

## Finding Open Access Publications by UWM Authors

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International Open Access Week is observed October 22-18, 2018. This year's theme is "designing equitable foundations for open knowledge." The theme underscores the value of making scholarship more open and inclusive. Purposely, I chose to highlight the recent breakthrough - from [Web of Science](#) to millions of open access publications. *Web of Science* is a "foundations" database, the most comprehensive and authoritative among all other [subscription-based databases](#) at the UWM Libraries. Its *Core Collection* indexes over 20,000 high quality journals<sup>1</sup> that pass rigorous review by in-house editors at Clarivate Analytics who is operating *Web of Science* presently.

In December 2017, Clarivate Analytics partnered with Impactstory in order to integrate the latter's new [Unpaywall](#) technology which enables one to find an individual open access article from a publisher's website or an author self-archived manuscript from a repository into *Web of Science*. Previously, only links to fully-open journals from the *Directory of Open Access Journals* were included in the database. The new technology improves discoverability and access to the article-level open access version, not only by adding a link, but also by prioritizing the links to the final version at a publisher's website when multiple versions of an article are available. Currently, there are three distinctive types of open access documents for *Web of Science* "refine results" filter: 1) Gold or Bronze, 2) Green Published, and 3) Green Accepted, each defined as follows:

- **Gold:** A freely accessible final version of an article at a publisher's website in one of the following:
  - A journal that publishes only open access articles
  - A journal that allows individual articles to be open access in an otherwise subscription-based journal (also known as Hybrid Gold)
- **Bronze:** A freely accessible final version of an article at a publisher's website that may be promotional or archival **free-to-read only** content, but not with other rights-to-use:
  - Copyrighted public access
  - Unidentifiable license information

Gold or Bronze publications are identified with a link "Free Full Text from Publisher"

- **Green:** A freely accessible version of an article in a subject-based repository such as *PubMed Central* or in an institutional repository. This version of the article may vary from a peer-reviewed accepted manuscript to the final published version based on the journal's policies so that they are labelled distinctly as:
  - Green Accepted, and
  - Green Published.

At this time, for Green OA articles, *Web of Science* links to a **peer-reviewed** version from open repositories, not to a **submitted version** or **pre-print**. For all OA content new links or changes in the open access status are updated weekly by Unpaywall.

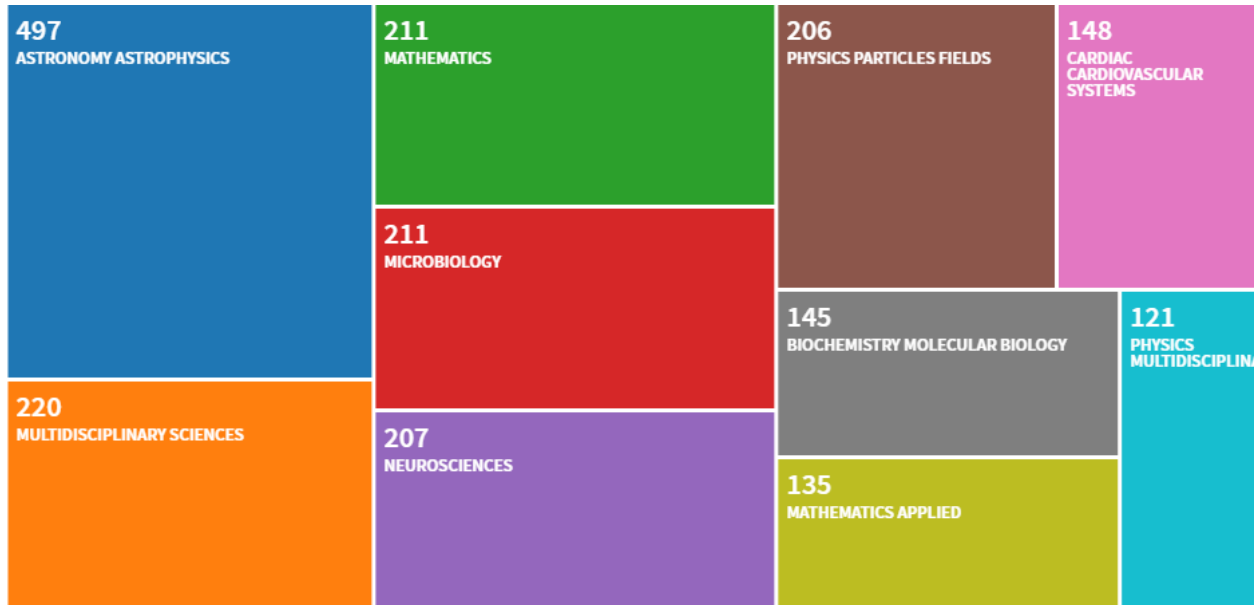
Now, let's find publications affiliated with UWM in *Web of Science Core Collection* within our campus subscription timespan 1987-2018. The searches were conducted utilizing **Organization-Enhanced** field for: **University of Wisconsin Milwaukee** on October 17, 2018. Total number of results: 24,083 including the following division for open access:

- ❖ All Open Access 4,181 (17.4% of the total 24,083)
- Gold or Bronze 3,197 (76.5% of all OA 4,181)
- Green Accepted 547 (13.1% of all OA 4,181)
- Green Published 437 (10.5% of all OA 4,181).

The percentage **17.4%** of UWM publications available as open access correlates well with the 18% *Web of Science Core Collection* data available as open access documents for the last 20 years, as reported by Clarivate Analytics<sup>2</sup>.

There is a caveat for interpreting lower percentages of the Green versions compared to Gold or Bronze because of the database preference linking to the version of record at a publisher’s site first, followed by the final version at a repository, and then the accepted manuscript at a repository last. There is evidence though that most changes in open access levels have been implemented by publishers in response to funder’s policies, not by researchers. Nonetheless, many institutions excluding UWM have adopted open access policies on their campuses.

Next, the open access records were analyzed by **research areas**:



**Astronomy Astrophysics** ranks first for open access availability on our campus, even much so when considered together with **Physics Particles Fields** (~11% of all OA at UWM). The majority of these publications are attributed to [LIGO and Virgo Scientific Collaboration](#), who made the first detection of gravitational waves, involving scientists from over 100 institutions including UWM. It is wonderful to get worldwide access to their “highly cited” and “hot papers” including the most cited article of **all** records affiliated with UWM:

Observation of Gravitational Waves from a Binary Black Hole Merger  
 Abbott BP et al  
 February 11, 2016  
*Physical Review Letters*  
<https://journals.aps.org/prl/pdf/10.1103/PhysRevLett.116.061102>

In Web of Science Core Collection  
**2,015**  
 Times Cited  
 Highly Cited Paper

After discovering 104 highly cited open access articles affiliated with UWM, I attempted to see whether there is a so called “citation advantage” for open access compared to all publications including those behind a subscription paywall. To that end, I created two Citation Reports:

1) For the UWM records published during 2011-2018\* with the total results at 9,480:

❖ Average citation per item: 10.94

2) For the open access UWM records published during 2011-18 with the total results at 2,692:

❖ Average citation per item: **19.73**

These numbers go along with a number of the “open access citation advantage” studies, including a large-scale analysis by Heather Piwowar and Jason Priem, founders of Impactstory, reporting higher citation counts for freely available papers: on average, 18% above the expected figure for comparable discipline and age<sup>3</sup>. The UWM higher quantity may be explained by a fact that among all 182 highly cited records 104 are open access with the majority of seminal publications on gravitational waves.

Amazingly, an individual astrophysics article has more than a hundred authors representing over 130 institutions worldwide. Broadly, for open access the top six countries with UWM collaborations are:



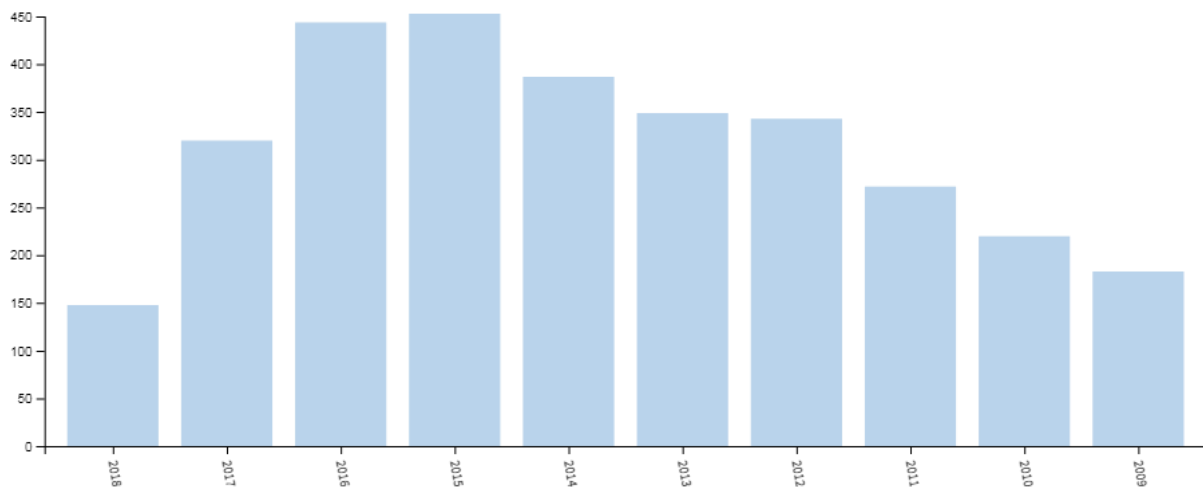
The top three funding agencies for the UWM researchers are:

1. National Science Foundation (749)
2. National Institutes of Health (429)
3. Science and Technology Facilities Council (175)

Next, not surprisingly, when analyzing the sources of open access publications by UWM authors, there is a clear preference for continuing publishing in the **subscription-based** journals with high impact. Among the five top choices, only one *PLOS ONE* is a fully-open journal. That means that publishers either get double payments first from the library for a subscription and second from the author for an individual article, or provide free-to-read access while keeping copyright.

Source Titles	Record Count	% of 4,181	OA status
ASTROPHYSICAL JOURNAL	165	3.9	Gold Hybrid (subscription based) Impact factor 5,551 (Q1)
PHYSICAL REVIEW D	145	3.5	Gold Hybrid (subscription based) Impact factor 4,394 (Q1)
PLOS ONE	95	2.3	Gold (fully open access) Impact factor 2,766 (Q1)
JOURNAL OF THE AMERICAN COLLEGE OF CAEDIOLOGY	58	1.4	Gold Hybrid (subscription based) Impact factor 16,834 (Q1)
ASTROPHYSICAL JOURNAL LETTERS	57	1.4	Gold Hybrid (subscription based) Impact factor 6,634 (Q1)

Lastly, when looking at distribution by years, it is interesting to find out that there are 22 open access articles available from 1987 (Gold or Bronze, of course), followed by a steady growth until its peak in 2015 (450 OA UWM records), very close to 2016 (441), with some good numbers above 340 levels during the recent six years since 2012, and 145 in 2018 so far:



In conclusion, I would like to summarize this brief analysis of the open access publications affiliated with UWM in *Web of Science Core Collection* with three observations:

1. There is 17.4% open access compared to all records affiliated with UWM.
2. There is open access citation advantage for UWM authors.
3. There is prevalence of Gold or Bronze over Green versions at UWM.

Circling back to the celebration of the International Open Access Week, we realize that access to *Web of Science* is a privilege associated with the UW System shared collection affiliation. This citation database is very expensive indeed, but in comparison with free indexes like *Google Scholar*, it offers many advanced search and refine features. In addition to providing a grant to Impactstory, Clarivate Analytics has most recently acquired the [Kopernio](#) plugin in order to integrate PDF legal full text from library subscriptions, preprint servers, and institutional repositories into *Web of Science*.

References (all links were accessed on October 19, 2018):

1. Web of Science: summary of coverage, <http://clarivate.libguides.com/webofscienceplatform/coverage>
2. Clarivate Analytics open access, <http://info.clarivate.com/openaccess>
3. Piwowar H, Priem J, Larivière V, Alperin JP, Matthias L, Norlander B, Farley A, West J, Haustein S. (2018). The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. *PeerJ* 6:e4375 <https://doi.org/10.7717/peerj.4375>

Note:

\* The range of recent years was chosen to fit into the 10,000 records cap for the Citation Report