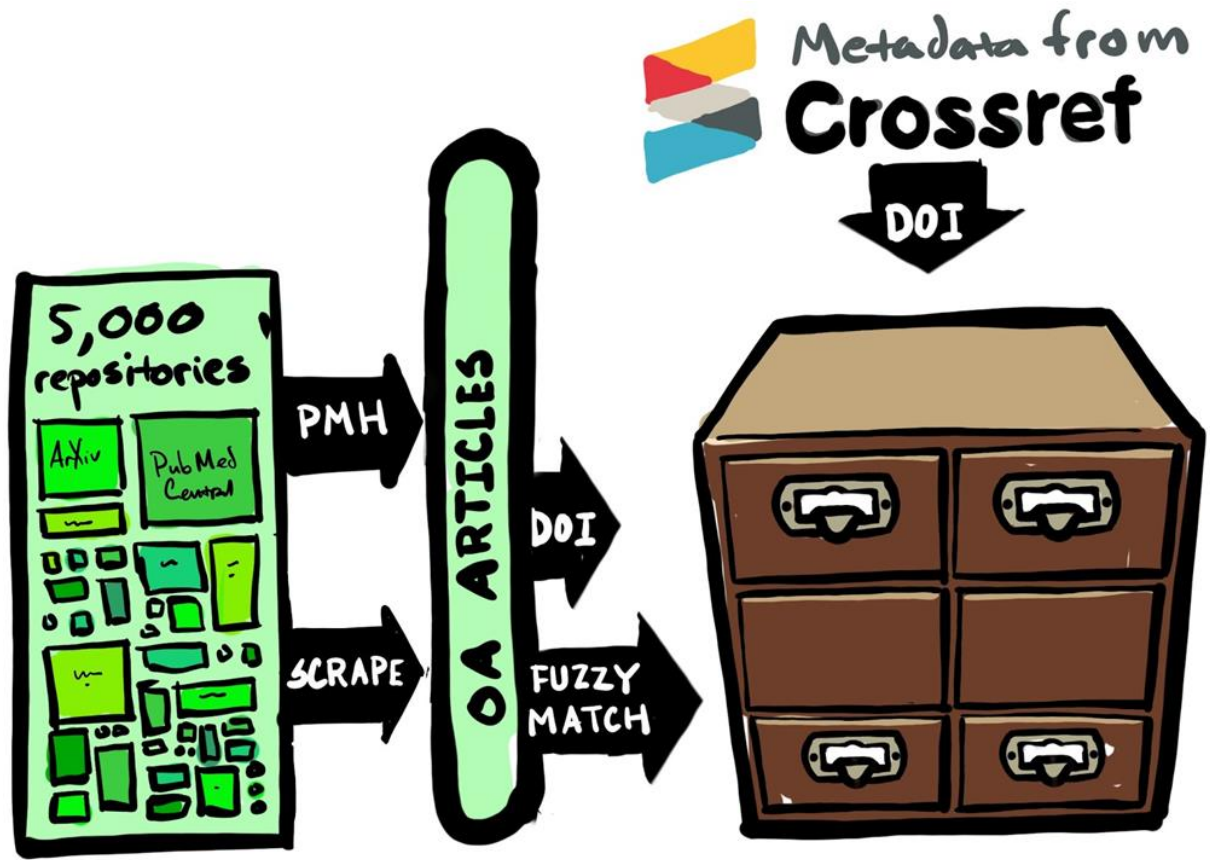
Metadata from
Crossref



Unpaywall is

1. Complete

- **Crossref**
- **Green OA**
 - **full list of repositories**
 - **unreliant on metadata**
 - **determines version and license**
 - **fuzzy-matches to link articles**
- **Publisher-hosted OA**

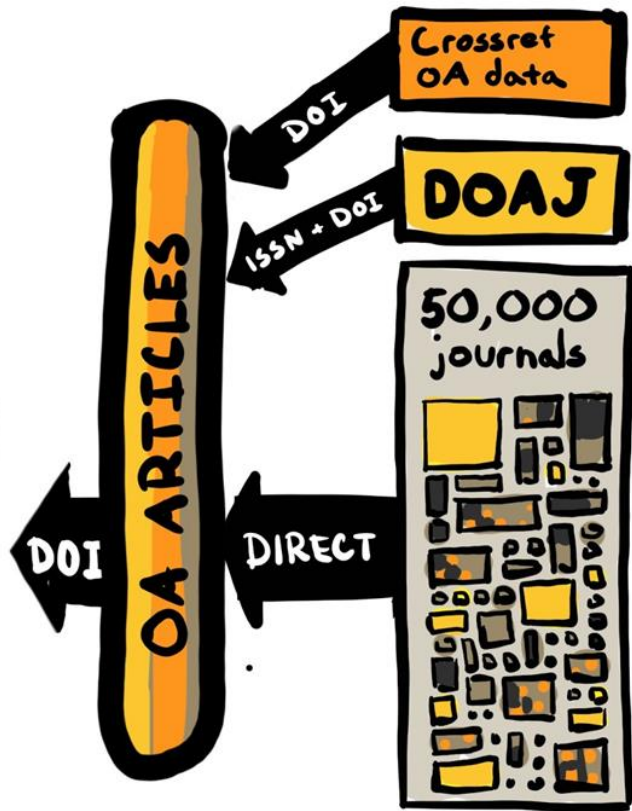


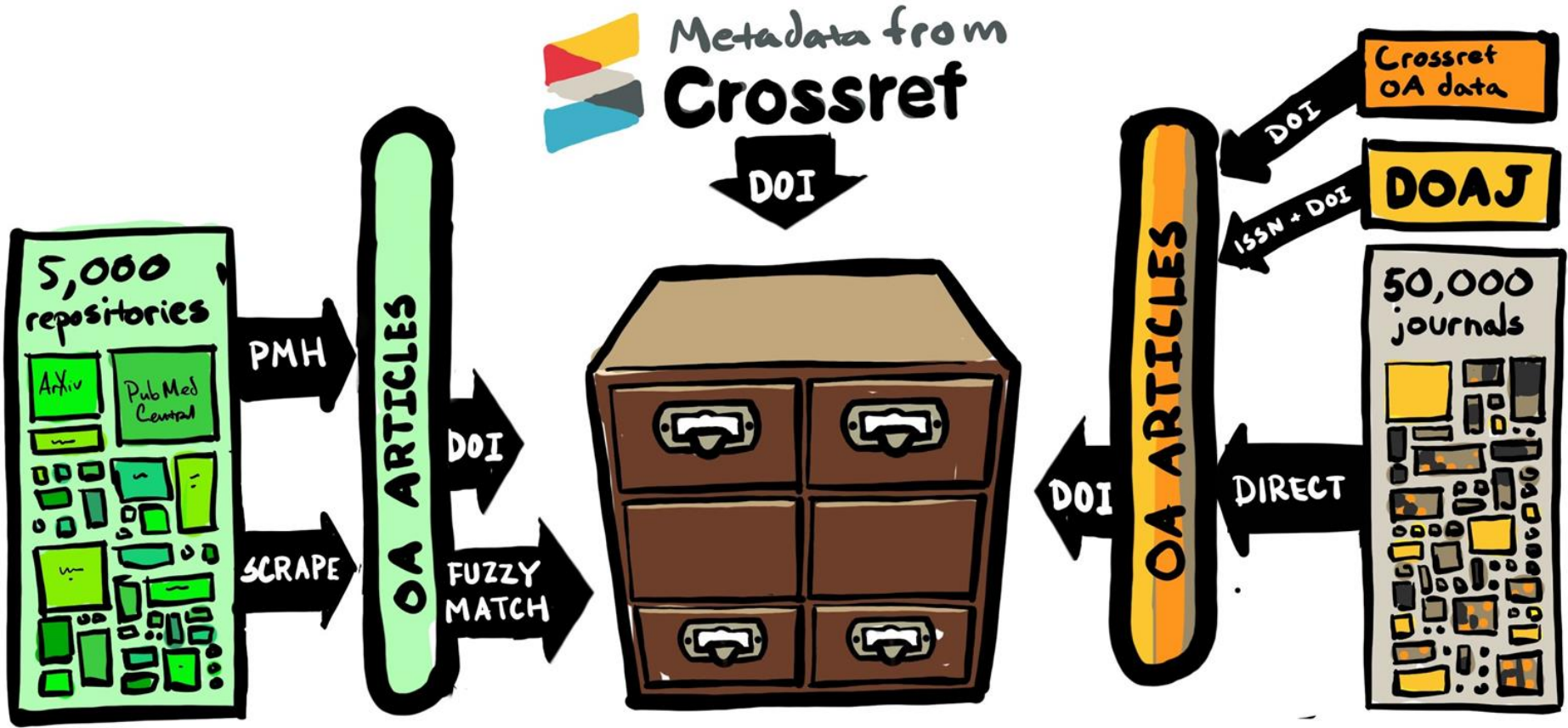
Unpaywall is

1. Complete

- **Crossref**
- **Green OA**
- **Publisher-hosted OA**
 - **direct assessment**
 - **Crossref OA metadata**
 - **DOAJ**

Metadata from
Crossref





Unpaywall is

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2. **Open**
3. Accurate

Resulting in

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Unpaywall is

2. Open

- **Open Source**
- **Open Data**
- **Open Integrations**

Unpaywall is

2. Open

- **Open Source**
- **Open Data**
 - **full snapshot**
 - **API**
- **Open Integrations**

```
{
- best_oa_location: {
  endpoint_id: null,
  evidence: "open (via page says license)",
  host_type: "publisher",
  is_best: true,
  license: "cc-by",
  pmh_id: null,
  repository_institution: null,
  updated: "2019-05-21T23:03:01.625938",
  url: "https://d2pdyyx74uyyu5.cloudfront.net/docs/peerj-factsheet.pdf",
  url_for_landing_page: "https://doi.org/10.7717/peerj.4375",
  url_for_pdf: "https://d2pdyyx74uyyu5.cloudfront.net/docs/peerj-factsheet.pdf",
  version: "publishedVersion"
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data_standard: 2,
doi: "10.7717/peerj.4375",
doi_url: "https://doi.org/10.7717/peerj.4375",
genre: "journal-article",
is_oa: true,
journal_is_in_doaj: true,
journal_is_oa: true,
journal_issns: "2167-8359",
journal_name: "PeerJ",
- oa_locations: [
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    evidence: "open (via page says license)",
    host_type: "publisher",
    is_best: true,
    license: "cc-by",
    pmh_id: null,
    repository_institution: null,
```

Unpaywall is

2. Open

- **Open Source**
- **Open Data**
- **Open Integrations**
 - **simple query tool**
 - **link resolvers**
 - **search engines**

Unpaywall is

1. Complete
2. Open
3. **Accurate**

Resulting in

4. Impact
5. Sustainability
6. Big Plans

Unpaywall is

3. Accurate

- **98% precision.** Mechanical Turkers help make sure our OA links are legit.
- **82% recall.** Turkers check to see if Google Scholar finds things we don't.
- **Compares well to Google Scholar**

Unpaywall OA coverage is comparable to Google Scholar

	2009		2014	
	Google Scholar	Unpaywall	Google Scholar	Unpaywall
% Gold	3.3	3.1	10.1	9.4
% Hybrid	0.5	3.4	1.5	5.2
% Delayed	2	-	1.1	-
% Bronze	14.1	14.7	12.6	11.6
% Green (only)	11.3	11.9	10.5	11.2
% Total OA	31.2	33.1	35.8	37.4

Martín-Martín, A., Costas, R., van Leeuwen, T., & López-Cózar, E. D. (2018). **Evidence of Open Access of scientific publications in Google Scholar: a large-scale analysis.** arXiv preprint arXiv:1803.06161.

Unpaywall is

1. Complete
2. Open
3. Accurate

Resulting in

4. **Impact**
5. Sustainability
6. Big Plans

Resulting in

4. Impact

- **Used by all major academic discovery services.**
- **Used in over 2,000 libraries.**
- **Used in large-scale policy assessment**

Unpaywall is

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Resulting in

4. Impact
5. **Sustainability**
6. Big Plans

Resulting in

5. Sustainability

- **Financial sustainability:**
 - **Staying small: ant not lion**
 - **Unpaywall Data Feed**
- **“Moral sustainability”**: involvement in community-based open infrastructure projects

Unpaywall is

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Resulting in

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5. Sustainability
6. **Big Plans**

Resulting in

6. Big Plans

- **better support for OA analytics**
 - **policy**
 - **compliance tools**
 - **subscription decision-making**
- **beyond DOI**
- **including other open metadata**

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Resulting in

- 4. Impact**
- 5. Sustainability**
- 6. Big Plans**



Metadata from
Crossref

DOI

green OA



DOI

FUZZY



DOI

gold OA
hybrid OA
bronze OA

