

# Pre-prints

A more affordable and quicker way to share research results

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# Pre-prints have a long history...

Published: 10 August 2011

## ArXiv at 20

Paul Ginsparg 

*Nature* **476**, 145–147(2011) | [Cite this article](#)

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This automated repository and alert system for physics preprints, at `hep-th@xxx.lanl.gov`, was implemented shortly before the dawn of the web era. As I e-mailed to a colleague at CERN more than a year later: 'I know nothing of WWW, what is it?' The original plan was for roughly 100 full-text article submissions every year, each stored for three months until the existing paper distribution system could catch up. By popular demand, nothing was ever deleted.



The arXiv server in the early 1990s: a computer that helped to change the world of physics. Credit: J. FLOWER/LANL

# Pre-prints have a long history...

arXiv is a free distribution service and an open-access archive for 1,840,163 scholarly articles in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, and economics. Materials on this site are not peer-reviewed by arXiv.

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# Strathclyde works in arXiv



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1. [arXiv:1704.05246](#) [pdf, other] [physics.chem-ph](#) [cond-mat.stat-mech](#) [doi](#) [10.5281/zenodo.495336](#)

Can approximate integral equation theories accurately predict solvation thermodynamics?

Authors: Maksim Misin

**Abstract:** The thesis focuses on the prediction of solvation thermodynamics using integral equation theories. Our main goal is to improve the approach using a rational correction. We achieve it by extending recently introduced pressure correction, and rationalizing it in the context of solvation entropy. The improved model (to which we refer as advanced pressure correction) is rather universal. It can accura... [More](#)

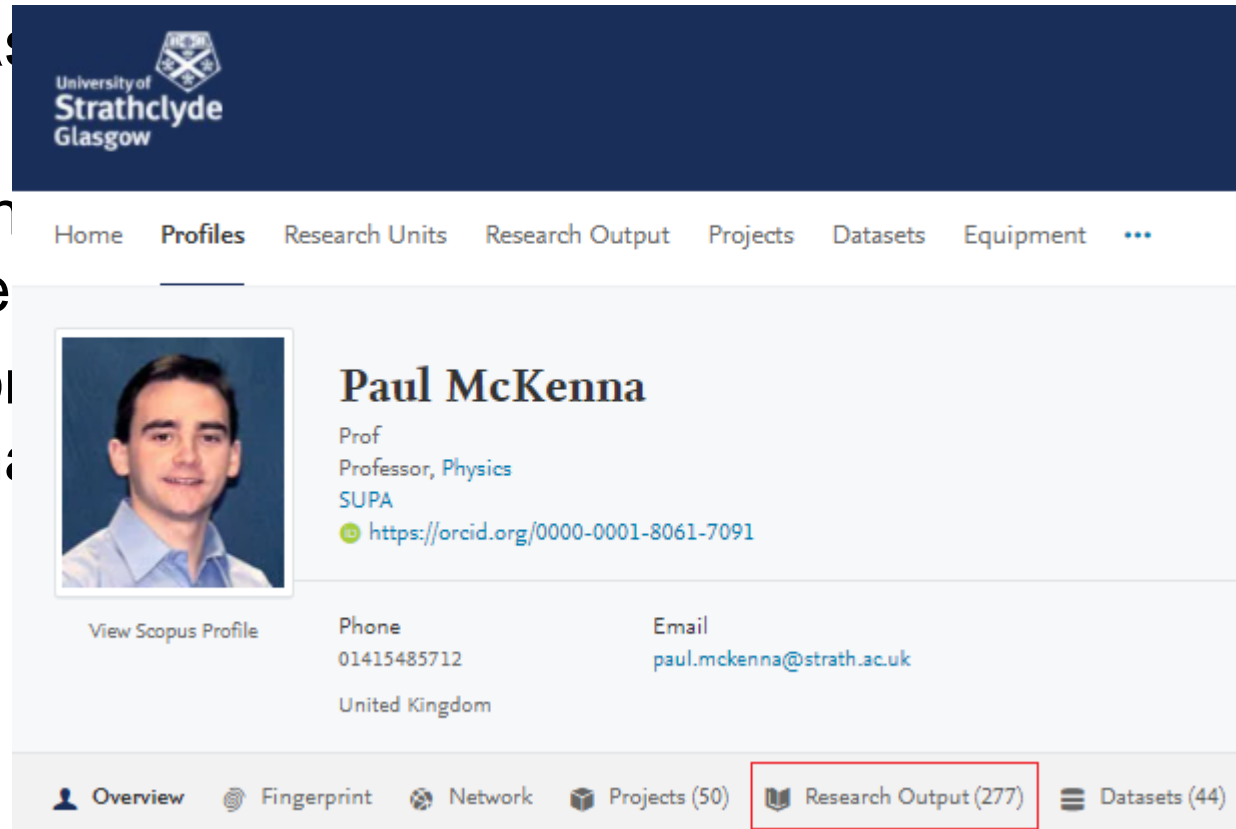
Submitted 18 April, 2017; originally announced April 2017.

Comments: Author's Ph.D. thesis (University of [Strathclyde](#), 2016). Supervisors: Maxim V. Fedorov and David S. Palmer

2. [arXiv:1704.01377](#) [pdf, other] [math.PR](#)

# Why so few of them?


- Affiliation not the best field to search in a pre-print server (just basic metadata kept)
- Publisher may as well as to be removed
- As opposite to the dissertations/the
- Somewhat 'theoretical' which doesn't make



The screenshot shows a profile page for Paul McKenna on the University of Strathclyde website. The page includes a navigation bar with links for Home, Profiles, Research Units, Research Output, Projects, Datasets, and Equipment. The profile section features a photo of Paul McKenna, his name, title (Prof), department (Professor, Physics), and affiliation (SUPA). It also lists his ORCID iD and a link to his Scopus profile. Contact information such as phone number, email, and location (United Kingdom) is provided. At the bottom, a summary bar shows various metrics: Overview, Fingerprint, Network, Projects (50), Research Output (277), and Datasets (44). The 'Research Output (277)' link is highlighted with a red box.

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**Paul McKenna**  
Prof  
Professor, Physics  
SUPA  
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Phone 01415485712  
Email [paul.mckenna@strath.ac.uk](mailto:paul.mckenna@strath.ac.uk)  
United Kingdom

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# Strathclyde works in arXiv: Des Higham

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Higham, D J

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1. [arXiv:2101.06215](#) [pdf, other] [cs.SI](#) [math.NA](#) [physics.data-an](#)

## Node and Edge Eigenvector Centrality for Hypergraphs

**Authors:** [Francesco Tudisco](#), [Desmond J. Higham](#)

**Abstract:** Network scientists have shown that there is great value in studying pairwise interactions between components in a system. From a linear algebra point of view, this involves defining and evaluating functions of the associated adjacency matrix. Recent work indicates that there are further benefits from accounting directly for higher order interactions, notably through a hypergraph representation whe... [More](#)

Submitted 15 January, 2021; originally announced January 2021.

2. [arXiv:2012.02999](#) [pdf, other] [cs.SI](#) [math.NA](#)

## A Theory for Backtrack-Downweighted Walks

**Authors:** [Francesca Arrigo](#), [Desmond J. Higham](#), [Vanni Noferini](#)

**Abstract:** We develop a complete theory for the combinatorics of walk-counting on a directed graph in the case where each backtracking step is downweighted by a given factor. By deriving expressions for the associated generating functions, we also obtain linear systems for computing centrality measures in this setting. In particular, we show that backtrack-downweighted Katz-style network centrality can be co... [More](#)

Submitted 5 December, 2020; originally announced December 2020.

MSC Class: 05C50; 05C82; 68R10

# Strathclyde works in arXiv: Ernesto Estrada

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1. [arXiv:2011.06014](#) [[pdf](#)] [cs.SI](#) [physics.soc-ph](#)

## Football tracking networks: Beyond event-based connectivity

**Authors:** J. M. Buldu, D. Garrido, D. R. Antequera, J. Busquets, E. Estrada, R. Resta, R. Lopez del Campo

**Abstract:** We propose using Network Science as a complementary tool to analyze player and team behavior during a football match. Specifically, we introduce four kinds of networks based on different ways of interaction between players. Our approach's main novelty is to use tracking datasets to create football tracking networks, instead of constructing and analyzing the traditional networks based on events. In... [More](#)

**Submitted** 11 November, 2020; **originally announced** November 2020.

**Comments:** 13 pages, 5 figures

**Journal ref:** Conference Analytics in Sports Tomorrow 2020, F.C. Barcelona

2. [arXiv:1704.03943](#) [[pdf](#), [ps](#), [other](#)] [physics.soc-ph](#) [cs.SI](#)

## Two-walks degree assortativity in graphs and networks

**Authors:** Alfonso Allen-Perkins, Juan Manuel Pastor, Ernesto Estrada

**Abstract:** Degree assortativity is the tendency for nodes of high degree (resp. low degree) in a graph to be connected to high degree nodes (resp. to low degree ones). It is usually quantified by the Pearson correlation coefficient of the degree-degree correlation. Here we extend this concept to account for the effect of second neighbours to a given node in a graph. That is, we consider the two-walks degree of... [More](#)

**Submitted** 12 April, 2017; **originally announced** April 2017.

**Comments:** 15 pages, 5 figures, 2 tables

**MSC Class:** 05C82; 05C75; 91D30; 92C42

... but their popularisation is rather recent

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## Preprints come to life

A dedicated website for sharing biology papers before peer review leaves journals divided.

Ewen Callaway

12 November 2013



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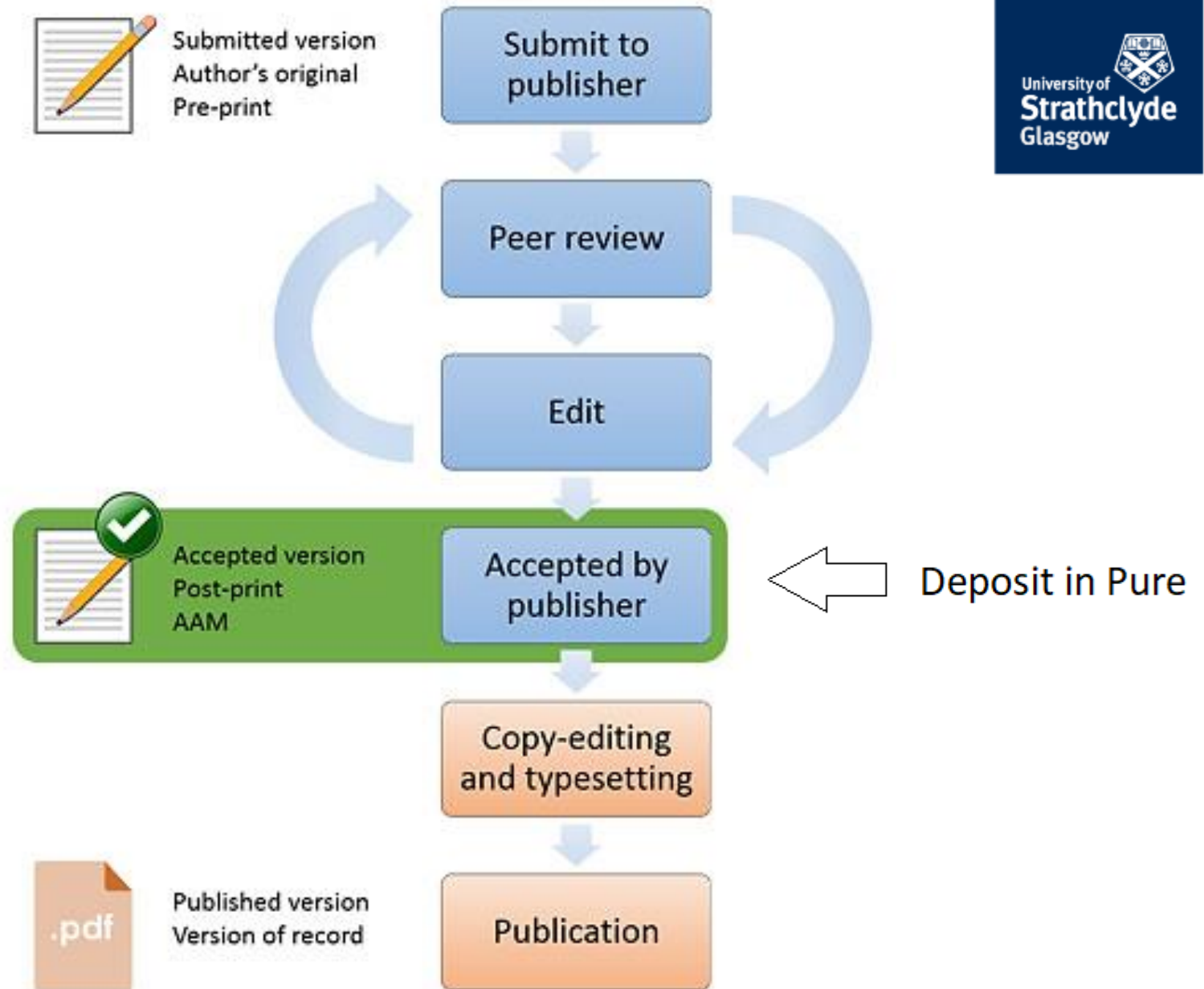
What are biologists so afraid of? Physicists, mathematicians and social scientists routinely post their research to preprint servers such as arXiv.org before publication, yet few life scientists follow suit.

A website that goes like Cold Spring Harbor Laboratory Press will operate similarly to them, weeks or months

### 2017

**ChemRxiv** is an open access preprint archive for chemistry. It is operated by the American Chemical Society, Royal Society of Chemistry and German Chemical Society. The new preprint server was announced already in 2016, but was only **opened** online in 2017.





# How much of an earlier dissemination?

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Publication status

Publication statuses and dates \*

Accepted/In press	7 Feb 2020
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**Simultaneous electrophysiological recording and fiber photometry in freely behaving mice**

Posted October 17, 2019.

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Amisha A Patel, Niall McAlinden, Keith Mathieson, Shuzo Sakata

doi: <https://doi.org/10.1101/807602>

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Frog nest foam as a drug delivery system

Sarah Brozio, Erin M. O'Shaughnessy, Stuart Woods, Ivan Hall-Barrientos, Patricia E. Martin, Malcolm W. Kennedy, Dimitrios A. Lamprou, Paul A. Hoskisson

bioRxiv 2021.01.06.425559; doi: <https://doi.org/10.1101/2021.01.06.425559>

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## Publication status ⓘ

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## Cre-dependent optogenetic transgenic mice without early age-related hearing loss

Posted September 13, 2018.

Daniel Lyngholm, Shuzo Sakata

doi: <https://doi.org/10.1101/416164>

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Now published in *Frontiers in Aging Neuroscience* doi: 10.3389/fnagi.2019.00029

# What about other SIPBS authors?



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## Reconciling DNA replication and transcription in a hyphal organism: Spatial dynamics of transcription complexes in live *Streptomyces coelicolor* A3(2)

Leena Nieminen, Paul A. Hoskisson

bioRxiv 498634; doi: <https://doi.org/10.1101/498634>

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## Functional channels in mature *E. coli* colonies

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Preprint first posted online on 20.01.2021

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## Electrochemical Synthesis of Isoxazolines: Method and Mechanism

Preprint first posted online on 24.12.2020



## Marc Reid

 [0000-0003-4394-3132](https://orcid.org/0000-0003-4394-3132) 

UKRI Future Leaders Fellow ([Analytical Chemistry](#); [Catalysis](#); [Chemical Education](#); [Chemical Engineering and Industrial Chemistry](#); [Organic Chemistry](#); [Organometallic Chemistry](#); [Theoretical and Computational Chemistry](#))

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<http://www.dr-marc-reid.com/bio>

Research interests include:

- physical organic chemistry
- computer vision
- cheminformatics
- virtual reality
- process safety
- psychology of the imposter phenomenon.

Outside of academia, Marc is the co-founder of safety culture and accident readiness company Pre-Site Safety.



### Publications

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Co-workers & collaborators

 [Neal Fazakerley](#)

 [Claire Eaglesham](#)

 [Darren poole](#)

 [Andrew Leach](#)

 [William Kerr](#)

 [Mathieu Poyade](#)

[https://chemrxiv.org/authors/Marc\\_Reid/8315271](https://chemrxiv.org/authors/Marc_Reid/8315271)



# ChemRxiv is newer => more sophisticated

## Marc Reid's public data



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**1. Methods**

All simulations were performed with the assistance of the STRATHCLYDE HPC. All of the data and code for this work are available in the ChemRxiv repository. All of the data and code for this work are available in the ChemRxiv repository. All of the data and code for this work are available in the ChemRxiv repository.

Catalyst Design in C–H Activation: A Case Study in the Use of Group Selectivity in Indium Catalysts

Abstract

Introduction

The reaction of indium catalysts with C–H bonds is a topic of significant interest in the field of C–H activation. This work reports on the development of a new catalyst system for the C–H activation of indium catalysts. The reaction of indium catalysts with C–H bonds is a topic of significant interest in the field of C–H activation. This work reports on the development of a new catalyst system for the C–H activation of indium catalysts.



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## A Transferable Psychological Evaluation of Virtual Reality Applied to Safety Training in Chemical Manufacturing

Cite

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**Version 2** ▾ Preprint revised on 21.09.2020, 07:58 and posted on 21.09.2020, 12:54 by Mathieu Poyade, [Claire Eaglesham](#), Jordan Trench, [Marc Reid](#)

High-profile accidents in the Chemical sector – across research and manufacturing scales – have provided strong drivers to develop a new benchmark in safety training and compliance. Herein, we describe the design, implementation, and standardised psychological evaluation of Virtual Reality (VR) applied to process safety training. Through a specific industrial case study, we show that testable learning of complex safety-specific tasks in VR is statistically equivalent to traditional slide-based video training. However, VR training presents a measurable positive improvement on trainees' perception of overall learning, and their feeling of presence in the task during training. It has also been shown that knowledge retention from video lectures can be overestimated, if not controlled. Through these results – and our transferable blueprint for robustly assessing any new VR training platform – we envisage a range of technologically-enabled efforts to enhance safety performance in both laboratory and plant-based activities. Implications for physical resource-saving projects are also described.

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[A Transferable Psychological Evaluation of Virtual Reality Applied to Safety Training in Chemical Manufacturing](#)

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- 4. Higher Order Aggregate Analysis
- 5. Single Point Analysis

Catalyst Design in C-H Activation: A Case Study in the Use of Binding Free Energies to Rationalize Intermetallic Steering Group Selectivity in Iridium Catalysis

William J. Lee, "Open Access Article" and 101 others

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# A Transferable Psychological Evaluation of Virtual Reality Applied to Safety Training in Chemical Manufacturing

Matthieu Poyade, Claire Eaglesham, Jordan Trench, and Marc Reid\*

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# Publishers' attitude to pre-prints

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# Funders' attitude to pre-prints

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## Ten simple rules to consider regarding preprint submission

Philip E. Bourne , Jessica K. Polka, Ronald D. Vale, Robert Kiley

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### Rule 1: Preprints speed up dissemination

Rule 2: Preprints should be licensed and formatted to facilitate reuse

Rule 3: Preprints provide a record of priority


Rule 4: Preprints do not lead to being scooped

Rule 5: Preprints provide access to scholarly content that would otherwise be lost

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# Funders' attitude to pre-prints

EDITORIAL

## Ten simple rules to consider regarding preprint submission

Philip E. Bourne , Jessica K. Polka, Ronald D. Vale, Robert Kiley

Published: May 4, 2017 • <https://doi.org/10.1371/journal.pcbi.1005473>

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Rule 5: Preprints provide access to scholarly content that would otherwise be lost

Rule 6: Preprints do not imply low quality

Rule 7: Preprints support the rapid evaluation of controversial results

Rule 8: Preprints do not typically preclude publication

Rule 9: Preprints can further inform grant review and academic advancement

Rule 10: Preprints—one shoe does not fit all

# Massive Impact of Covid-19

08-05-20 | WORLD CHANGING IDEAS

## How the COVID-19 crisis has prompted a revolution in scientific publishing

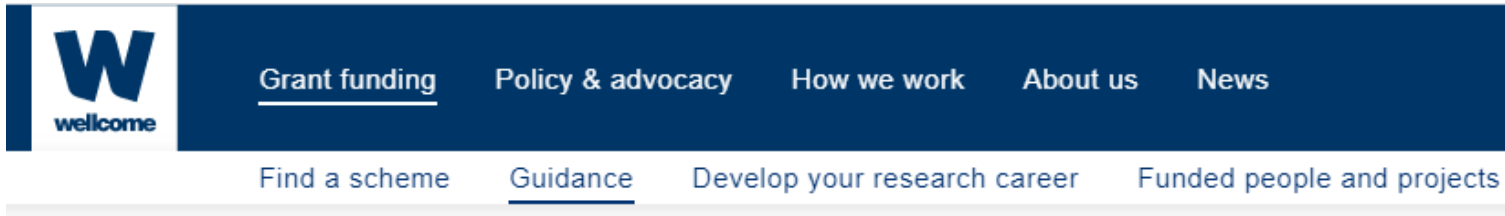
Preprint servers have existed for decades, but the fight against the coronavirus has seen their use soar. They're changing how science is done—but need important guardrails.



[Illustration: FC]

In March, as the World Health Organization declared COVID-19 a pandemic, 8,830 biomedical preprints were published, a 142% increase from last year. Over the past few months, approximately half of all available scientific work on COVID-19 has been published through preprint servers, amounting to more than 18,000 preprints as of July 2020. Traffic to these servers has jumped substantially too. MedRxiv's page views have spiked to 15 million a month, compared to 1 million a month before the pandemic began.


# Funders' policies towards pre-prints



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All Wellcome-funded researchers are strongly encouraged to:

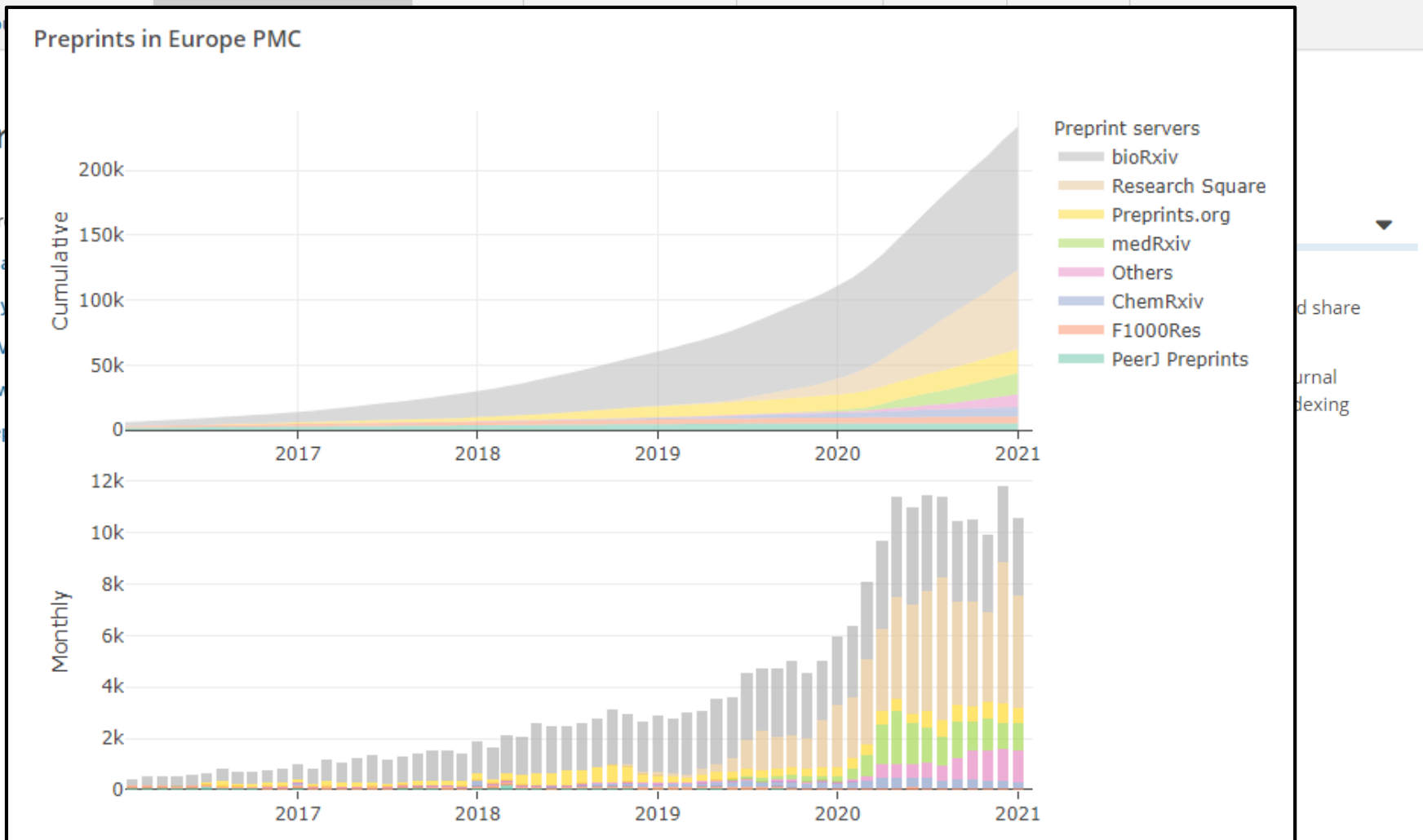
- post preprints of their work
- publish them under a CC BY licence on a platform that is indexed in [Europe PMC](#) .

Where there is a significant public health benefit to preprints being shared widely and rapidly, such as a disease outbreak, we **require** the posting of preprints.

<https://wellcome.org/grant-funding/guidance/open-access-guidance/open-access-policy>



# Funders' policies towards pre-prints





# Institutional policies towards pre-prints

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## Understanding Preprints

By Patrycja, on 29 April 2020

There are a **wide range of preprint repositories out there** including:

- [arXiv](#) – astronomy, mathematics, economics
- [bioRxiv](#) – biology
- [ChemRxiv](#) – chemistry
- [earthArXiv](#) – earth sciences
- [engrXiv](#) – engineering
- [medRxiv](#) – health sciences
- [psyArXiv](#) – psychological sciences
- [RePEc](#) – economics
- [SocArXiv](#) – social sciences
- [SSRN](#) – social sciences

# A citation advantage?

## Computer Science > Digital Libraries

[Submitted on 30 Jun 2009 (v1), last revised 25 Nov 2009 (this version, v2)]

### Citing and Reading Behaviours in High-Energy Physics. How a Community Stopped Worrying about Journals and Learned to Love Repositories

Anne Gentil-Beccot, Salvatore Mele, Travis Brooks

Contemporary scholarly discourse follows many alternative routes in addition to the three-century old tradition of publication in peer-reviewed journals. The field of High-Energy Physics (HEP) has explored alternative communication strategies for decades, initially via the mass mailing of paper copies of preliminary manuscripts, then via the inception of the first online repositories and digital libraries.

This field is uniquely placed to answer recurrent questions raised by the current trends in scholarly communication: is there an advantage for scientists to make their work available through repositories, often in preliminary form? Is there an advantage to publishing in Open Access journals? Do scientists still read journals or do they use digital repositories?

The analysis of citation data demonstrates that free and immediate online dissemination of preprints creates an immense citation advantage in HEP, whereas publication in Open Access journals presents no discernible advantage. In addition, the analysis of clickstreams in the leading digital library of the field shows that HEP scientists seldom read journals, preferring preprints instead.

Comments: Version to be published in Scientometrics

Subjects: Digital Libraries (cs.DL)

Report number: CERN-OPEN-2009-012, SLAC-PUB-13693

Cite as: arXiv:0906.5418 [cs.DL]

(or arXiv:0906.5418v2 [cs.DL] for this version)

# A citation advantage?

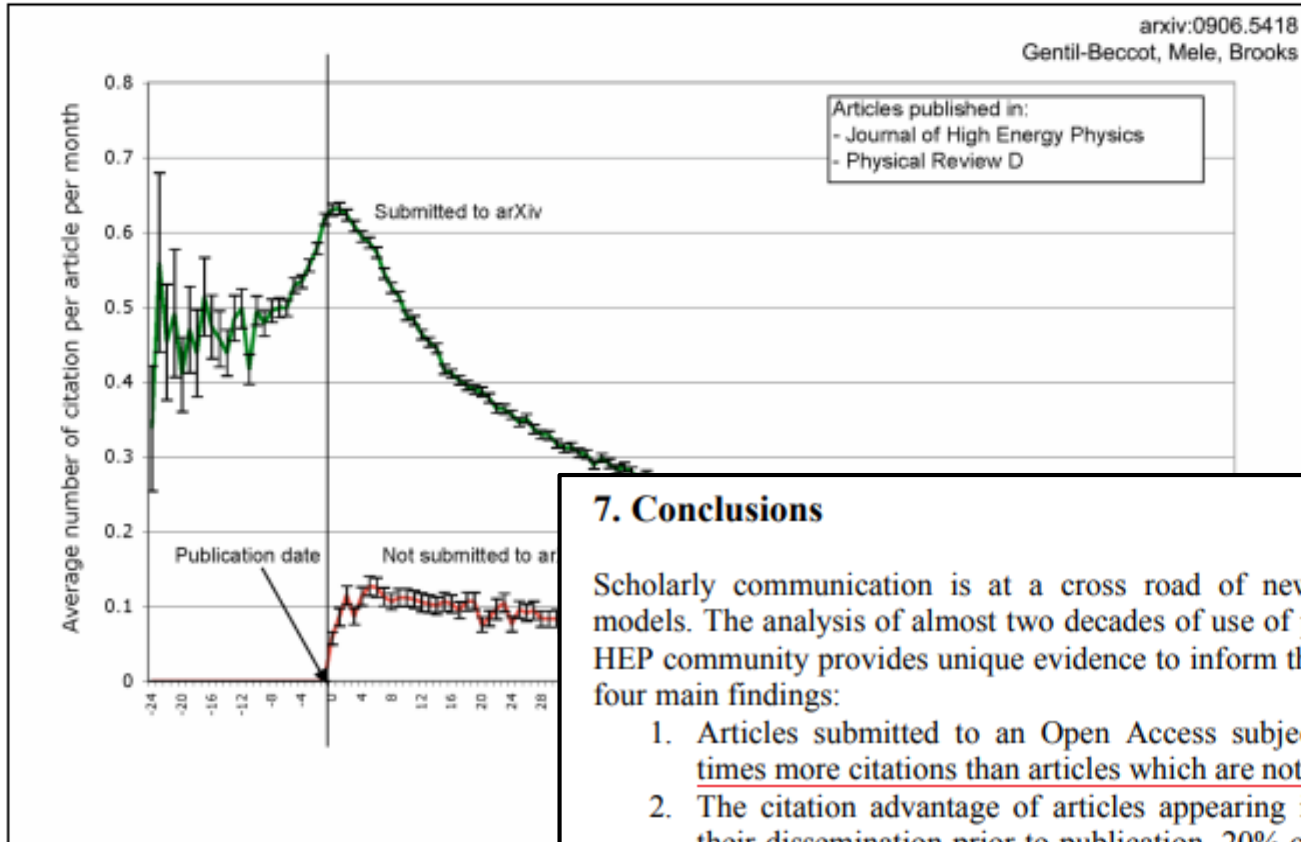


Figure 3. Average number of citations of the citation relative to the time of while articles were in their preprint publication of the articles. Data is Energy Physics and Physical Review

## 7. Conclusions

Scholarly communication is at a cross road of new technologies and publishing models. The analysis of almost two decades of use of preprints and repositories in the HEP community provides unique evidence to inform the Open Access debate, through four main findings:

1. Articles submitted to an Open Access subject repository, arXiv, receive 5 times more citations than articles which are not.
2. The citation advantage of articles appearing in a repository is connected to their dissemination prior to publication, 20% of citations of HEP articles over a two-year period occur before publication.
3. No discernable citation advantage can yet be observed in the statistically-limited sample of articles published in “gold” Open Access journals.
4. HEP scientists are between four and eight times more likely to download an article in its preprint form from arXiv rather than its final published version on a journal web site.

# A few questions for discussion

- May a publisher ask an author to remove a pre-print from a server upon publication of the final version?
- Would a [life-sciences] author welcome citations to a pre-print, or is the final published version the ‘official currency’ for the purpose?
- “What are biologists so afraid of?” – asks the Nature editorial about the launch of bioRxiv. Could pre-prints endanger any commercial follow-up for the research?
- Is there a specific licence that could be used to prevent this potential downside?
- Can pre-prints be used as publications references in project proposals and for promotion purposes at institutions?