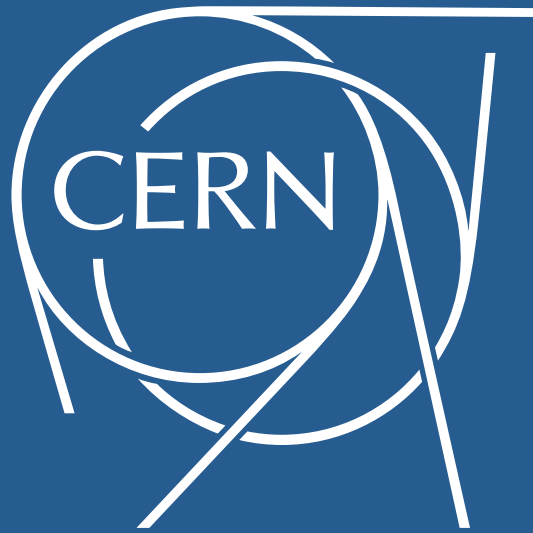


Implementing the Open Access Transformation: SCOAP³



Salvatore MELE, CERN for the SCOAP3 Governance
CAPES Portal de Periódicos` Seminar
Brasilia, November 6th, 2017

SCOAP3.org

Sponsoring Consortium for Open Access Publishing in Particle Physics

*A global consortium to convert
Particle Physics articles in
high-quality journals to Open Access,
at no burden for authors,
mostly re-using existing subscription money*



HEP – High Energy Physics (or Particle Physics)

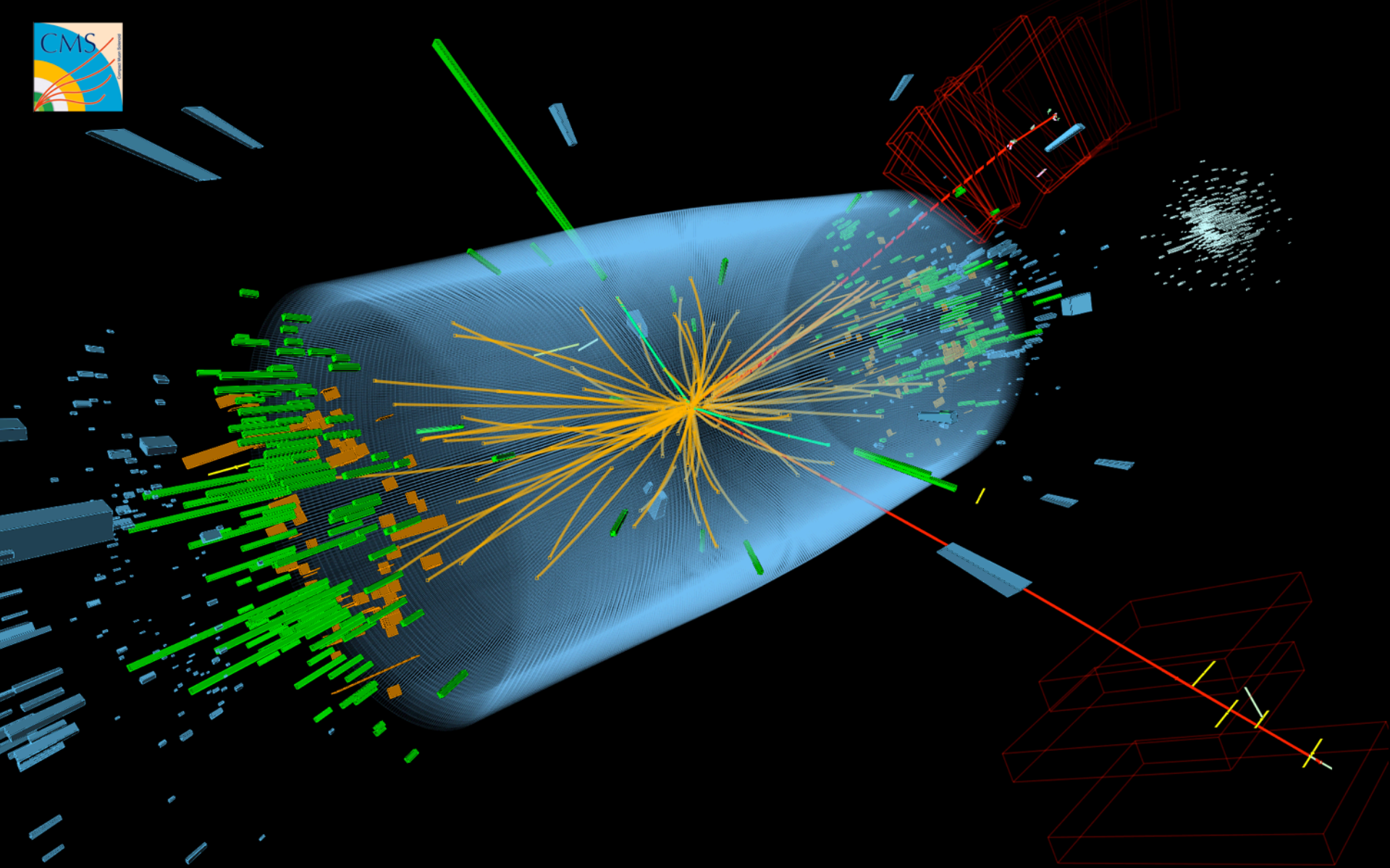




LHC: 25+ years to imagine, design and build



LHC: 27 Km, -271.25°C , 99.999999% speed of light



Meet the Higgs Boson !

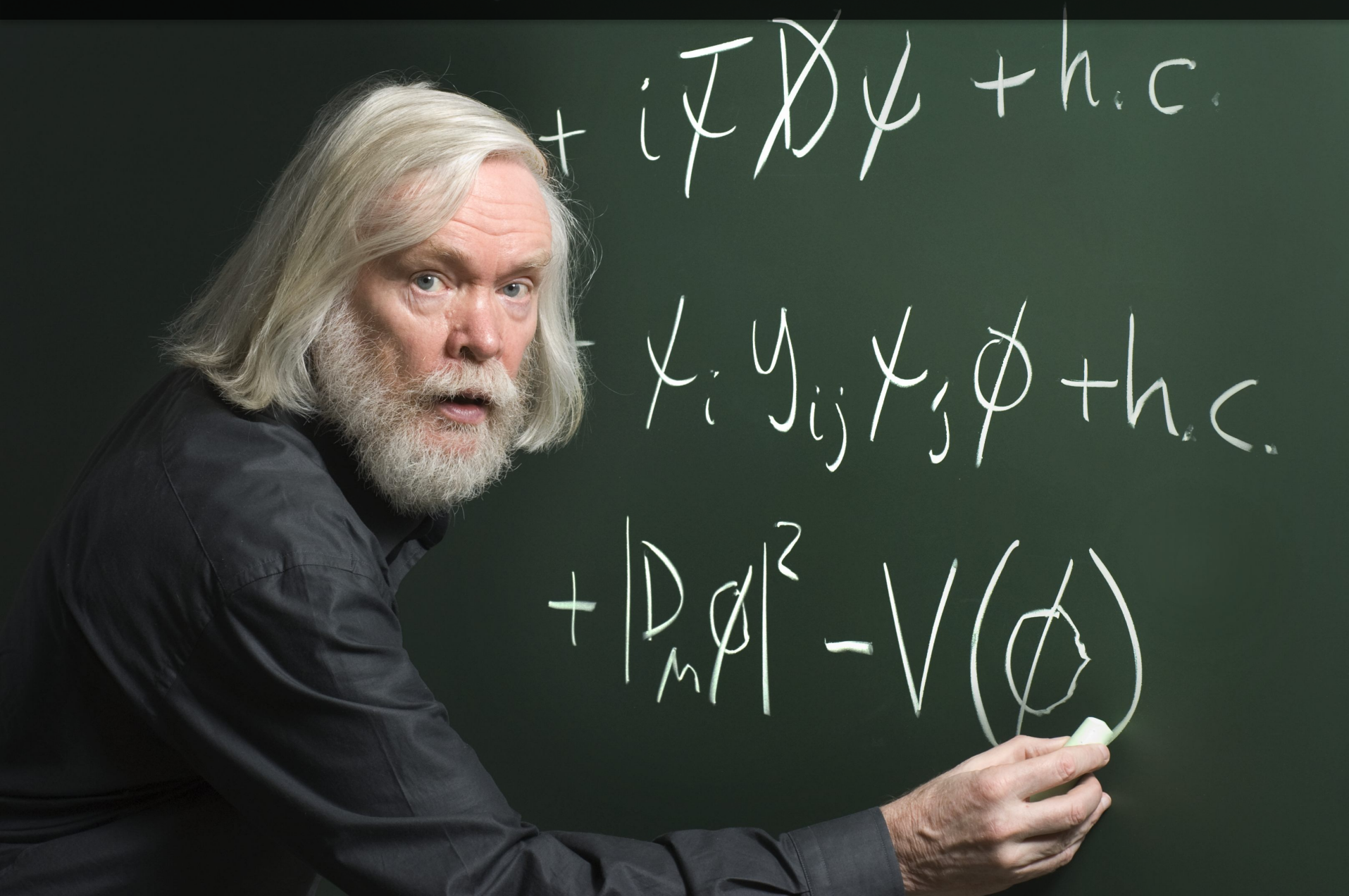


Article

5154 Authors

344 Institutions

Meet a theoretical physicist!





High Energy Physics ~7'500 papers/year
90% written by 1-5 authors

Only 2% of publications overall come from CERN

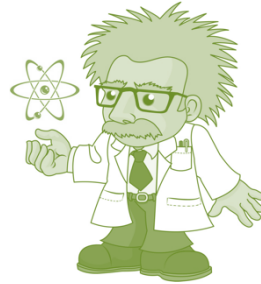
Open Access models

Scientific Publishing: subscription model



Public

Researcher



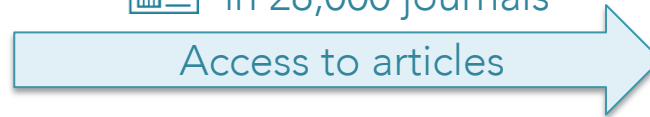
Articles & Copyright



Access to articles



2.5 M articles/year
in 28,000 journals



Access to articles



Subscription Costs



\$10 billion/year for
English-language journals

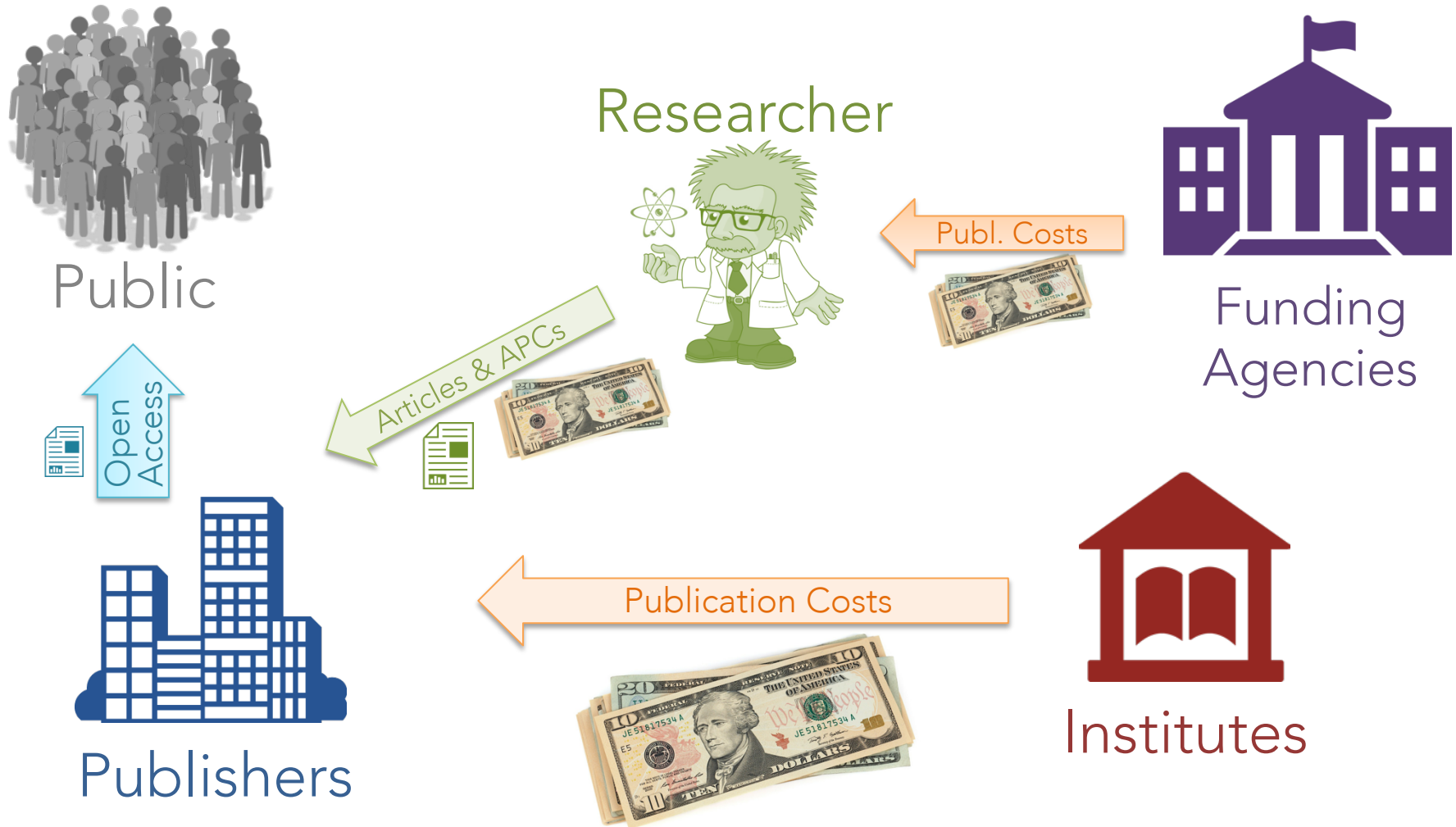


Publishers



Libraries

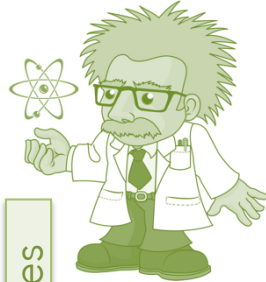
Scientific Publishing: Open Access model



Scientific Publishing: collective efforts



Researcher



Articles



Funding Agencies



Support



Support



Institutes



Open Access



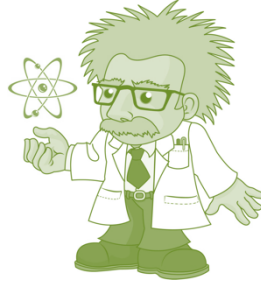
Public

SCOAP³ model

SCOAP³ Model

Journals chosen & APC set through open procurement based quality/price ratio

Researcher



- No change in behavior
- No direct costs/burden
- Retains copyright



Articles



Publishers



Public

Reduction on Subscriptions



Libraries

Contracts



Membership fees



for the benefit of
SCOAP³



Support

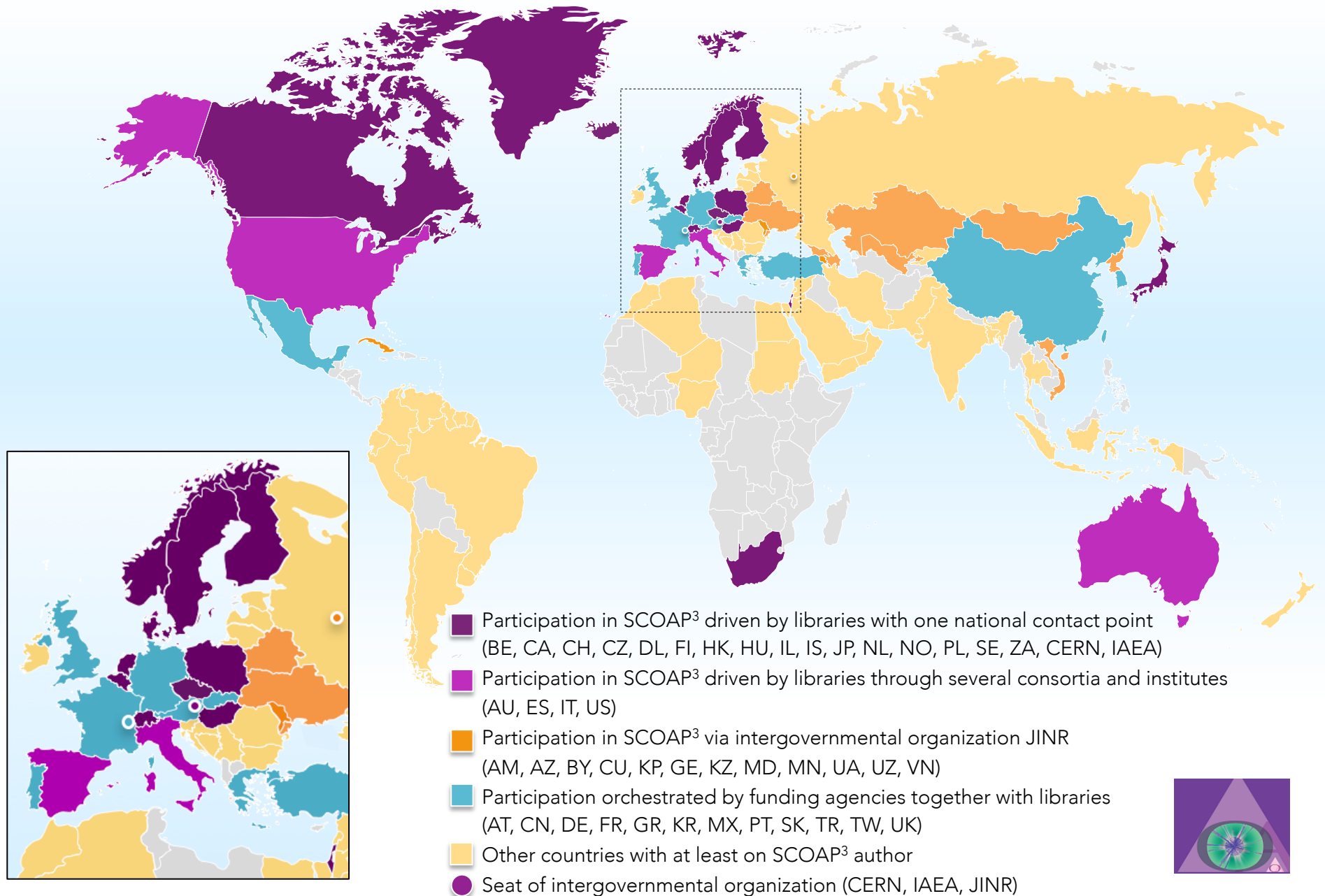


Funding Agencies
(research intensive countries)

SCOAP³ Timeline

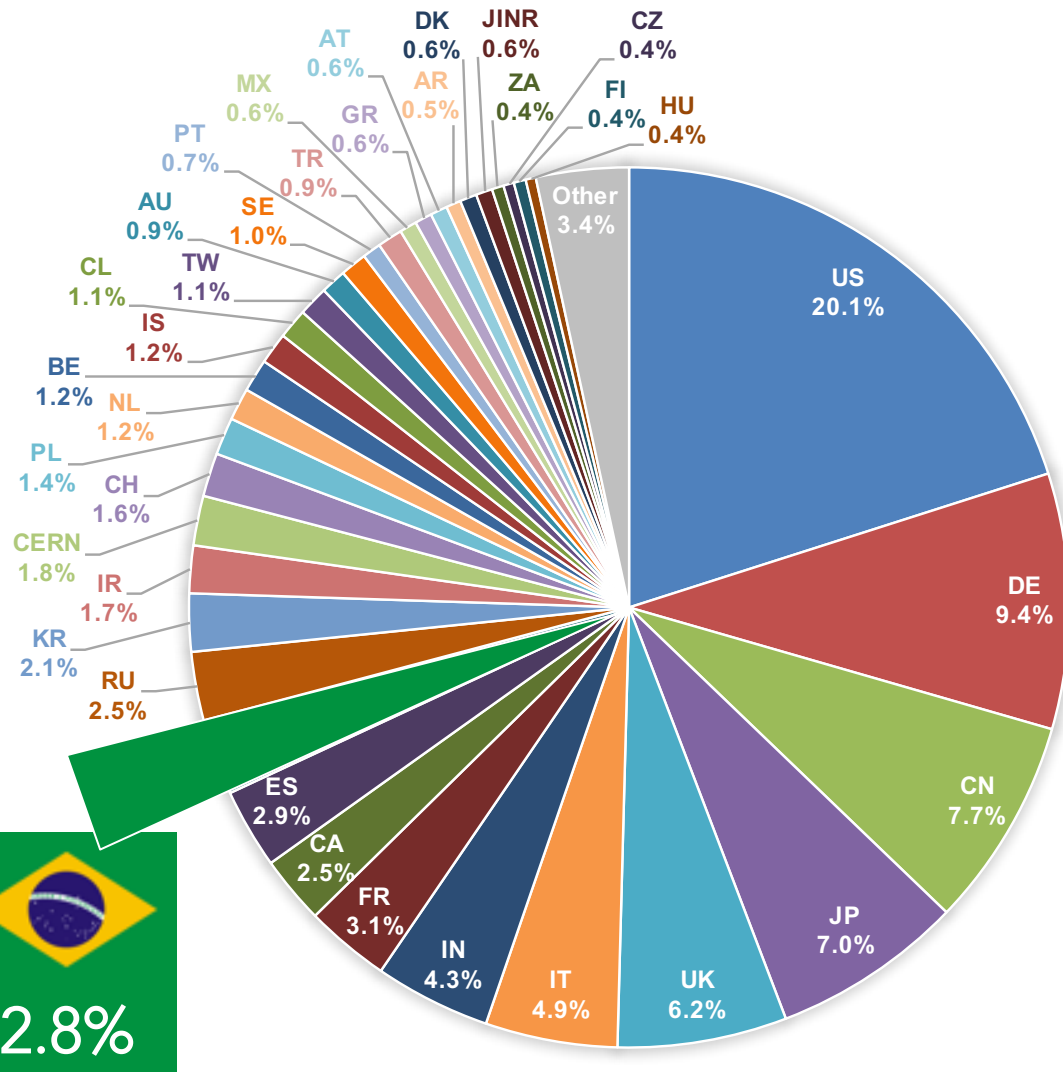
2005-2006: options for Open Access in HEP
2007-2008: design & business model
2009-2011: consensus building
2012-2013: procurement & start-up
2014-2016: operations & partnership growth
2017-2019: adding journals and partners
2020+ : invisible, sustainable infrastructure

3'000+ libraries through 52 partners in 43 countries



Country contributions scale with publications

Share of 2014-2015 authorship of SCOAP³ and APS HEP articles in 2014-2015



2014-2017 budget:
4.7 mln € /year
(53% of the field OA)

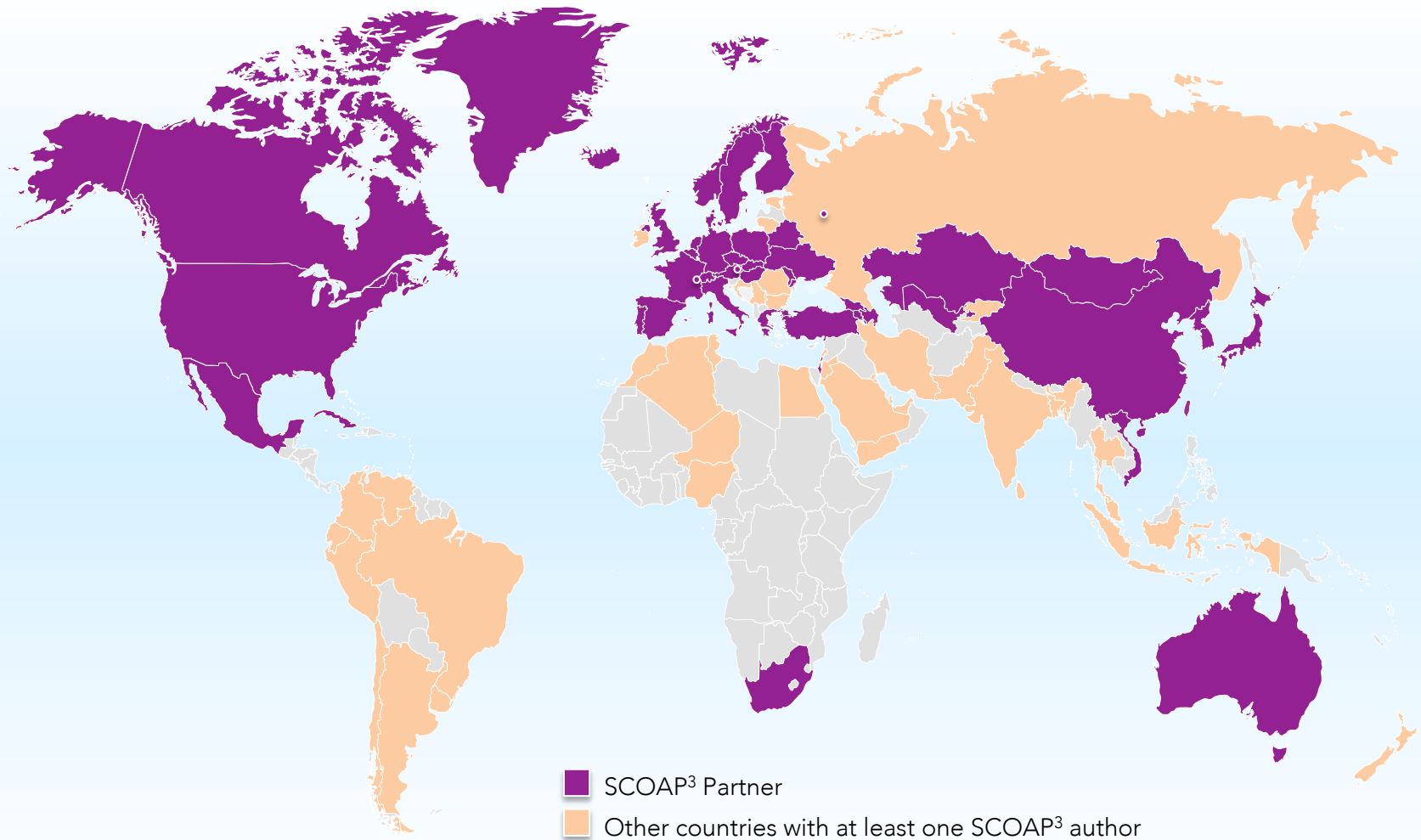
2018-2019 budget:
9.7 mln € /year
(90% of the field OA)

Countries contribute
subscription reductions
and in some cases add'l
funding agencies support

To start-up the initiative, CERN initially covered fees of
countries not yet participating (BR, AR, CL, CO, ..., IN, RU)

SCOAP³ impact

20'000 authors from ~100 countries, no APC barriers












All articles, from any author, published Open Access,
including from countries not yet participating in SCOAP3

SCOAP³ 2014-2016 book-closing: transparency

~4,500/year theoretical and experimental articles, from all over the world

7/10 journals and 69% of articles published
or co-published by learned societies

Publisher	Journal	Articles	Total payments
	Nuclear Physics B Flip	1,008	6,621,200 \$
	Physics Letters B Flip	2,654	
 Hindawi	Advances in HEP OA	512	133,000 \$
 	Chinese Physics C % Flip	91	76,000 £
	JCAP % Flip	654	677,600 £
	New J of Phys. OA	25	30,000 £
	Acta Phys. Pol B % Flip	56	27,500 €
 	PTEP OA	255	204,500 £
 	Eur.Phys.Journ. C Flip	1,830	6,764,500 €
	JHEP Flip	6,283	

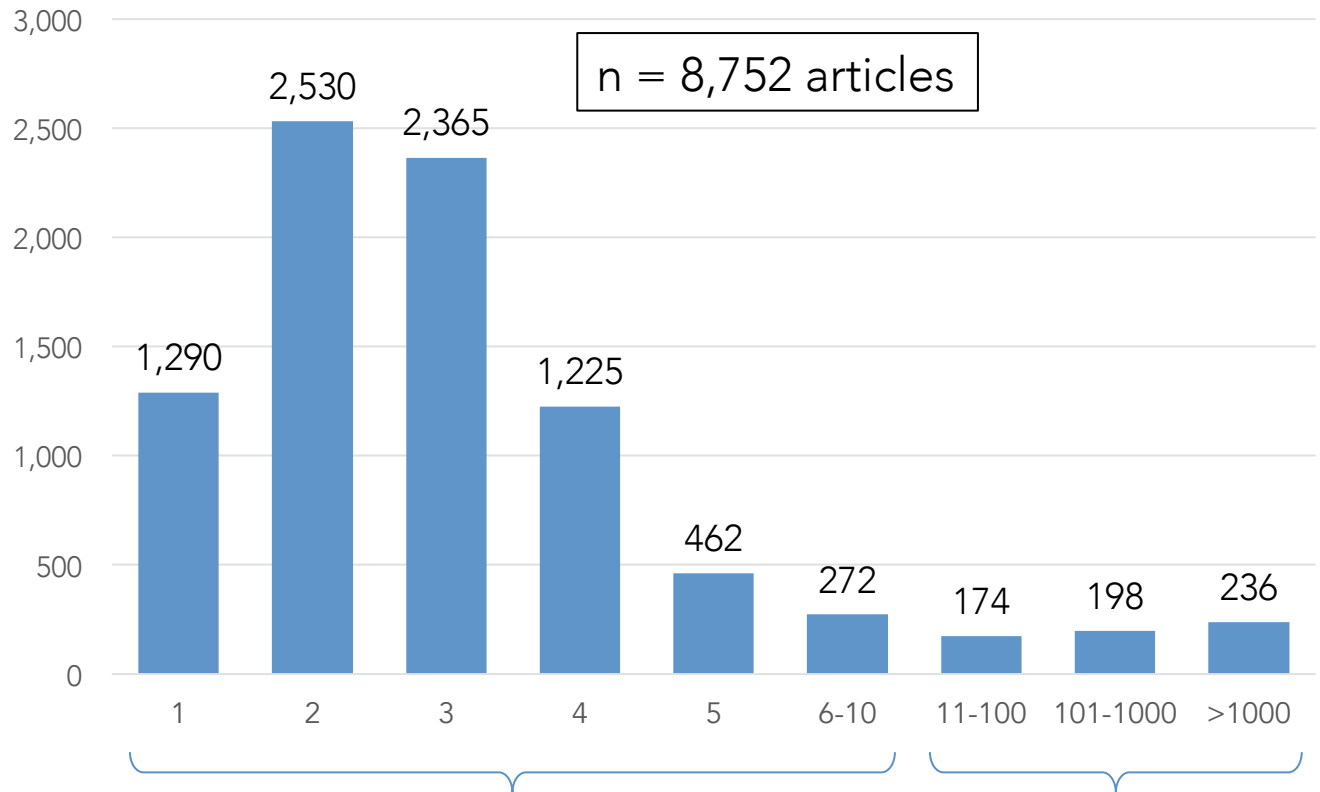
Total: 13,368 13,905,300 €

Average investment per article 1,040 €

Library subscriptions: 76% | Funding agencies: 16 % | CERN 8%

93% of SCOAP³ articles have 1-10 authors

Articles published in SCOAP³ journals 2014-2015 by number of authors



Mostly theoretical
articles

Experimental articles by
large collaborations:

- 53% experiments at CERN
- 47% other experiments
(mainly in Japan, China, US)

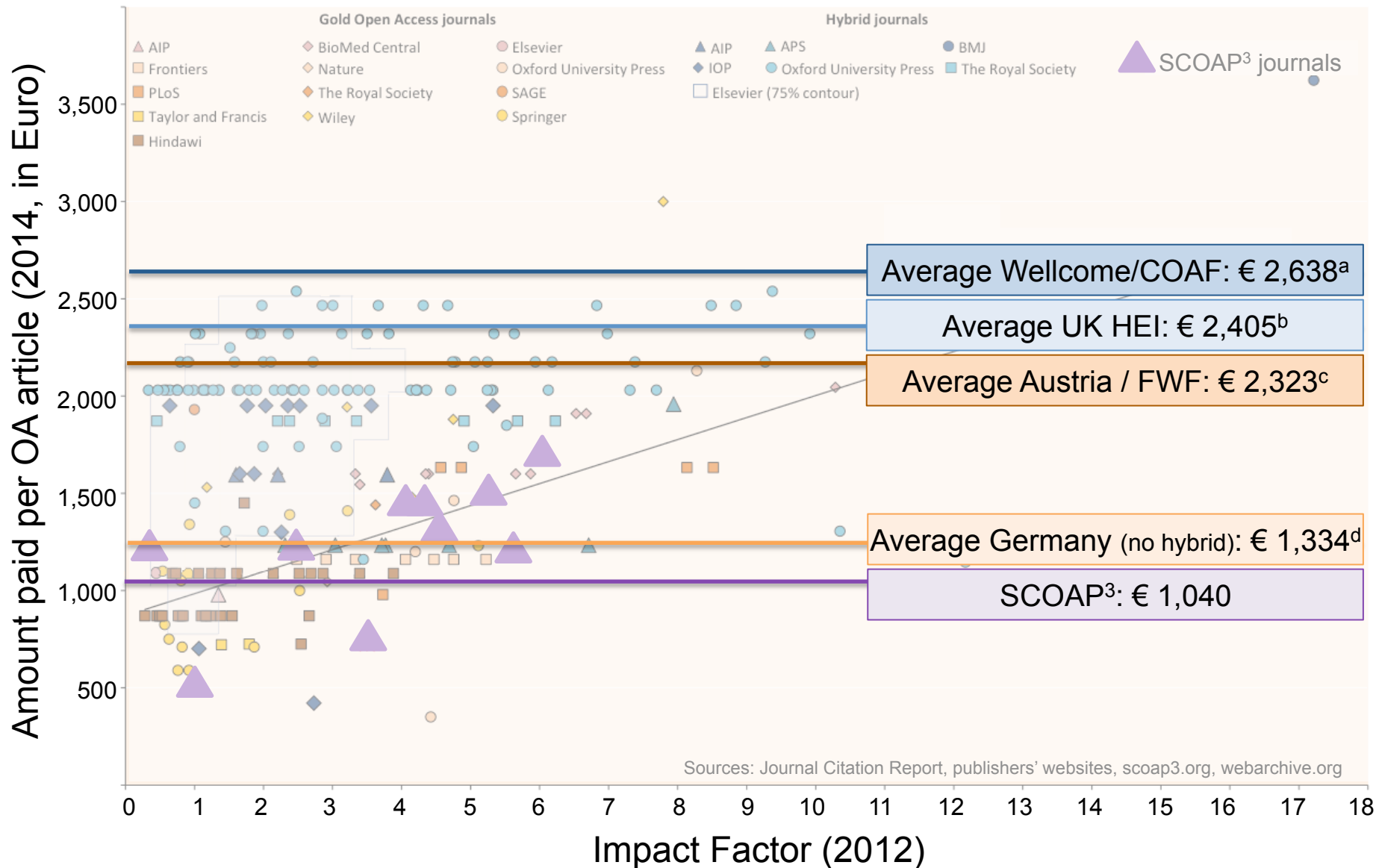


Chart: C. Romeu et al. (2014) The SCOAP3 initiative and the Open Access - Article-Processing-Charge market: global partnership and competition improve value in the dissemination of science DOI: 10.2314/CERN/C26P.W9DT













- a) <https://blog.wellcome.ac.uk/2016/03/23/wellcome-trust-and-coaf-open-access-spend-2014-15/>
 b) <https://www.jisc.ac.uk/reports/apcs-and-subscriptions>
 c) https://figshare.com/articles/Austrian_Science_Fund_FWF_Publication_Cost_Data_2015/3180166
 d) <https://github.com/OpenAPC/openapc-de>

SCOAP³ impact for Brazil

SCOAP³ – Brazilian benefits to date



~390 articles/year OA in top journals with at least one Brazilian author

Publisher	Journal	2014	2015	2016	Jan-Oct 2017	Total
	Nuclear Physics B	9	15	17	11	52
	Physics Letters B	90	112	121	98	421
 Hindawi	Advances in HEP	9	5	15	10	39
   	Chinese Physics C	0	0	2	0	2
	JCAP	9	4	8	-	21
	New J of Phys.	2	1	2	-	5
	Acta Phys. Polon. B	0	1	2	0	3
 	PTEP	1	4	2	0	7
  	Eur. Phys. Journ. C	86	89	129	102	406
	JHEP	119	160	136	130	546
Total:		325	391	434	351	1,502

Starting 2018 (including APS journals) SCOAP³ Brazil articles: 650/year
 >50% of articles are in theoretical physics and have 1-3 authors

CERN is subsidising OA publication for authors in countries not yet participating to SCOAP³

What does it mean (for Brazil) to join SCOAP³



- Yearly average of articles with Brazilian authors 2014-2017: 390
- Expected average articles/year from 2018 (more journals): 650
- Share of worldwide HEP articles by Brazilian authors: 2.8%

Countries contribute to SCOAP³ according to share of publications:

- Cost of Brazilian SCOAP³ article from 2018: 318,000 Euro/year

Note: CERN contributed additional 580,000 Euro to SCOAP³ in 2014-2017 to cover publications by Brazilian authors

CAPES was granted a reduction in yearly subscription costs:

- In Elsevier, SpringerNature and IOPp packages (starting 2014)
- In APS package (starting 2018)

Countries join SCOAP³ initially by redirecting subscription savings

SCOAP³ impact on articles downloads

Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC[☆]

CMS Collaboration*

CERN, Switzerland

This paper is dedicated to the memory of our colleagues who worked on CMS but have since passed away. In recognition of their many contributions to the achievement of this observation.

ARTICLE INFO

Article history

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Physics
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ABSTRACT

Results are presented for searches for the standard model Higgs boson in proton-proton collisions at $\sqrt{s} = 7$ and 8 TeV in the Compact Muon Solenoid experiment at the LHC, using data samples corresponding to integrated luminosities of up to 5.1 fb^{-1} at $\sqrt{s} = 7$ and 5.3 fb^{-1} at 8 TeV. The search is performed in five decay modes: $\gamma\gamma$, $Z^* Z^* W^+ W^-$, $1^+ 1^-$, and $b\bar{b}$. An excess of events is observed above the expected background, with a local significance of 5.0 standard deviations, at a mass near 125 GeV, signalling the production of a new particle. The expected significance for a standard model Higgs boson of this mass is 3.5 standard deviations. An excess of events is also observed in the $b\bar{b}\gamma\gamma$ channel, the best model for this excess is a Higgs boson with a mass of 125.3 ± 0.4 (stat.) ± 0.5 (syst.) GeV. The decay to two photons indicates that this new particle is a boson with spin different from 1.

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1. Introduction

The standard model (SM) of elementary particles provides a remarkably accurate description of results from many accelerator and non-accelerator based experiments. The SM comprises quarks and leptons as the building blocks of matter, and describes their interactions through the exchange of force carriers: the photon for electromagnetic interactions, the W and Z bosons for weak interactions, and the gluons for strong interactions. The electromagnetic and weak interactions are unified in the electroweak theory. Although the predictions of the SM have been extensively confirmed, the question of how the W and Z gauge bosons acquire mass whilst the photon remains massless is still open.

Nearly fifty years ago it was proposed [1–6] that spontaneous symmetry breaking in gauge theories could be achieved through the introduction of a scalar field. Applying this mechanism to the electroweak theory [7–9] through a complex scalar doublet field leads to the generation of the W and Z masses, and to the prediction of the existence of the SM Higgs boson (H). The scalar field also gives mass to the fundamental fermions through the Yukawa interaction. The mass m_H of the SM Higgs boson is not predicted by theory. However, general considerations [10–13] suggest that


m_{H^\pm} should be smaller than ~ 1 TeV, while precision electroweak measurements imply that $m_{H^\pm} < 152$ GeV at 95% confidence level (CL) [14]. Over the past twenty years, direct searches for the Higgs boson have been carried out at the LEP collider, leading to a lower bound of $m_{H^\pm} > 114.4$ GeV at 95% CL [15], and at the Tevatron proton-antiproton collider, excluding the mass range 162–166 GeV at 95% CL [16] and detecting an excess of events, recently reported in [17–19], in the range 120–135 GeV.

The discovery or exclusion of the SM Higgs boson is one of the primary scientific goals of the Large Hadron Collider (LHC) [20]. Previous direct searches at the LHC were based on data from proton-proton collisions corresponding to an integrated luminosity of 5 fb^{-1} collected at a centre-of-mass energy $\sqrt{s} = 7 \text{ TeV}$. The CMS experiment excluded at 95% CL a range of masses from 127 to 600 GeV [21]. The ATLAS experiment excluded at 95% CL the ranges 111.4–116.6, 119.4–122.1 and 129.2–541 GeV [22]. Within the remaining allowed mass region, an excess of events near 125 GeV was reported by both experiments. In 2012 the proton-proton centre-of-mass energy was increased to 8 TeV and by the end of June an additional integrated luminosity of more than 5 fb^{-1} had been recorded by each of these experiments, thereby enhancing significantly the sensitivity of the search for the Higgs boson.

This Letter reports the results of a search for the SM Higgs boson using samples collected by the CMS experiment, comprising data recorded at $\sqrt{s} = 7$ and 8 TeV. The search is performed in

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* E-mail address: cms-publication-committee-chair@cern.ch



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Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC

The CMS Collaboration

(Submitted on 31 Jul 2012 (v1), last revised 28 Jan 2013 (this version, v2))

Results are presented from searches for the standard model Higgs boson in proton-proton collisions at $\sqrt{s} = 7$ and 8 TeV in the Compact Muon Solenoid experiment at the LHC, using data samples corresponding to integrated luminosities of up to 5.1 inverse femtobarns at 7 TeV and 5.3 inverse femtobarns at 8 TeV. The search is performed in five decay modes: $\gamma\gamma$, ZZ , WW , $\tau\tau$, and $b\bar{b}$. An excess of events is observed above the expected background, with a local significance of 5.0 standard deviations, at a mass near 125 GeV, signalling the production of a new particle. The expected significance for a standard model Higgs boson of that mass is 5.8 standard deviations. The excess is most significant in the two decay modes with the best mass resolution, $\gamma\gamma$ and ZZ ; a fit to these signals gives a mass of 125.3 ± 0.4 (stat.) ± 0.5 (syst.) GeV. The decay to two photons indicates that the new particle is a boson with spin different from one.

Comments: Submitted to Phys. Lett. B

Subjects: High Energy Physics – Experiment (hep-ex)

Journal reference: Phys. Lett. B 716 (2012) 30

DOI: 10.1016/j.physletb.2012.08.021

Report number: CMS-HIG-12-028; CERN-PH-EP-2012-220

Cite as: arXiv:1207.7235 [hep-ex]
(or arXiv:1207.7235v2 [hep-ex] for this version)

Submission history

From: Cms Collaboration [view email]

[v1] Tue, 31 Jul 2012 13:27:18 GMT (2076kb,D)

[v2] Mon, 28 Jan 2013 10:46:38 GMT (1508kb,D)

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97% of yearly HEP articles available as preprint on arXiv
(Since 1992: by now 60% of historic production)

Does it matter when all of High-Energy Physics is already available Green Open Access as preprints in arXiv ?

Are SCOAP³ Gold Open Access articles read (more) ?

How big an impact do we have ?

Shall we think pay-once and download forever?





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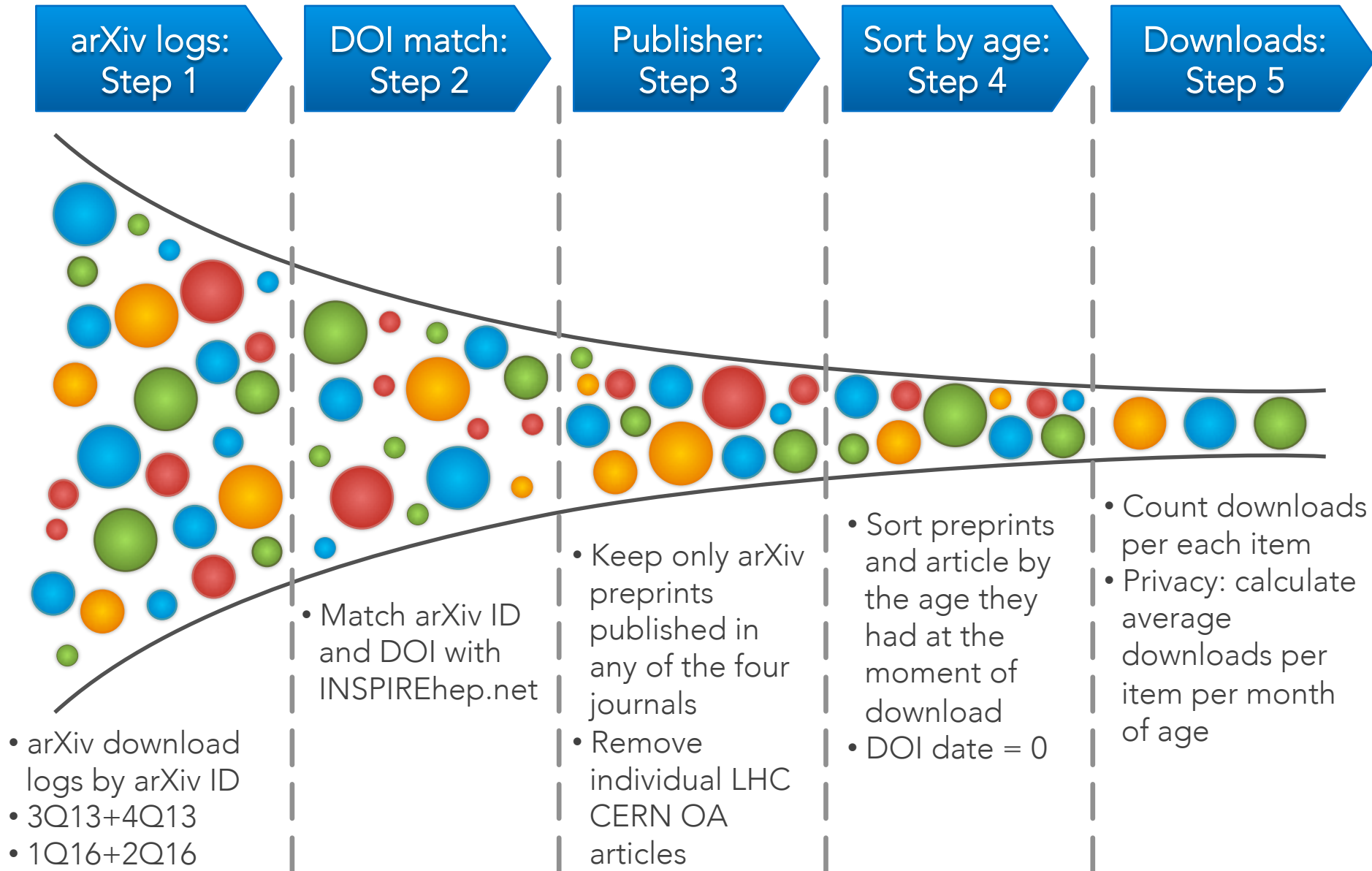


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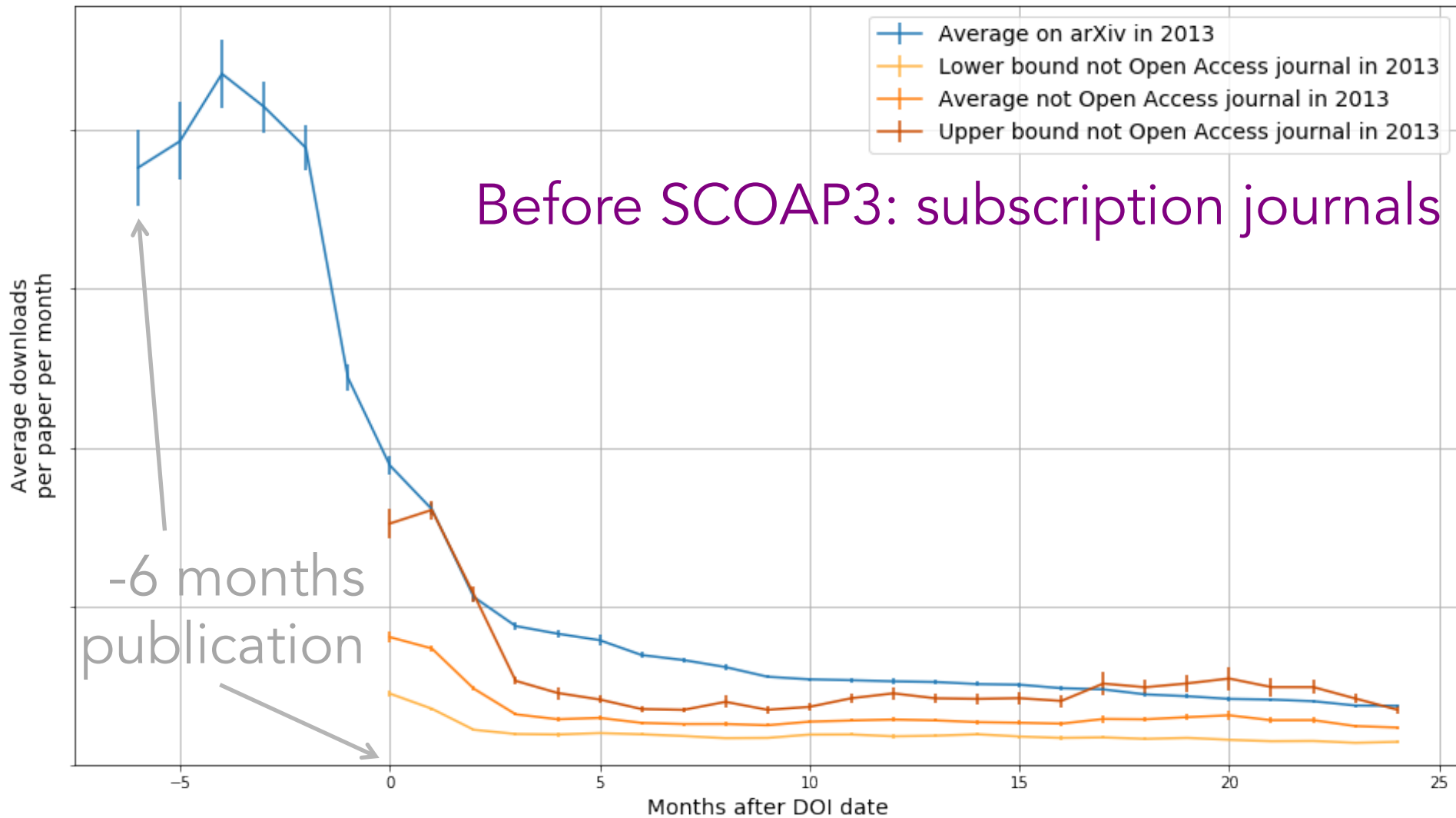


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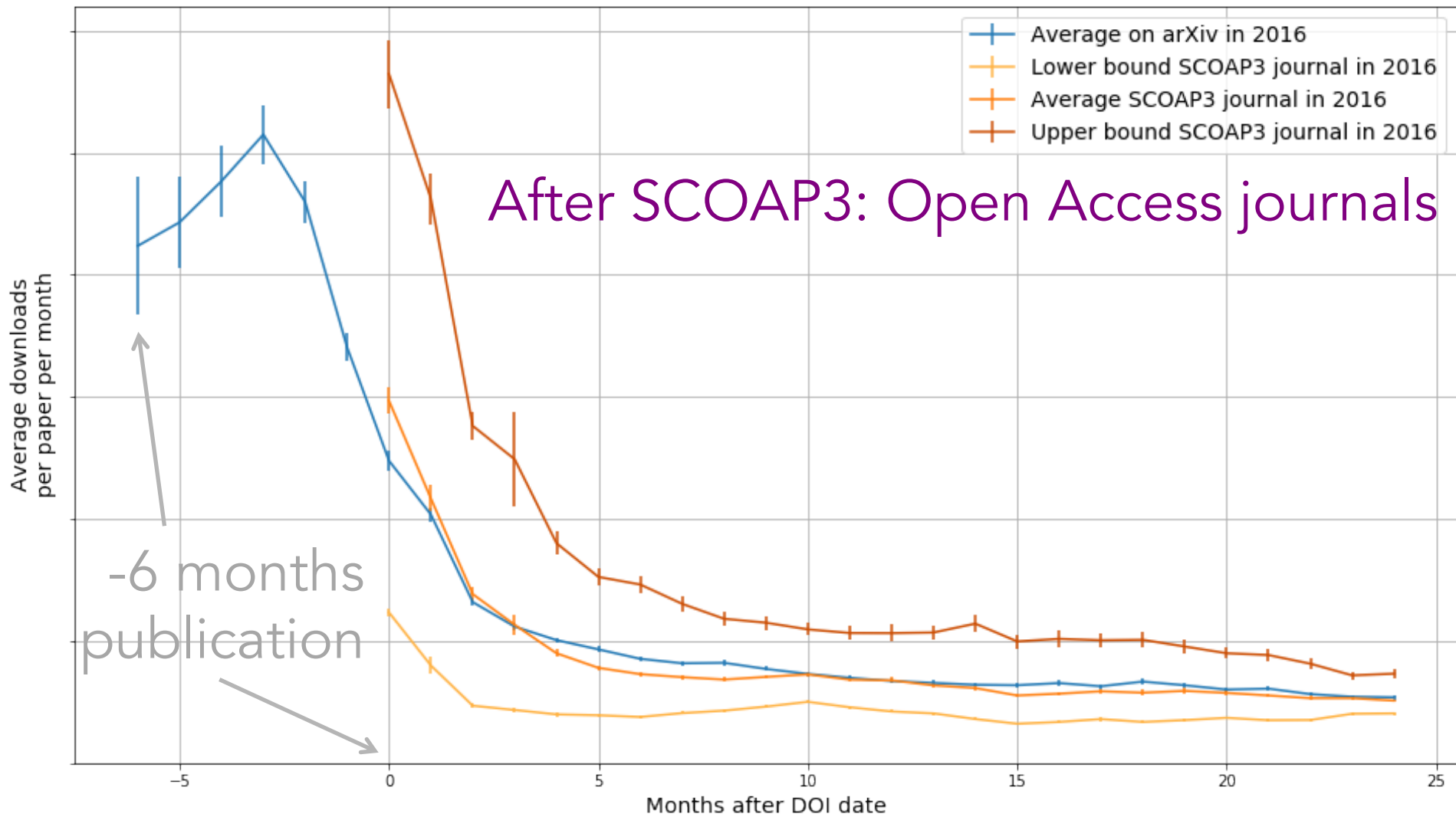


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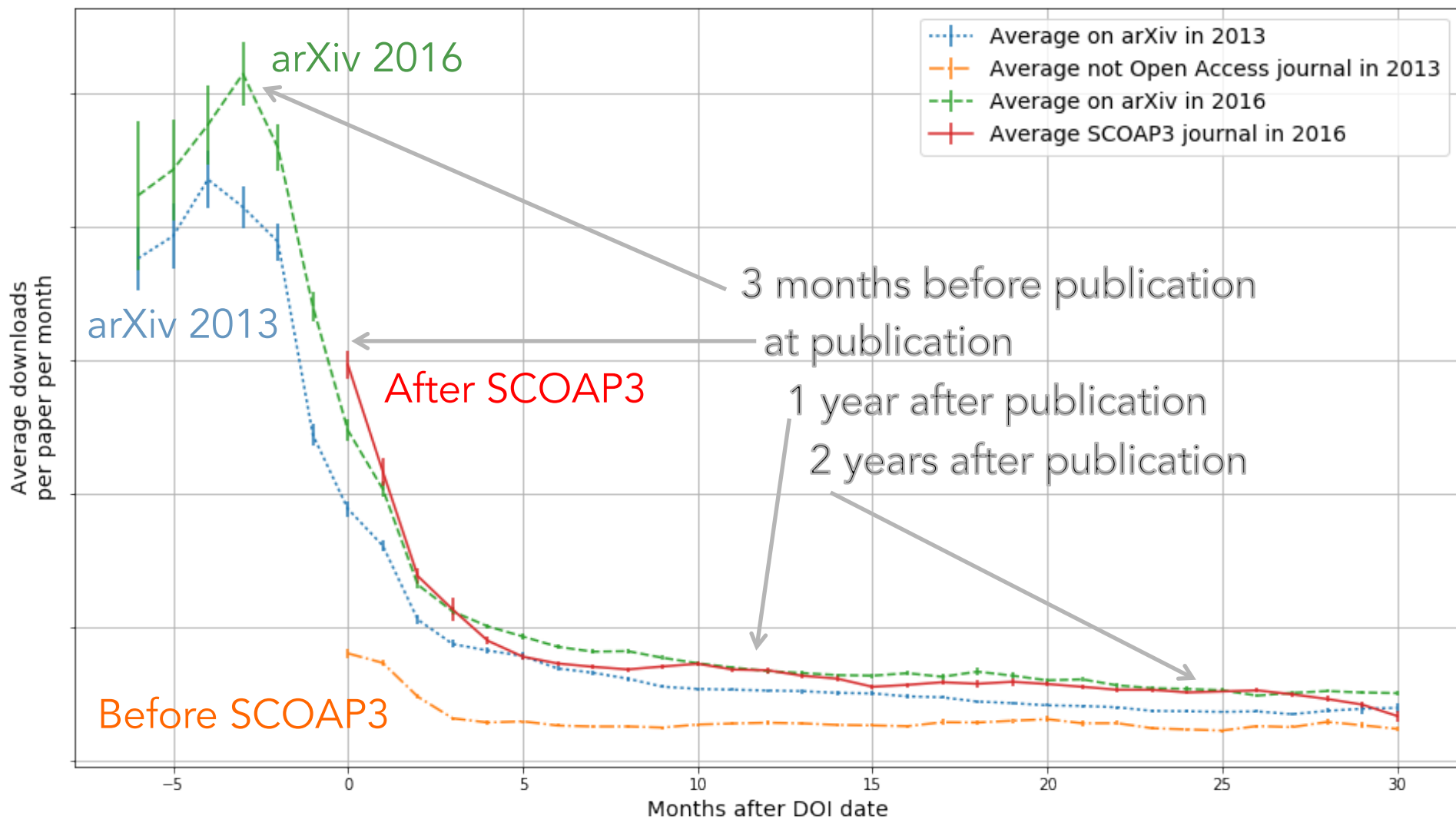
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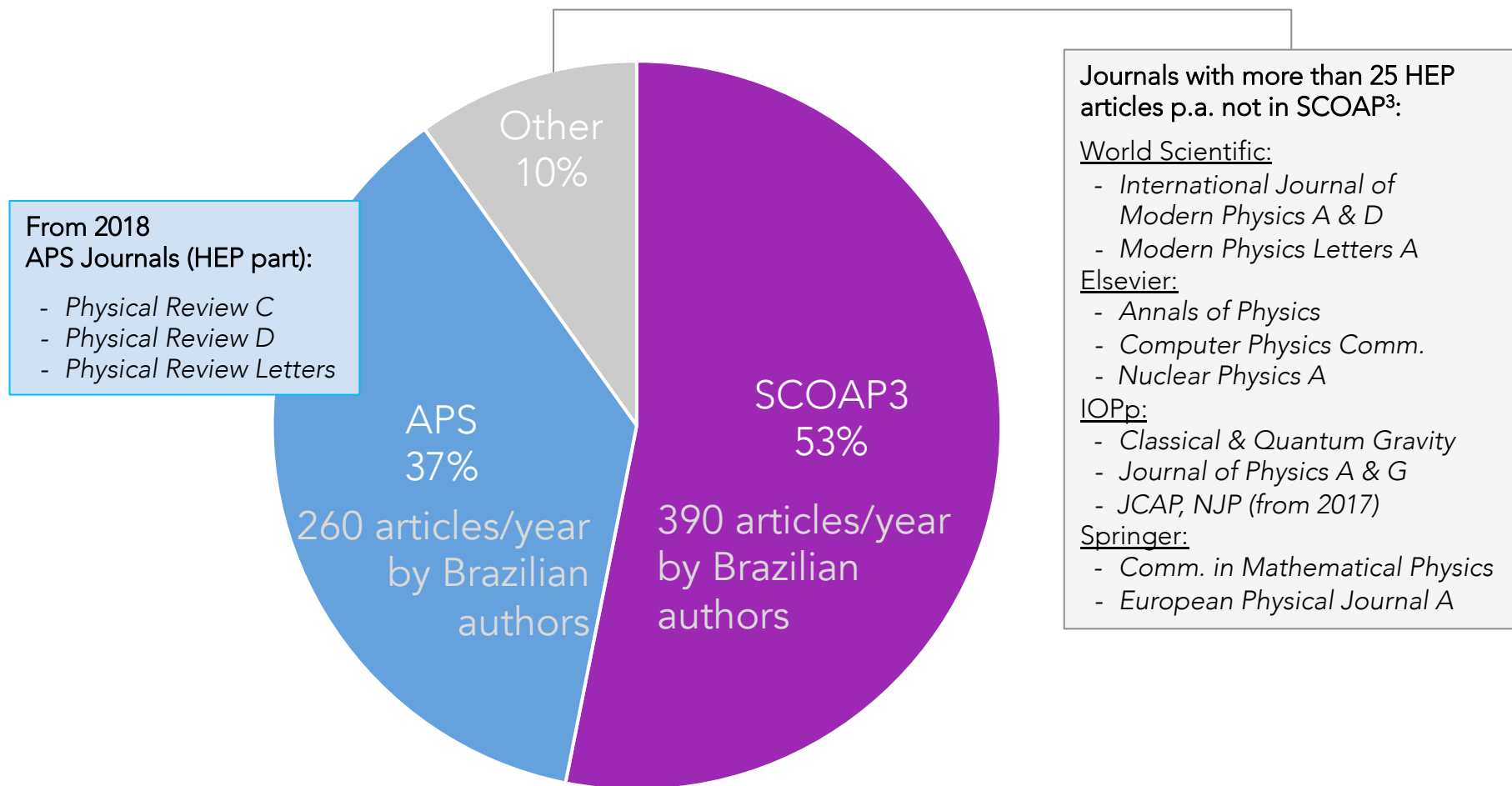
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SCOAP³ outlook and summary

From 2018 SCOAP³ will cover 90% of HEP content



This analysis includes HEP articles published 2014 and 2015 in the listed journals. A HEP article is defined as an article submitted to arXiv in one of the HEP categories: HEP-EX, HEP-LAT, HEP-PH, HEP-TH. For simplification, journals with less than 25 HEP articles/year were excluded.

SCOAP3 impact & outlook

the first 3 years: 2014-2016

3'000+ libraries & **8** funding agencies **43** countries

13'368 articles by **20'000** authors in **100** countries

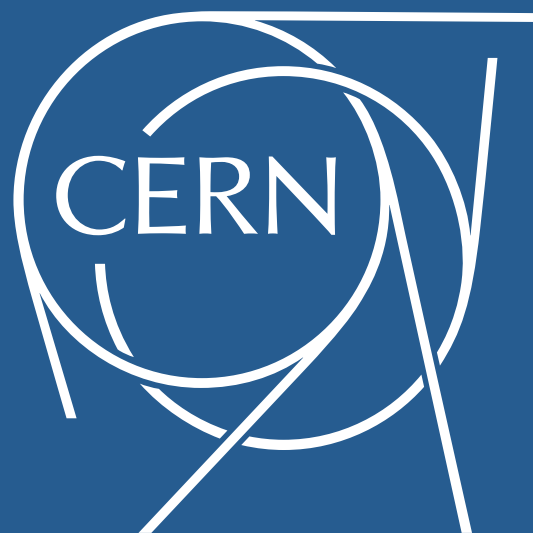
1'032€ /article (**1/2-1/3** of average **APCs**)

>90% cheaper (recycling subscriptions)

More than **doubling** article **downloads**

From 2018: **7000** articles/year, **90%** of the **field**

New **partners** can make this a **sustainable** success



Thanks:

to participating Publishers, SCOAP³ Partners and Governance for
10 years of trust, partnership, confidence, ... and miracles

Join us!