Open Access in High-Energy Physics and the SCOAP3 project

(Publishing in HEP)
Open Access tradition
Open Access advantages
Open Access publishing - SCOAP3

Salvatore Mele
CERN European Organization for Nuclear Research

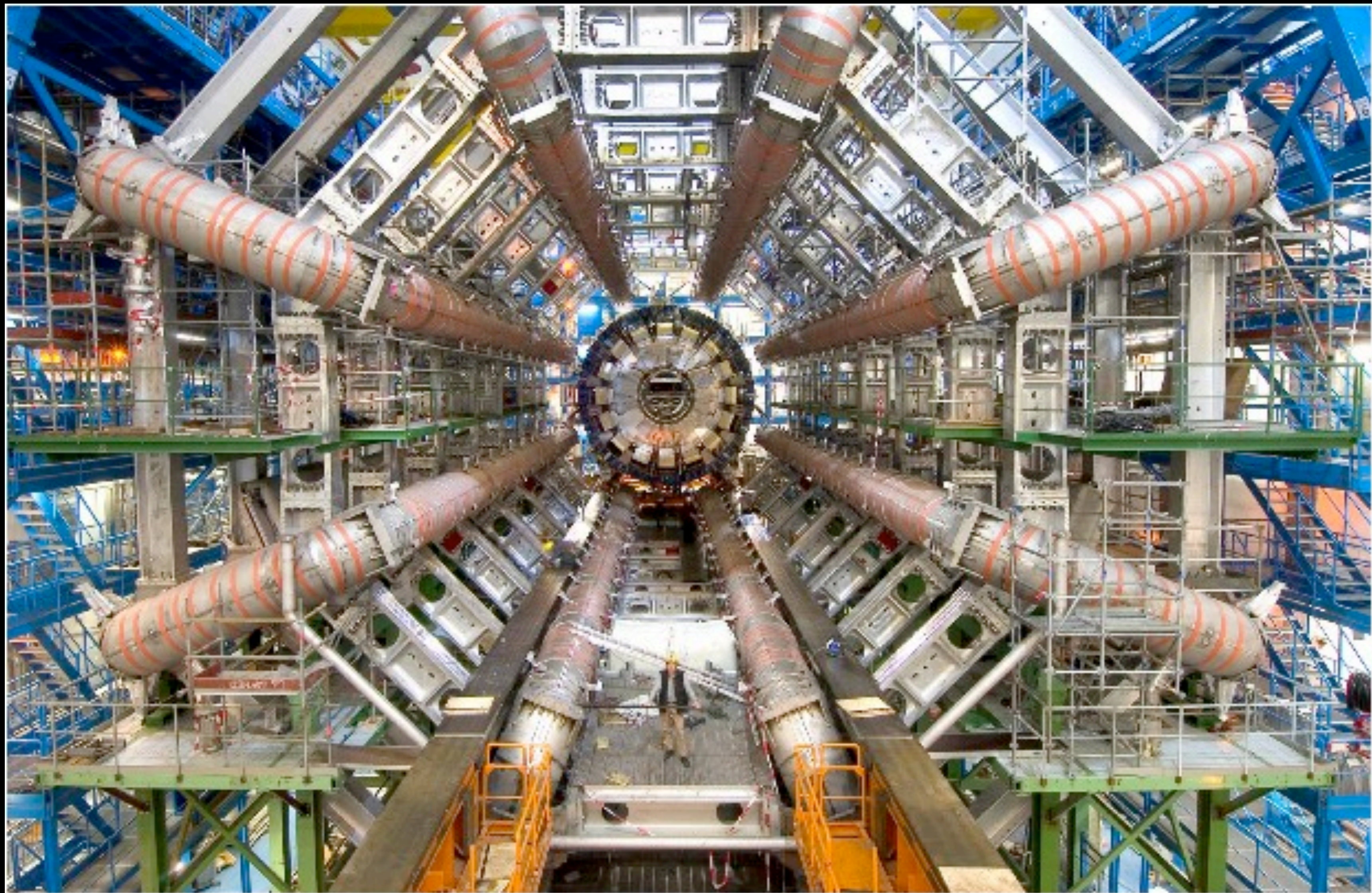
scoap3.org

CERN: European Organization for Nuclear Research (since 1954)

- World leading HEP laboratory, Geneva (CH)
- 2500 staff (mostly engineers, administrators/services)
- 10000 users (physicists from 580 institutes in 85 countries)
- 3 Nobel prizes (Accelerators, Detectors, Discoveries)
- Invented the web    
- Operates the 27-km (6bn€) LHC accelerator, "the big-bang machine"
- Top management committed to Open Access
- Runs a 1-million objects Digital Library

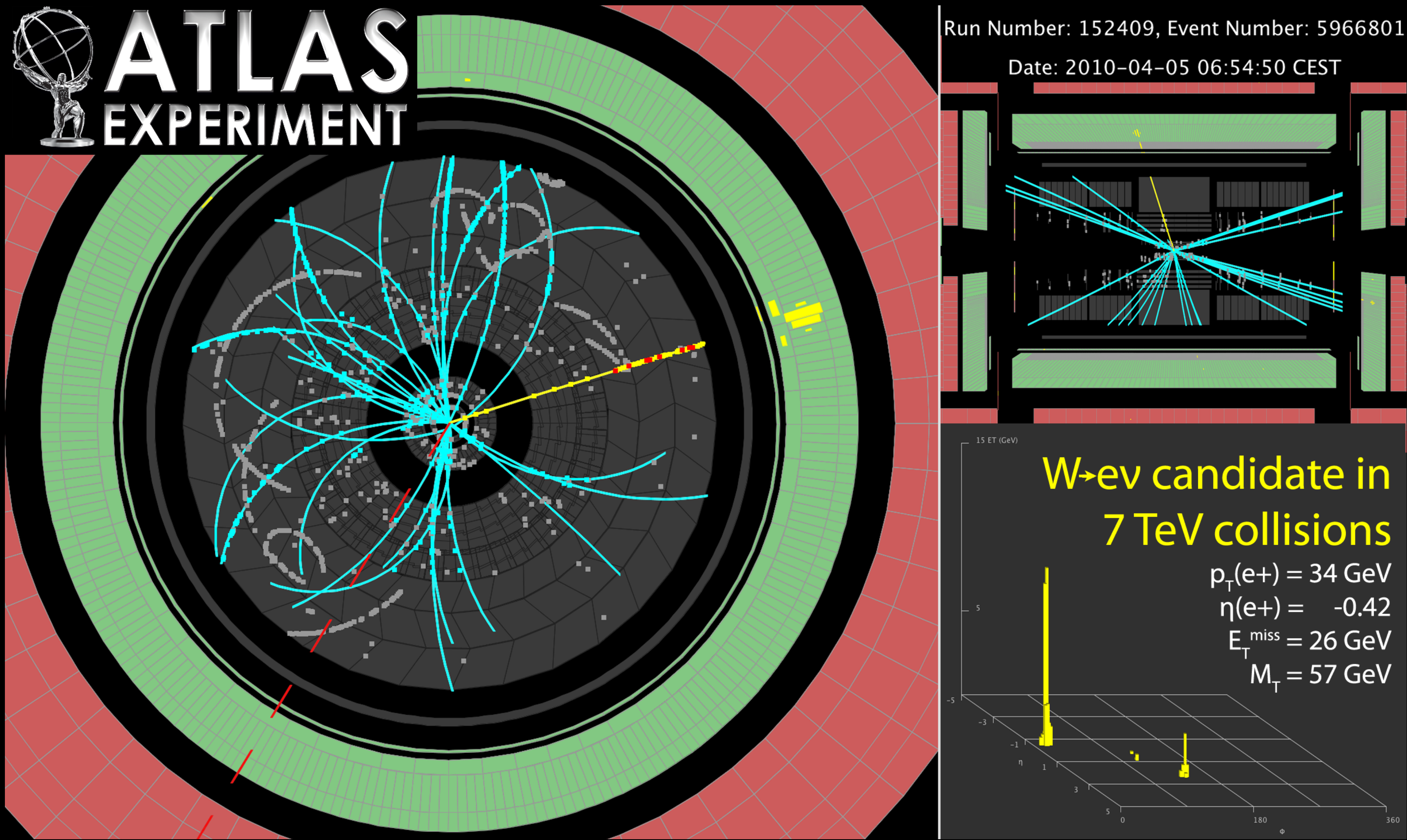
CERN Convention (1953): *ante-litteram* Open Access manifesto
"… the results of its experimental and theoretical work shall be published or otherwise made generally available"

~15’000 High Energy Physics (HEP) scientists smash stuff at the speed of light to produce new stuff



~15'000 HEP theorists scratch their heads to make sense of all that stuff and then some more

...and it works!



LHC re-discovering known particles for starters.
First needles in the haystack: one in a million.

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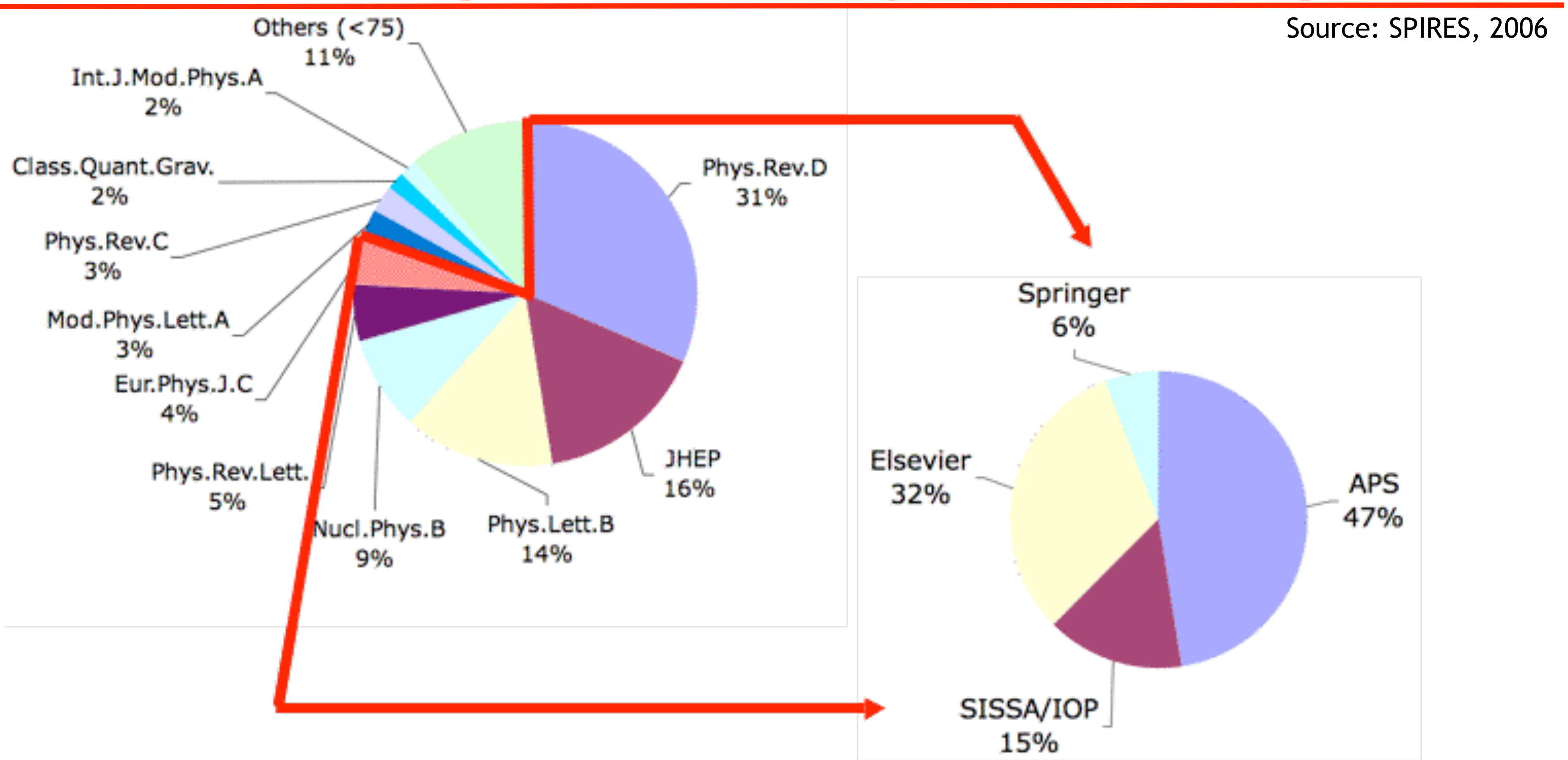
The HEP publishing landscape

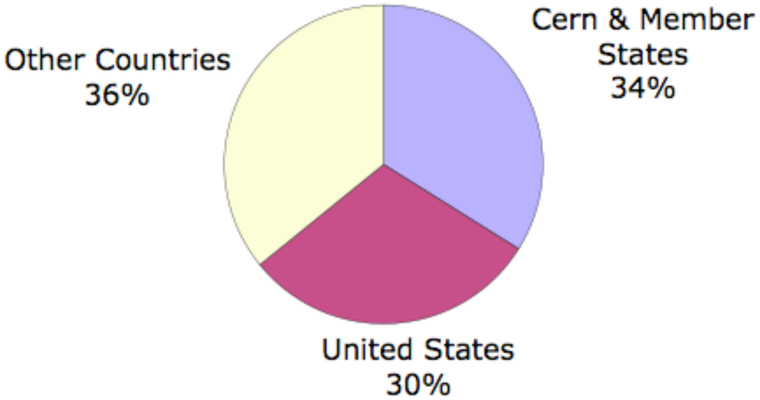


- 5000-7000 articles/year, according to HEP definition
- 90% are in theory
- 80% published in 6 journals by 4 publishers
- 62% by not-for-profit (nor-for-loss) publishers

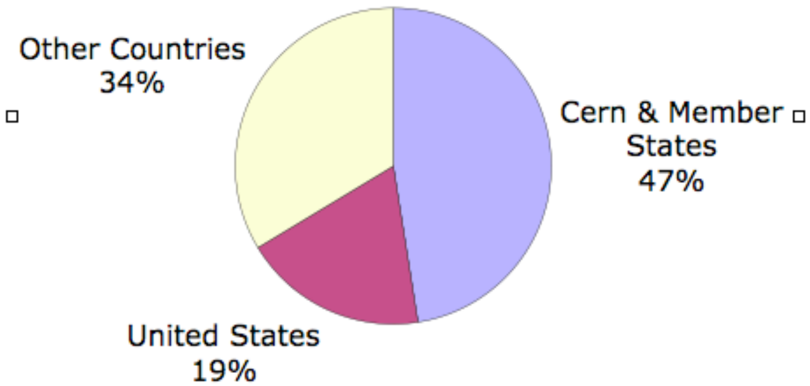
U.S. and European HEP journals

Krause *et al*. CERN-OPEN-2007-014

Origin of articles in U.S. journals

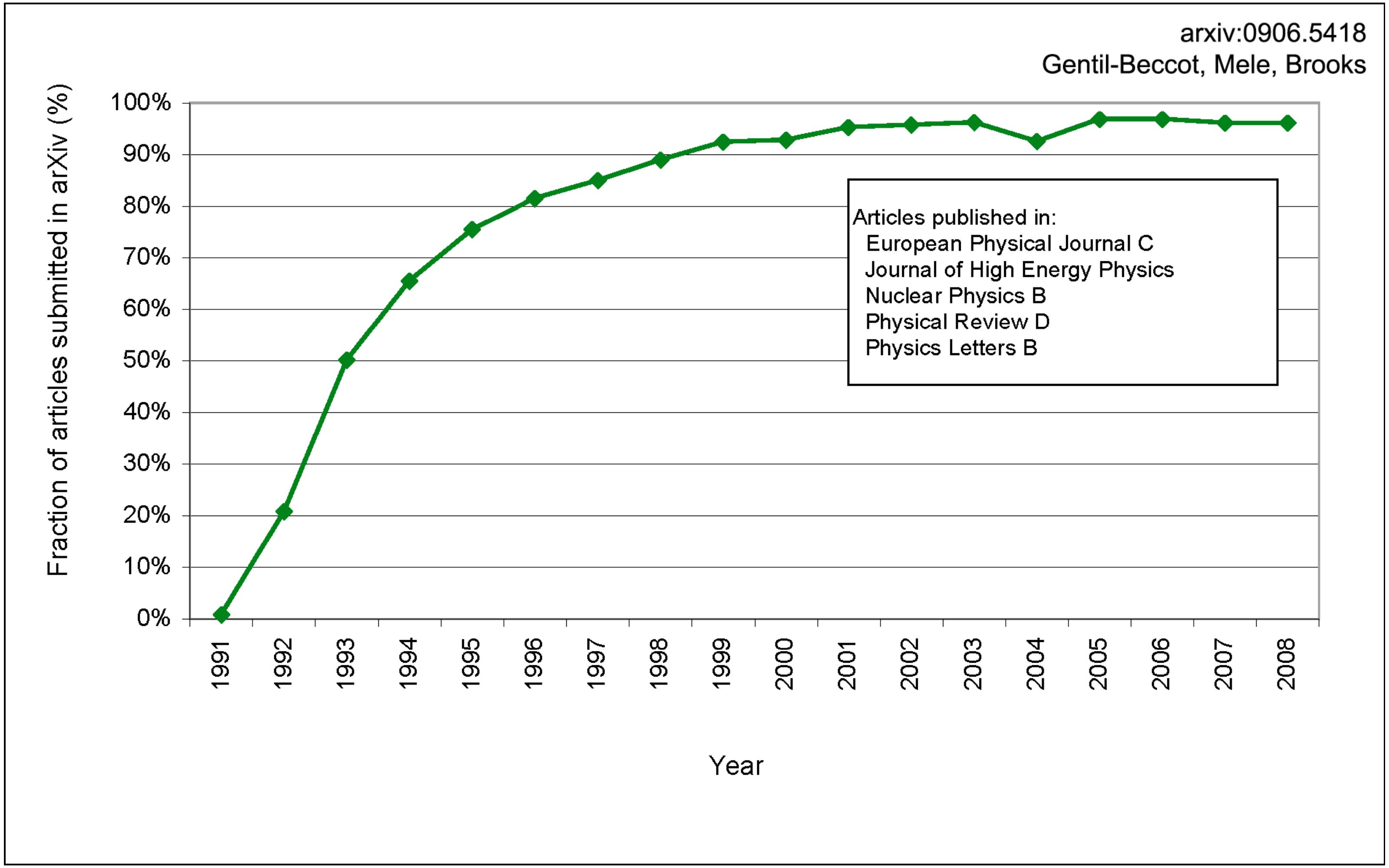


Origin of articles in E.U. journals

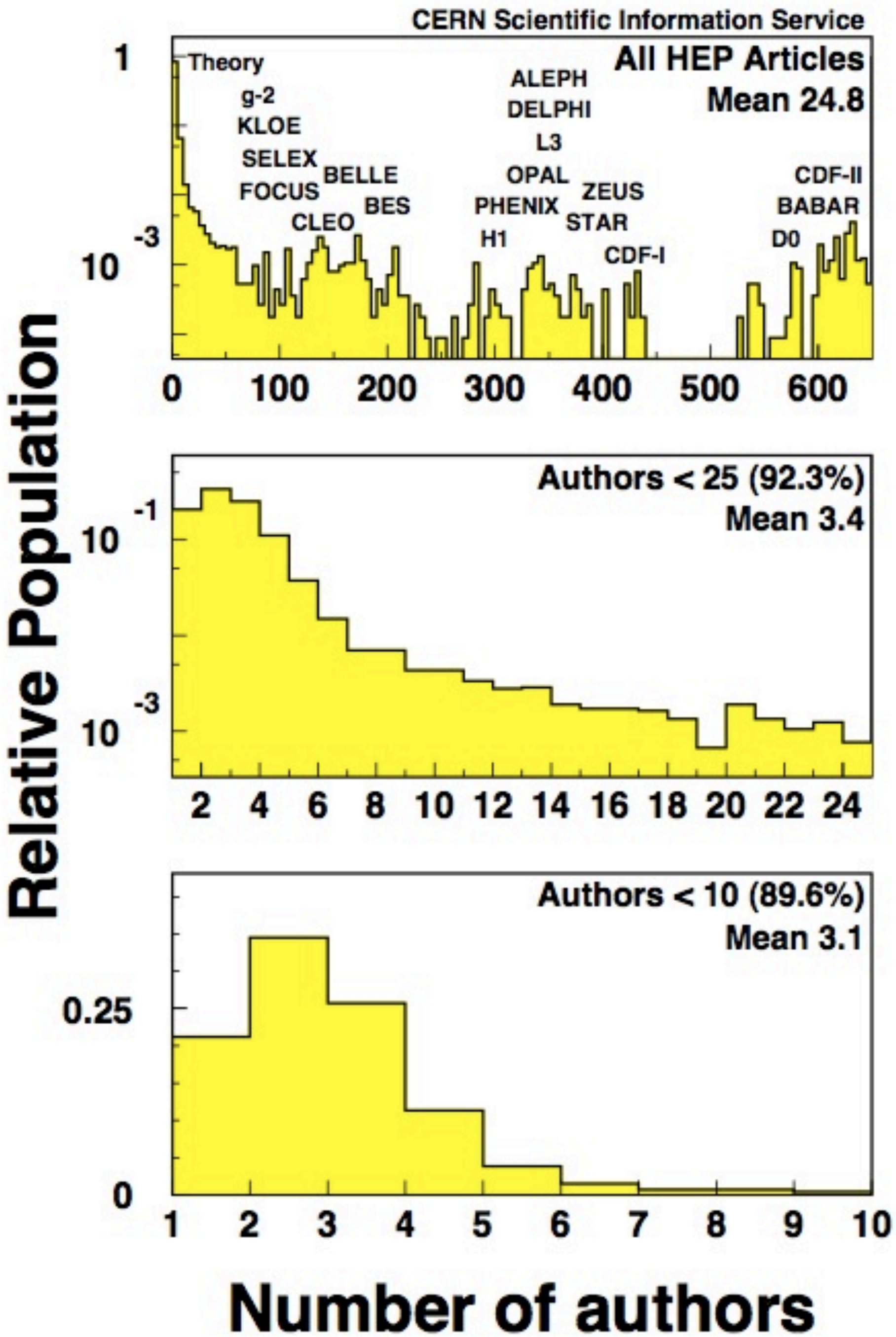


Study of 11326 HEP articles published in 2005-2006 in PRD,JHEP,PLB,NPB,EPJC,PRL and NIMA

97% of HEP journals' content is in arXiv



Krause *et al*. CERN-OPEN-2007-014



90% of articles…
…are in theory
…have 3 authors!

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The “preprint culture”

L.Goldschmidt-Clermont, 1965, http://eprints.rclis.org/archive/00000445/02/communication_patterns.pdf

Scientific journals of ‘60s too slow for HEP

Mass-mail preprints to institutes worldwide

Ante litteram (institute-pays) Open Access

Leading libraries “serve” preprints

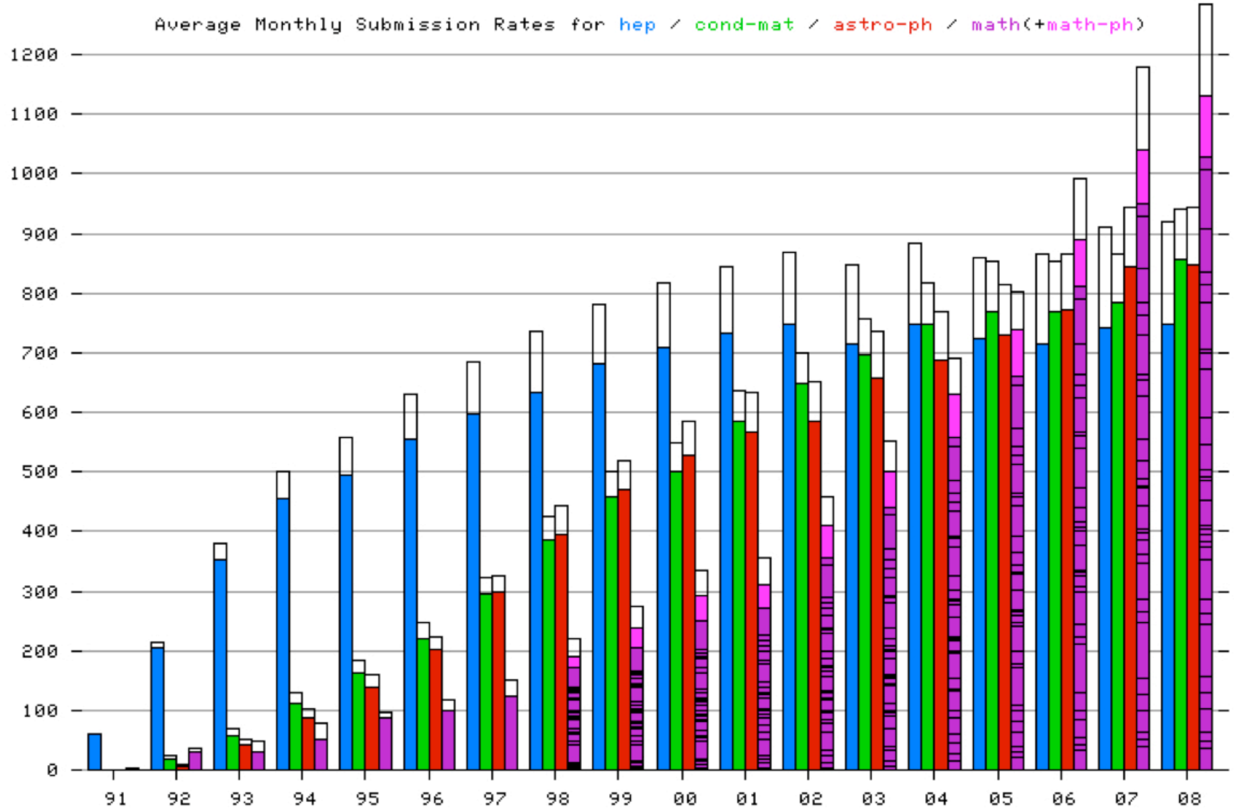
“Our ADS”: SPIRES (Stanford) 1st U.S. WWW!

CERN Library, circa 1960

arXiv.org the archetypal repository

http://vmsstreamer1.fnal.gov/VMS_Site_03/Lectures/Colloquium/presentations/090506Ginsparg.pdf

- P. Ginsparg, LANL, 1991. Now Cornell Library
- E-mail based, then immediately on the web
- No mandate, no debate, author-driven
- 1/2 Million preprints. HEP, Astro and growing




HEP – HEP
http://inspirebeta.net/
Tools Twikis SBTH SCOAP3control OAtalk Misc Shorten with bit.ly Add to Connotea
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More
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There are some things that are not working, and others that are rough around the edges, please report these bugs and we'll keep you updated on the fixes and improvements we make. We expect to be making a lot of updates and changes in the first few months, so please send feedback about the service to feedback@inspire-hep.net
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Open Access advantages in HEP

Visibility
Acceleration
Impact

Open Access advantages in HEP

Visibility

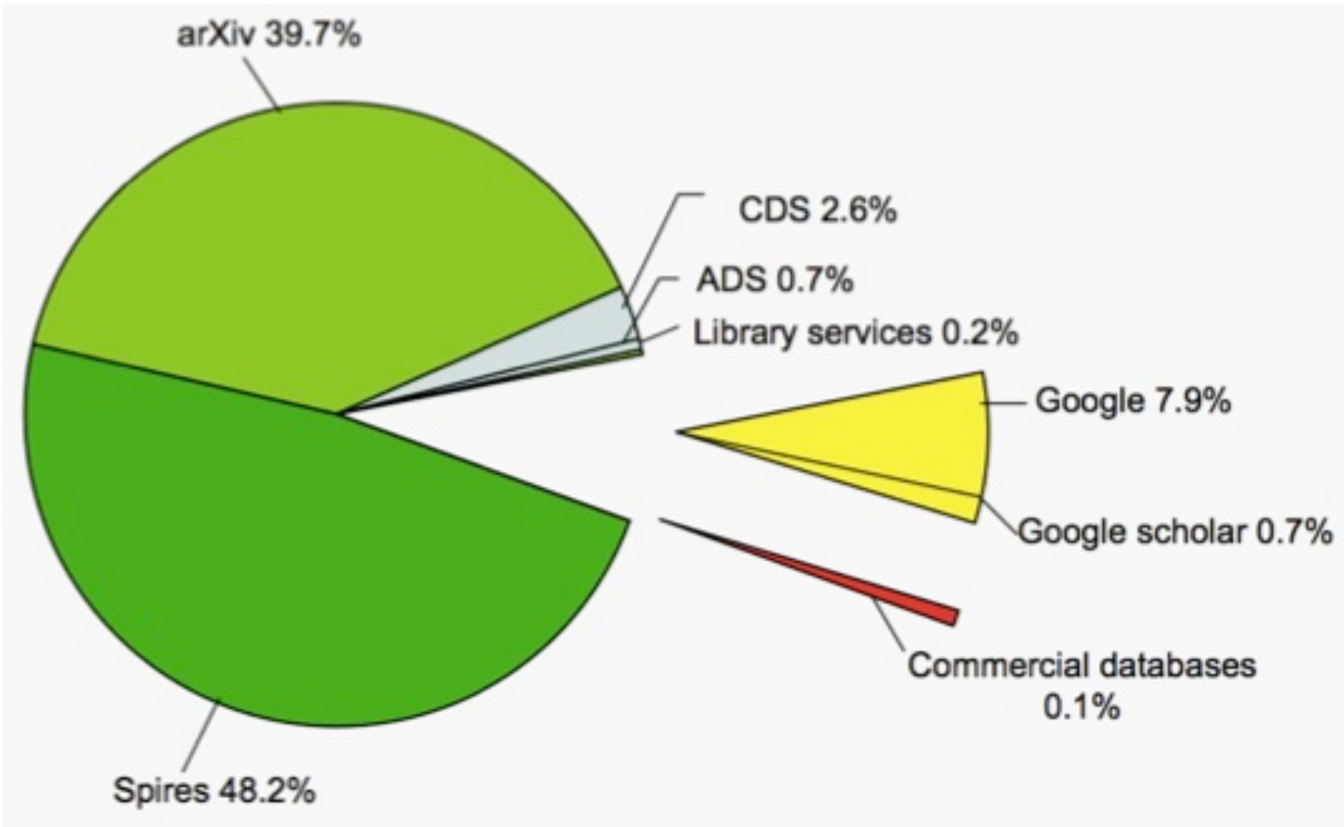
Acceleration

Impact

Where do HEP scientists look for info?

Gentil-Beccot *et al.* arxiv:0804.2701

- Survey of 2’000+ scientists (10% of community)
- OA tools answer scientists’ information needs
- Google as proxy of arXiv, SPIRES, publishers



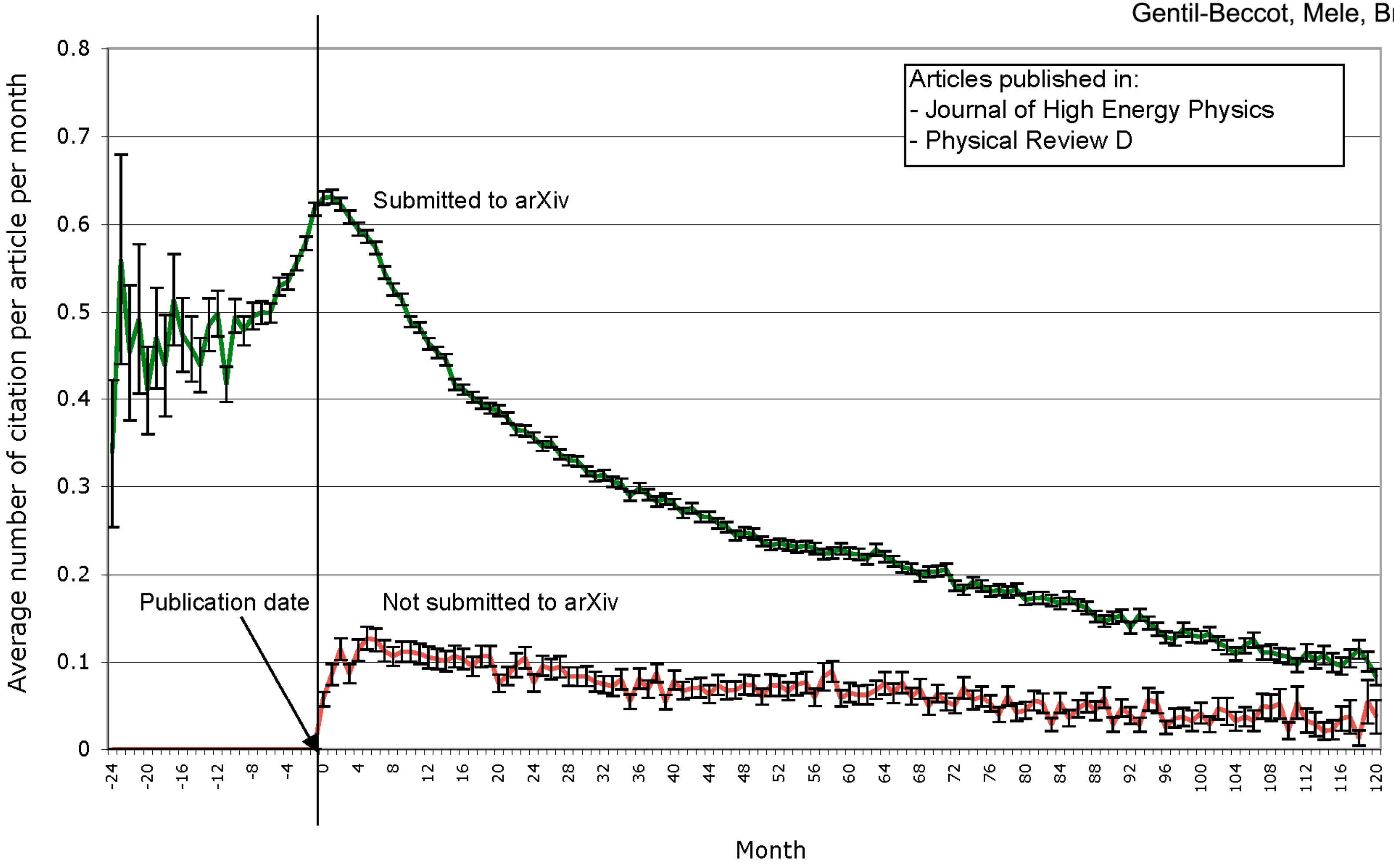
Open Access advantages in HEP

Visibility
Acceleration
Impact

Ten years in the life of a HEP article

- SPIRES counts: citations to/from preprints/articles
- Citation peaks **at** publications
- Scientific discourse proceeds on discipline repository

arxiv:0906.5418
Gentil-Beccot, Mele, Brooks



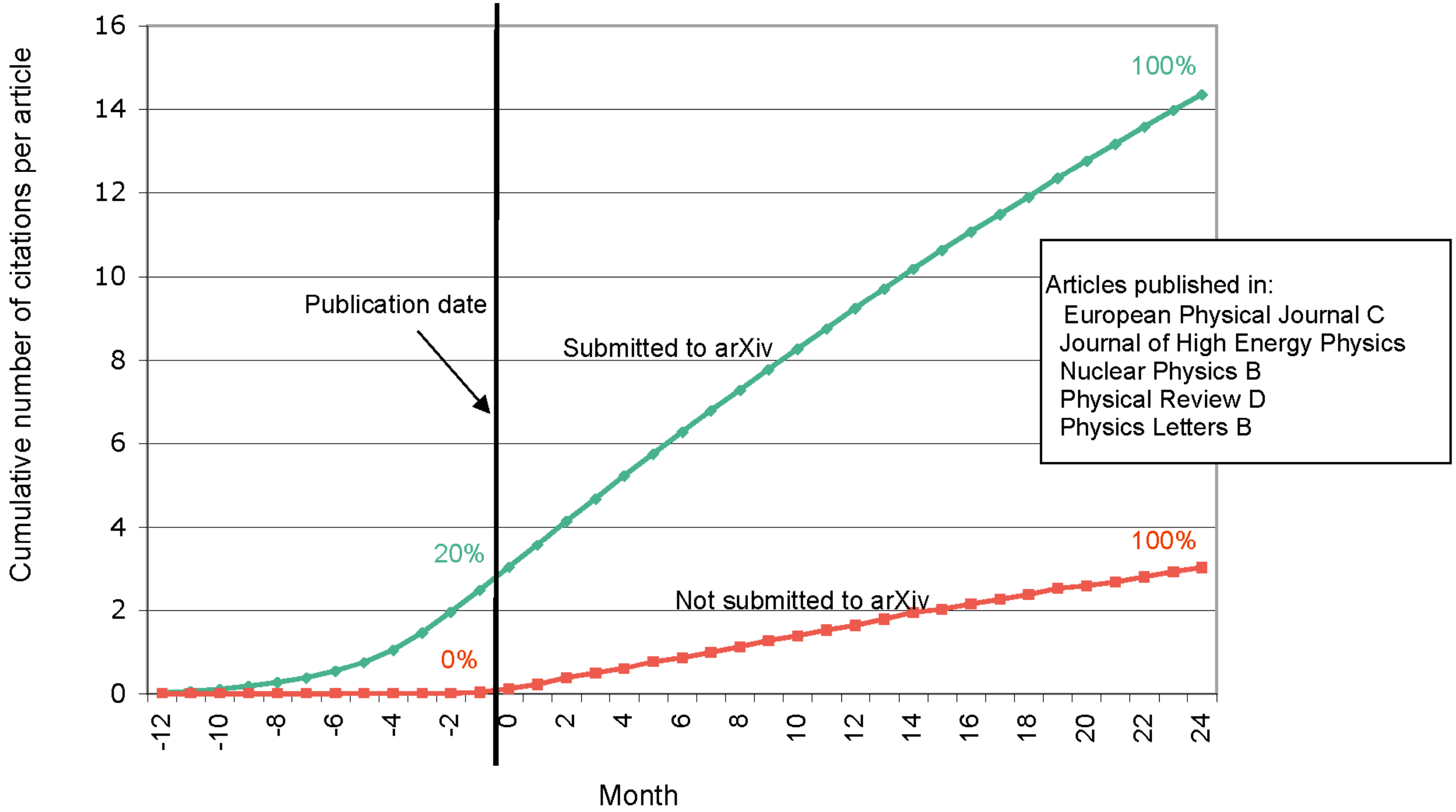
Open Access advantages in HEP

Visibility
Acceleration
Impact

Citation augmentation

- Discipline repository yields immense avantage
  - Five times more citations for articles in arXiv
  - 20% of 2-year citations occur before publication

arxiv:0906.5418
Gentil-Beccot, Mele, Brooks



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Open Access publishing in HEP

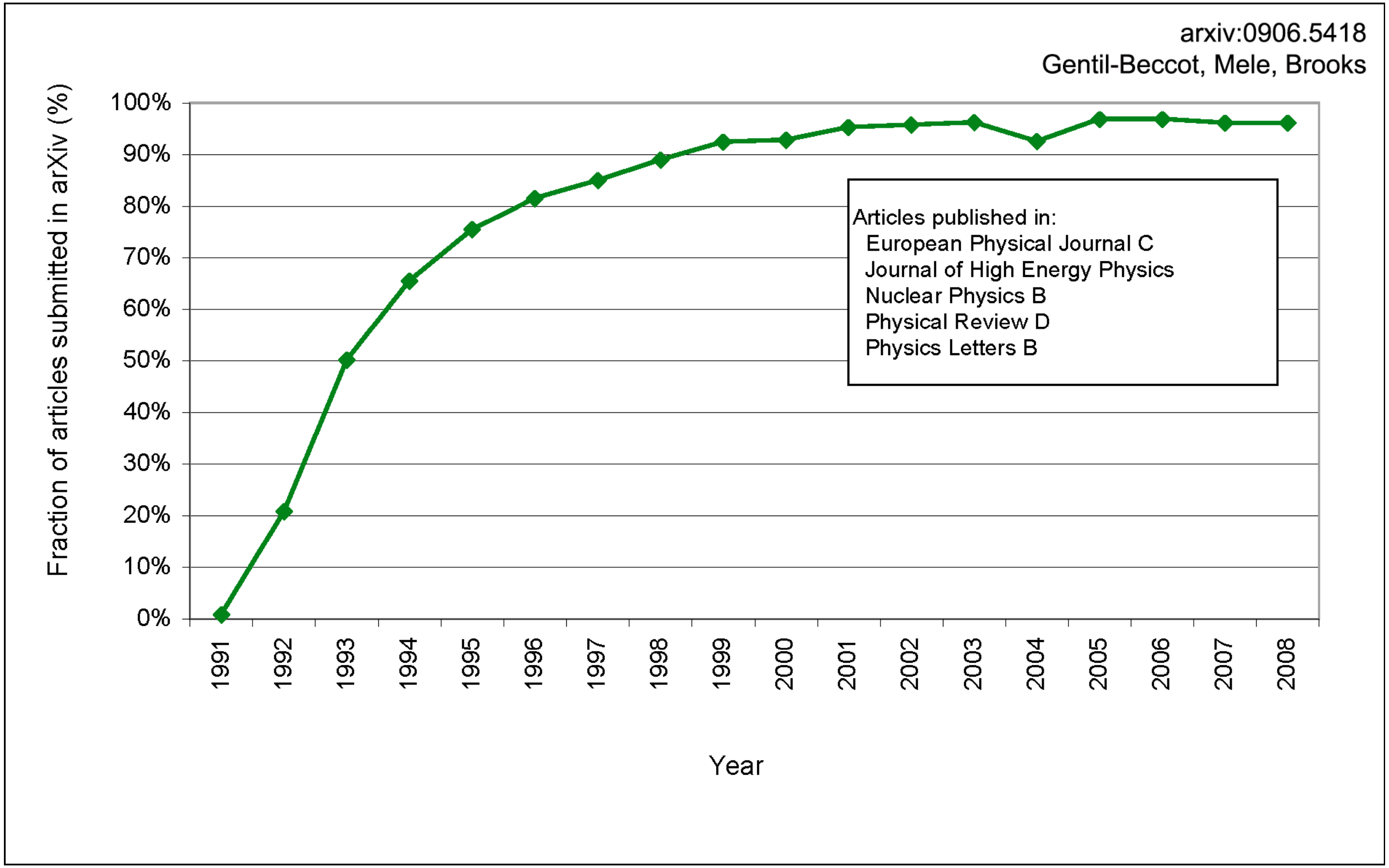
A conundrum
Experiments
SCOAP3

A conundrum

Experiments

SCOAP3

97% of HEP journals' content is in arXiv

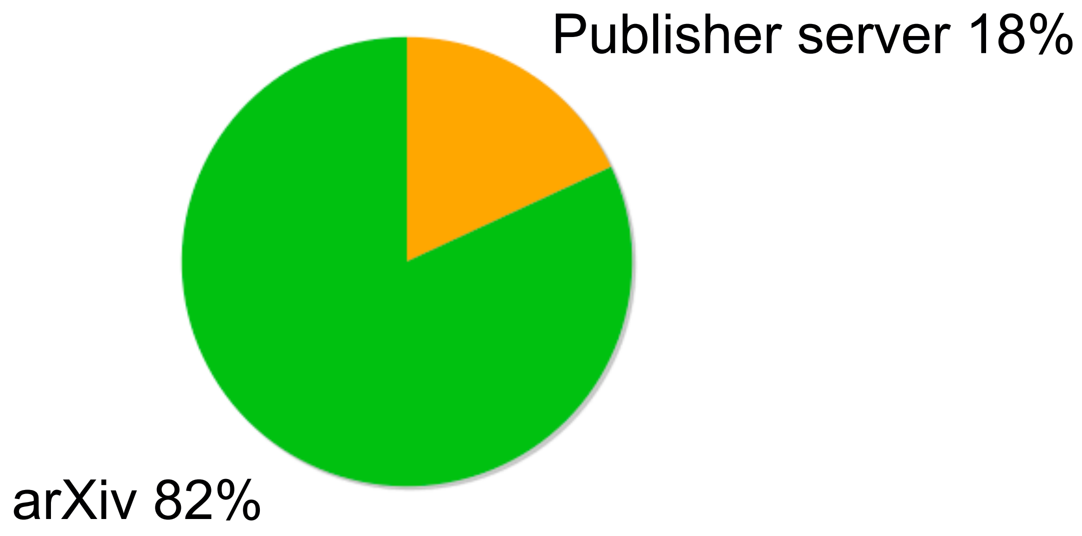


Do HEP scientists read journals ?

Gentil-Beccot *et al.* arxiv:0906.5418

Clicks to DOIs and arXiv from Spires database in October 2008

~30,000 clicks (choice between arXiv and journal)



(As many scientists as analyzed here go straight to arXiv)

HEP and its 6-8 journals: a conundrum

- Scientists do not read journals, they read arXiv
- Journals are for peer-review and officialdom
- Strong request for OA from scientists
- Libraries' subscriptions implicitly support the system rather than buying access

Open Access publishing in HEP

A conundrum

Experiments

SCOAP3

Open Access experiments in HEP
(and percentage of HEP literature)

Hybrid model: Per-article OA fee on top of subscriptions

- Negligible success in HEP. Author FAQ: why pay something (peer-review) you can get for free (the library pays subscriptions) (<<1%)

Author-pays: No subscriptions. Authors (institutions) pay per-article journals processing fees

- Model in its infancy in HEP. Author FAQ: why pay something you can get for free elsewhere (the library pays subscriptions) (<<1%)

Institutional membership: for a (small) fee in addition to subscriptions, all articles with at least one author from the institution are OA

- Leading laboratories and the entire France trying this scheme.
- Authors like OA without financial barriers in high-IF journals (~4%)

Community support for OA publishing

- LHC scientists (8000 scientists from 54 countries):
  "We strongly [...] support the principles of Open Access Publishing, which includes granting free access of our publications to all. Furthermore, we encourage all our members to publish papers in easily accessible journals, following the principles of the Open Access Paradigm."

- Seminal articles on LHC construction published OA *Journal of Instrumentation*
  - 7 articles/1600 pages/8000 authors.
  - Largest single OA operation so far?
  - 60’000+ downloads from journal site in first two months!

Recent Open Access developments in HEP

Waiting for SCOAP3 publishers offer **free** OA:

- Springer: *Eur. Phys. Jour. C*
  - Experimental HEP articles and all HEP letters
- EPS: *Europhys. Lett.*
  - All HEP articles
- Elsevier: *Phys. Lett. B* and *Nucl. Phys. B*
  - HEP articles from the LHC
- APS: *Phys. Rev. Lett.* and *Phys. Rev. D*
  - LHC articles in 2010

First LHC results: partnerships with publishers!

1. Open Access with no author fees
2. (C) CERN for the benefit of the collaborations
3. CC-BY-(NC)

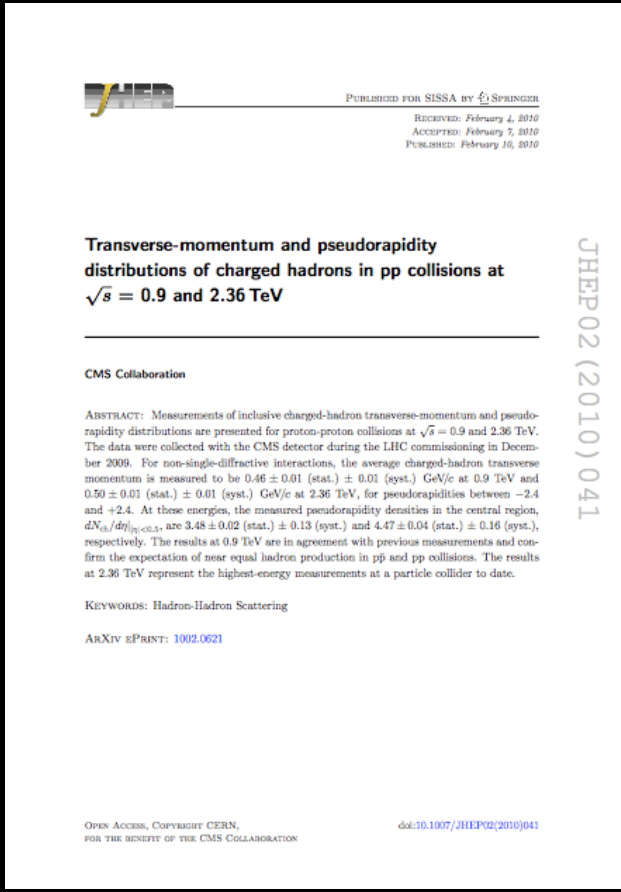
Eur. Phys. J. C (2010) 65: 111–125
DOI 10.1140/epjc/s10052-009-1227-4

THE EUROPEAN PHYSICAL JOURNAL C

Regular Article - Experimental Physics

First proton–proton collisions at the LHC as observed with the ALICE detector: measurement of the charged-particle pseudorapidity density at $\sqrt{s} = 900$ GeV

The ALICE Collaboration



JHEP

Published for SISSA by Springer

Received: February 4, 2010
Accepted: February 7, 2010
Published: February 10, 2010

Transverse-momentum and pseudorapidity distributions of charged hadrons in pp collisions at $\sqrt{s} = 0.9$ and 2.36 TeV

CMS Collaboration

Abstract: Measurements of inclusive charged-hadron transverse-momentum and pseudorapidity distributions are presented for proton-proton collisions at $\sqrt{s} = 0.9$ and 2.36 TeV. The data were collected with the CMS detector during the LHC commissioning in December 2009. For non-single-diffractive interactions, the average charged-hadron transverse momentum is measured to be 0.46 ± 0.01 (stat.) $\pm$ 0.01 (syst.) GeV/c at 0.9 TeV and 0.50 ± 0.01 (stat.) $\pm$ 0.01 (syst.) GeV/c at 2.36 TeV, for pseudorapidities between −2.4 and +2.4. At these energies, the measured pseudorapidity densities in the central region, $dN_{ch}/d\eta|_{|\eta|<0.5}$, are 3.48 ± 0.02 (stat.) $\pm$ 0.13 (syst.) and 4.47 ± 0.04 (stat.) $\pm$ 0.16 (syst.), respectively. The results at 0.9 TeV are in agreement with previous measurements and confirm the expectation of near equal hadron production in $p\bar{p}$ and pp collisions. The results at 2.36 TeV represent the highest-energy measurements at a particle collider to date.

Keywords: Hadron-Hadron Scattering

ArXiv ePrint: 1002.0621

Open Access, Copyright CERN, for the benefit of the CMS Collaboration

doi:10.1007/JHEP02(2010)041

JHEP02(2010)041

ARTICLE IN PRESS

Contents lists available at ScienceDirect

Physics Letters B

ELSEVIER

www.elsevier.com/locate/physletb

Charged-particle multiplicities in pp interactions at $\sqrt{s} = 900$ GeV measured with the ATLAS detector at the LHC

ATLAS Collaboration

ARTICLE INFO

ABSTRACT

1. Introduction

Springer | SISSA | Elsevier

Open Access publishing in HEP

A conundrum

Experiments

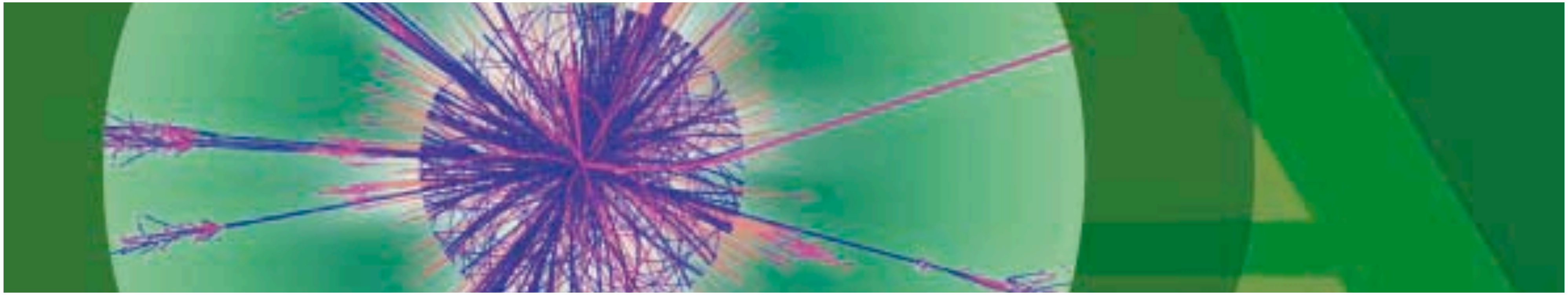
SCOAP3

The SCOAP3 model

An international consortium to convert existing (and new) top-quality HEP journals to OA

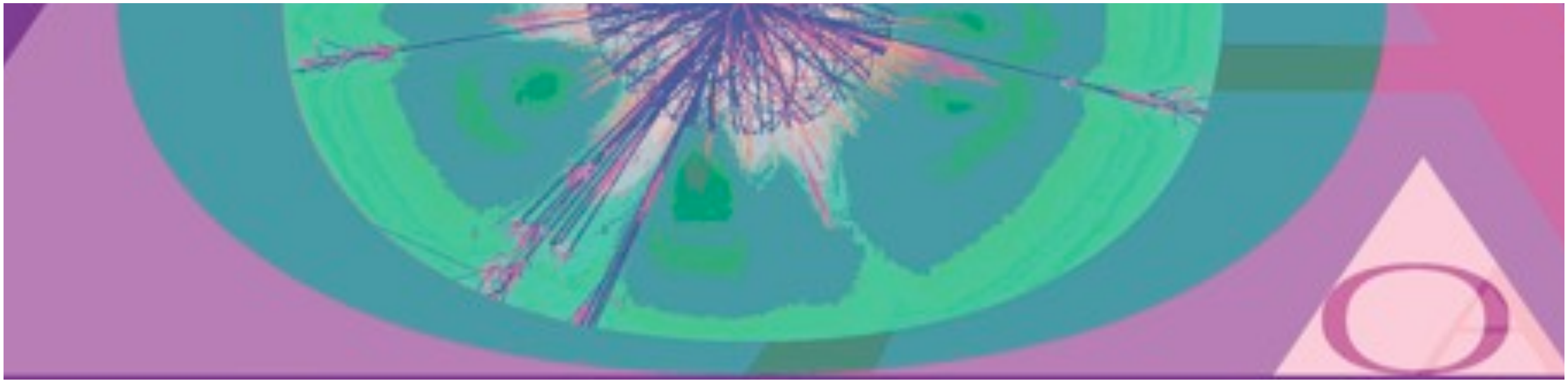
- Libraries re-direct subscriptions to SCOAP3
- SCOAP3 pays centrally for peer-review service
- Price-per-article established by call for tender
- Articles are (free and libre) Open Access

OA and publishing novelties



Publishing novelties of SCOAP3

- Link price and quality through call for tender
- Correlate volume and price through contracts
- Enshrine value added in publishing process
- Experiment in a field at a confluence:
  - OA, repositories, peer-review



OA novelties of SCOAP3

- No additional expenses for OA article fees
  - for anyone: authors, libraries, funders
- Discipline-wide re-direction of subscriptions
- Transparently provide scientists with:
  - OA; academic freedom; quality; prestige

Why libraries like SCOAP3

- Knowing what is paid for, and price control.
- Do more with articles:
  - Host local copies of entire field.
  - Automatic harvest institute's output in repositories.
  - Author's rights. Re-use rights.
- Experiment for later expansion to other fields?

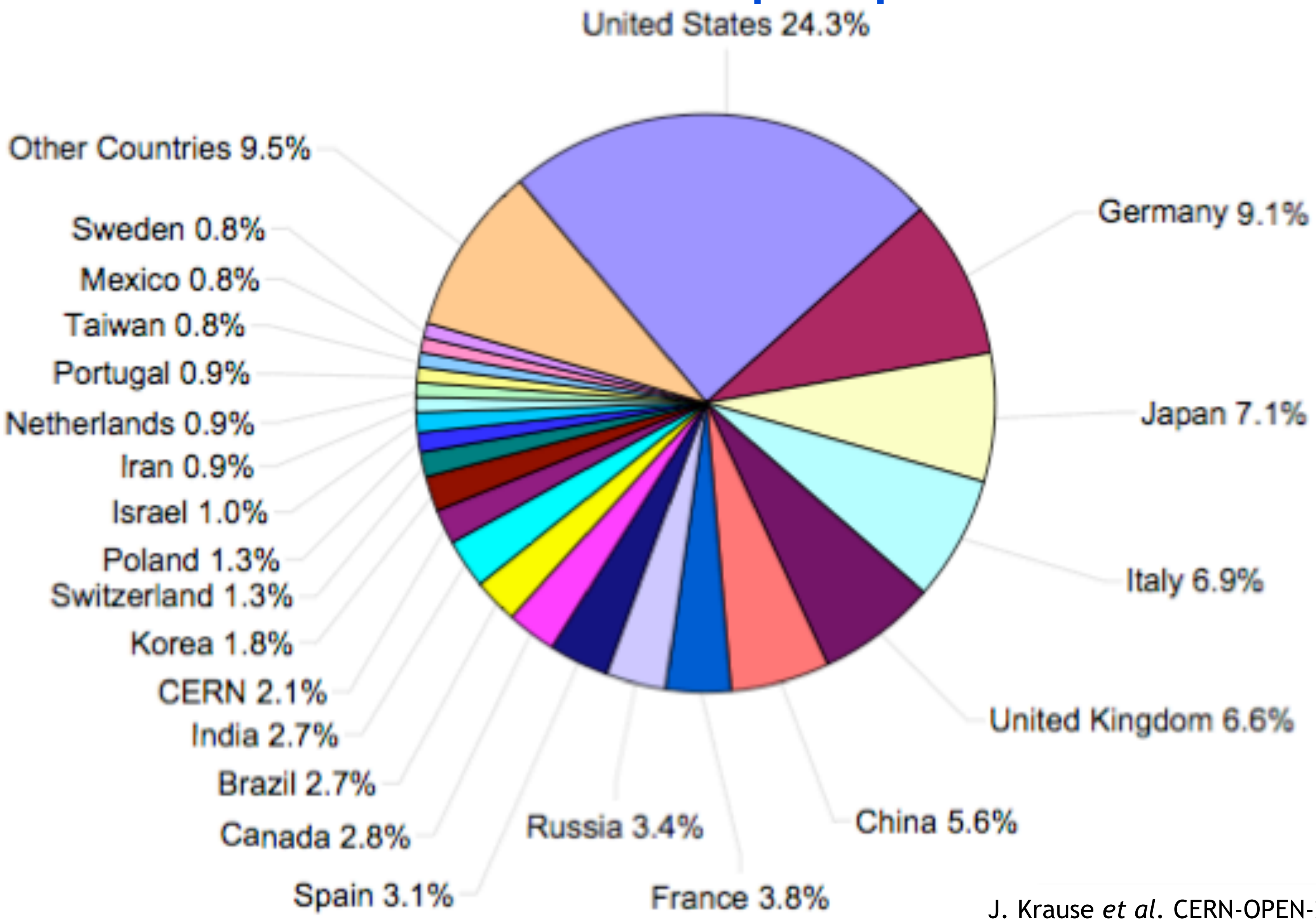
How much will it cost?

No more than we spend today!

- Worldwide budget envelope:
  - Today learned society prices
    - JHEP ~1M€ for 20% of HEP
    - APS ~2000$/article
  - 5000-7000 articles/year in 6-8 journals
- Total: 10M€/year

SCOAP3 funding

Fair-share: contribute as per peer-review usage



J. Krause *et al*. CERN-OPEN-2007-014

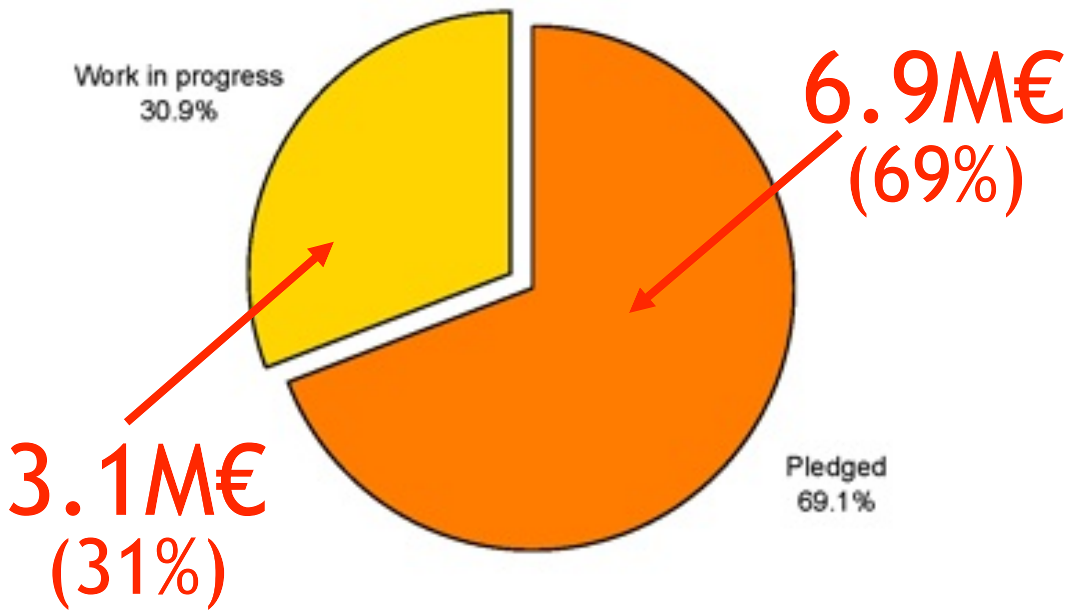
International consensus

- Only viable if every country is on board!
- Go beyond majority and well-wishing
- Success through consensus and unanimity
- Not a weakness: a strength!

XXIst century problem-solving strategy

SCOAP3 Partnerships

69% of the SCOAP3 budget envelope pledged by libraries, consortia and funders worldwide



Austria	Italy
Belgium	Netherlands
CERN	Norway
Czech Rep.	Portugal
Denmark	Romania
France	Slovakia
Finland	Sweden
Germany	Switzerland
Greece	Spain
Hungary	JISC (UK)
Australia	Israel, Turkey
Canada	
>150 U.S. libraries (>90%)	

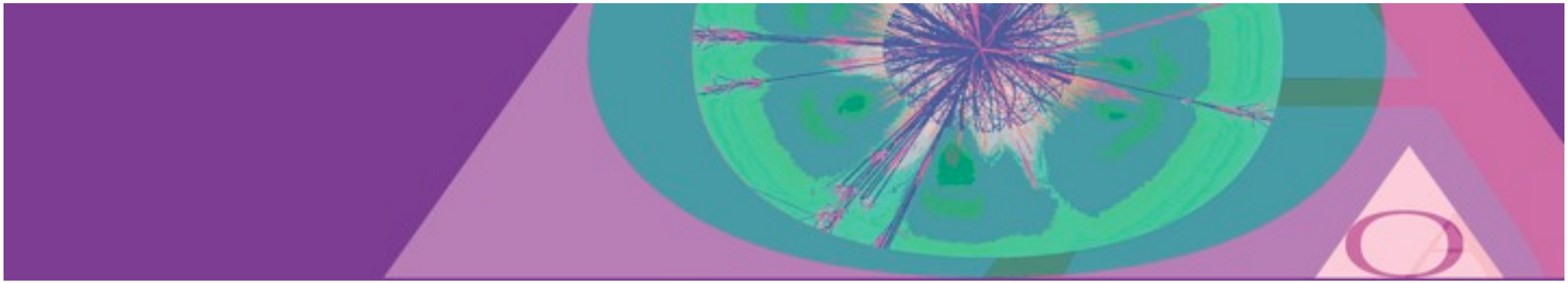
Intense conversations with Brazil, Russia, China, India and Japan !

SCOAP3 Call for Tender to publishers

- Request price-per-article for peer-review & OA
  - OA conditions
    - Irreversible OA
    - Author rights
    - Push into repositories
  - Financial conditions:
    - Unbundling of journal packages
    - Reduction of subscription prices
    - No double payment

SCOAP3 Outlook

1. Reach critical mass
   (Partnership in Asia and Latin America)
2. Engage publishers in a call for tender
3. Go/No-Go decision



SCOAP3 Outlook

4. Transfer knowledge?

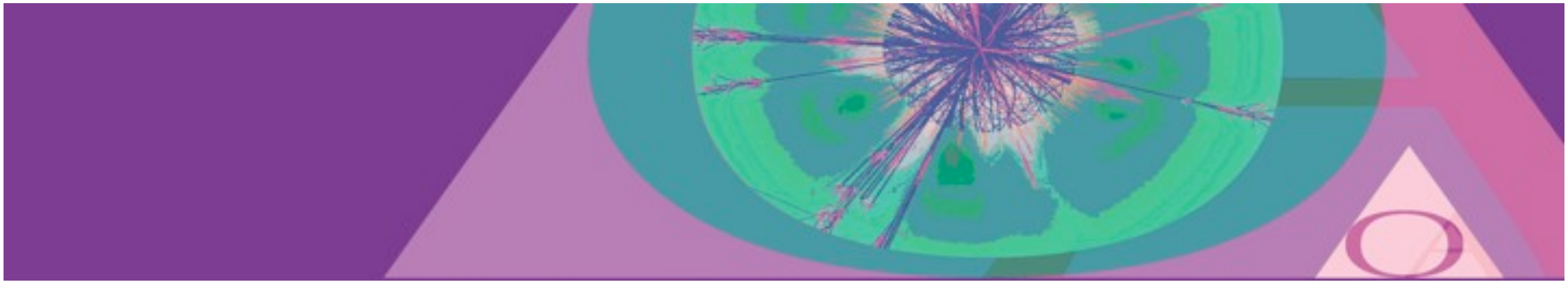
5000-7000 articles/year

around 6 leading journals

access to literature from community resource

pervasiveness of arXiv

Astro* anyone?



Thank you!

Salvatore.Mele@cern.ch
scoap3.org

Additional resources:

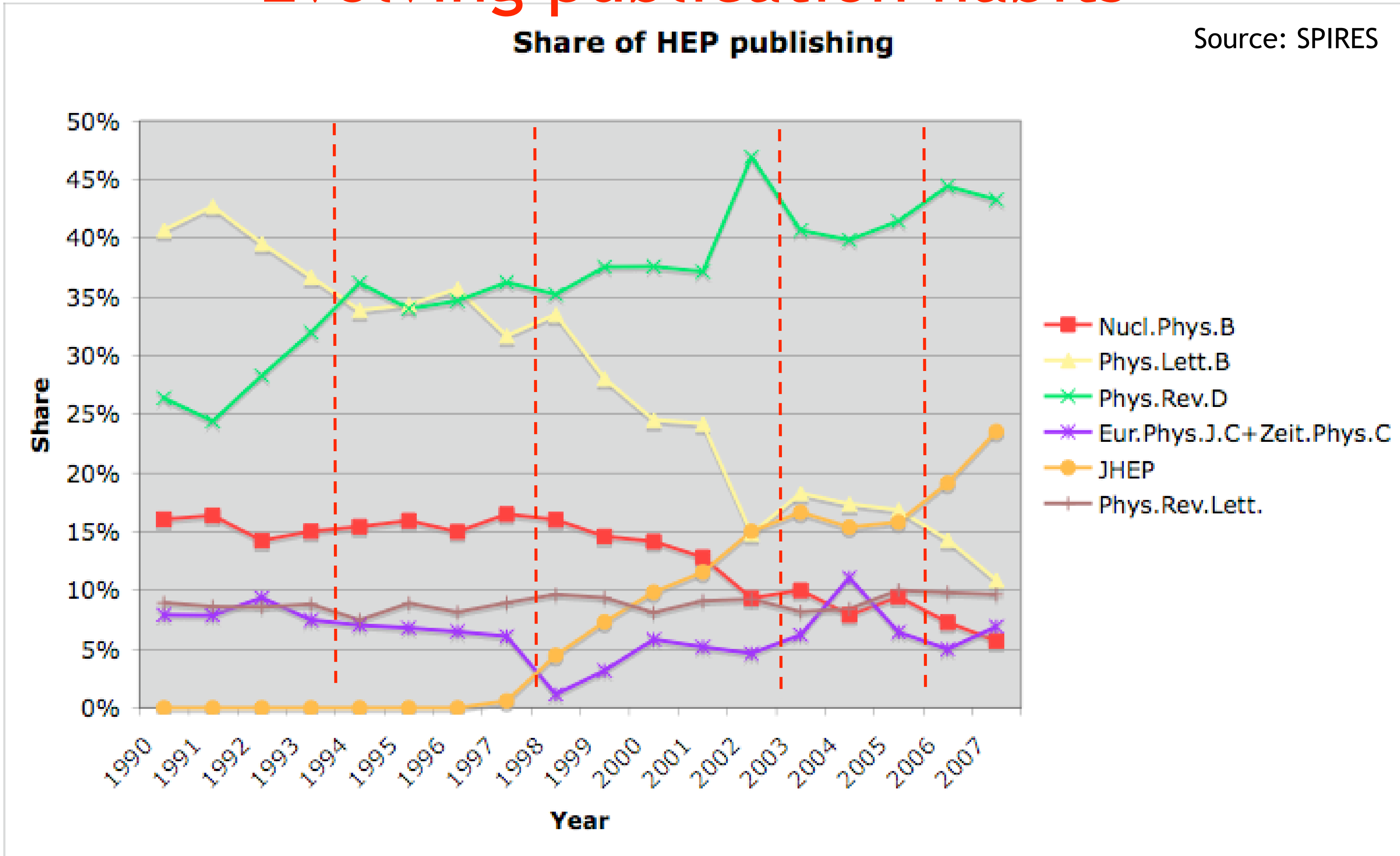
R. Heuer, S.M. *et al. Innovation in Scholarly Communication: Vision and Projects from High-Energy Physics*
http://arxiv.org/abs/0805.2739

A.Gentil-Beccot, S.M. *et al. Information Resources in High-Energy Physics: Surveying the Present Landscape and Charting the Future Course*
http://arxiv.org/abs/0804.2701

A.Gentil-Beccot, S.M. *et al. Citing and Reading Behaviors in HEP: How a Community Stopped Worrying about Journals and Learned to Love Repositories*
http://arxiv.org/abs/0906.5418

Additional information

Evolving publication habits

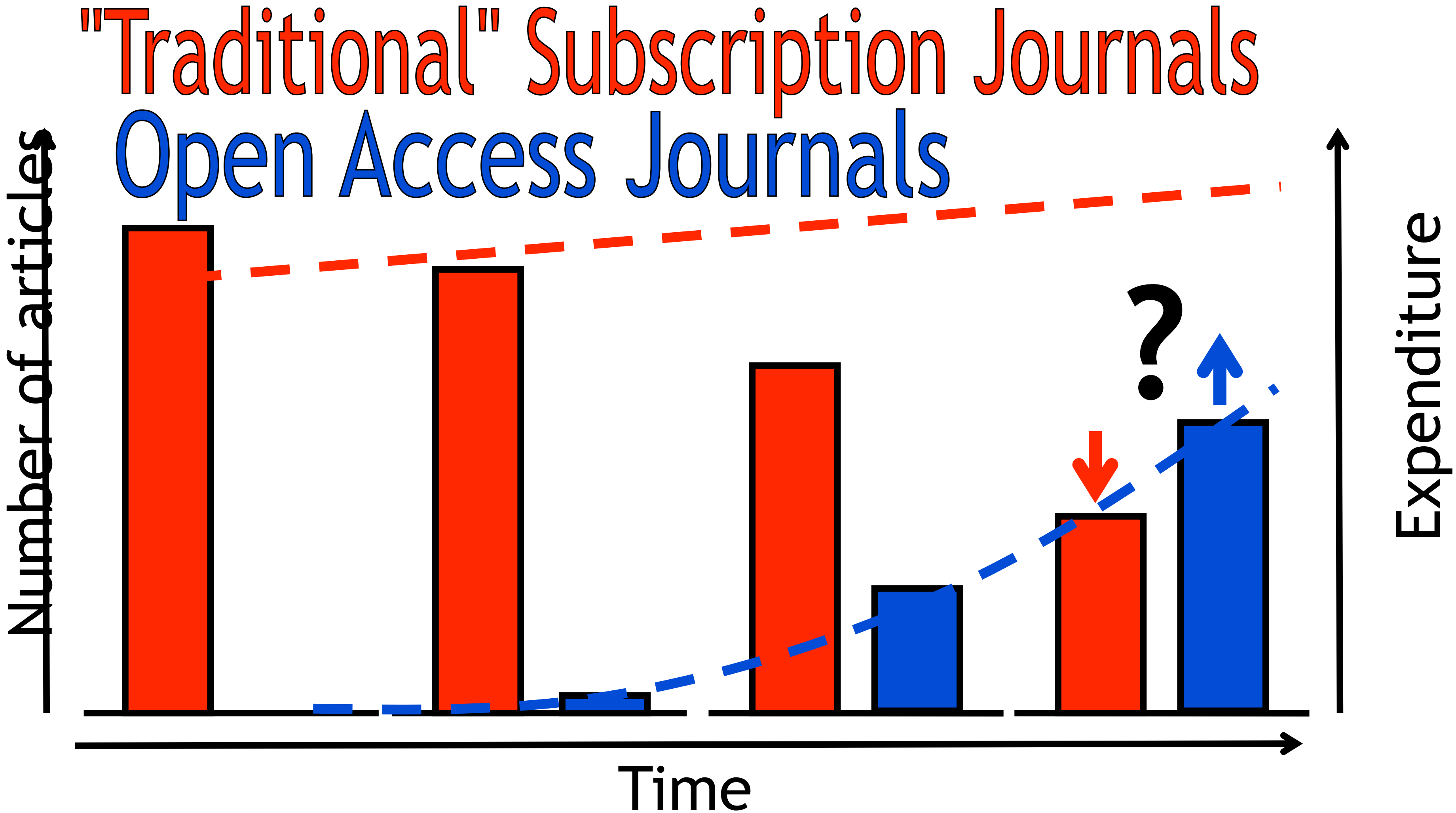


Phases of stability alternated with fast growth/decline

N.B. Only articles which appeared in the six largest HEP journals are considered.

Novelties of the SCOAP³ model

Converting an entire field by re-directing subscription funds avoids "paying more for OA"



"Flipping" the entire volume avoids surprises!

Practicalities and budget envelope

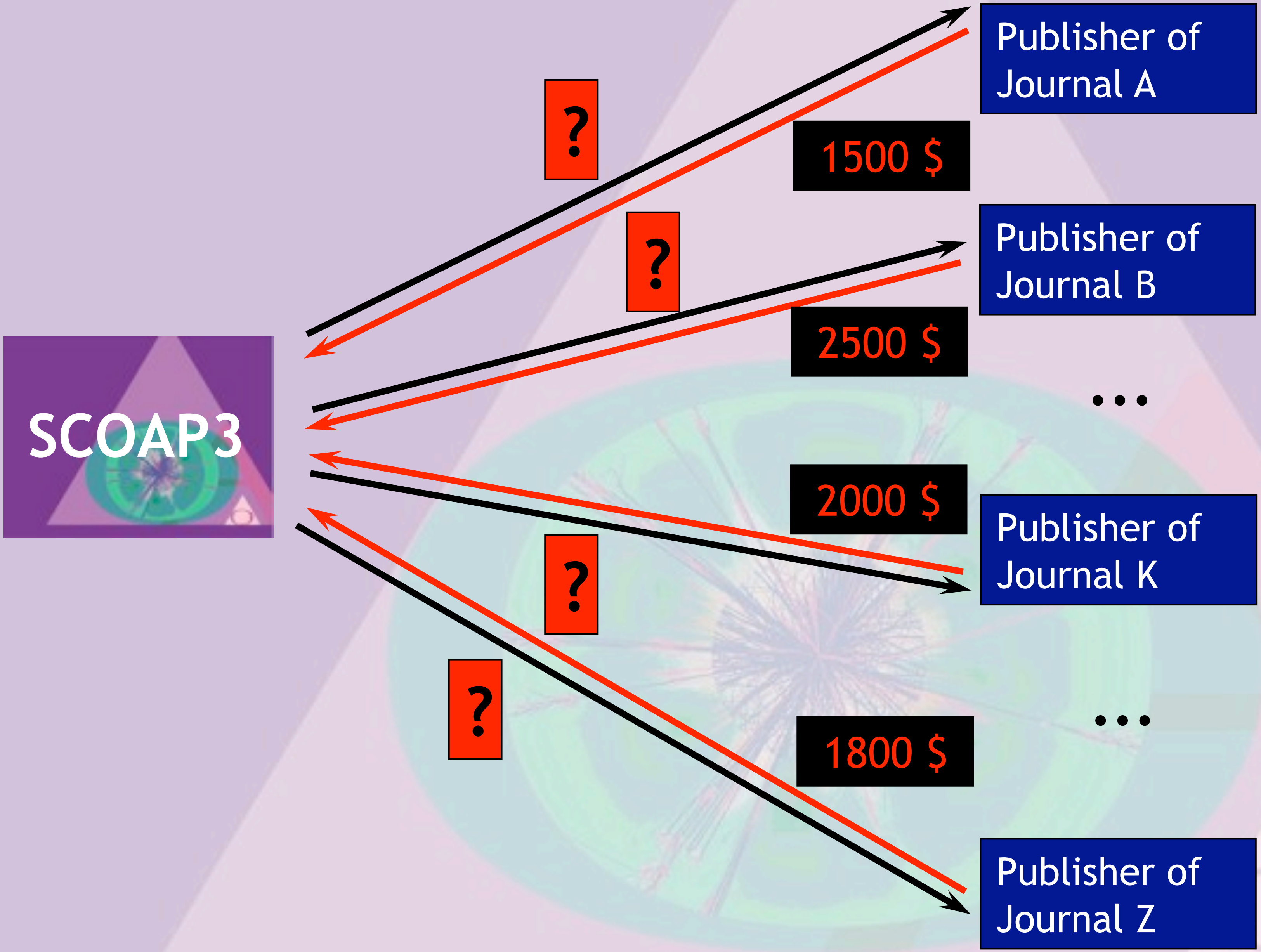
- Five "core" journals: PRD, JHEP, PLB, NPB, EPJC
  - Carry a majority of HEP content: aim to convert entirely to Open Access
- Two "broadband" journal: PRL, NIM
  - 10%,25% and 50% HEP: conversion to Open Access of this fraction
- Other, lower-volume, high-quality HEP journals
  - conversion to Open Access of the HEP content

Guesstimating the costs...

- *Physical Review D* (APS) income ~3.9M$/year (31% of arXiv:hep)
- *Journal of High Energy Physics* (SISSA/IOP) income ~1.3M$/year (19% of arXiv:hep)
- A published PRD article costs APS ~2000$
- 6-8 journals publish 5000-7000 articles/year

HEP Open Access price tag: 14M$/year

The SCOAP3 tender concept - 1



The SCOAP3 tender concept - 2

The SCOAP3 tender concept - 3

Ranked by (high) quality and (low) price

Journal	Price	Volume	Contract	Expenditure
Journal K	2000 $	1300	2.6 Mln $	2.6 Mln $
Journal A	1500 $	2000	3.0 Mln $	5.6 Mln $
Journal Z	1800 $	1000	1.8 Mln $	7.4 Mln $
Journal F	4000 $	300	1.2 Mln $	8.6 Mln $
Journal L	2000 $	1000	2.0 Mln $	10.6 Mln $
Journal R	1800 $	1000	1.8 Mln $	12.4 Mln $
Journal Q	3000 $	200	0.6 Mln $	13.0 Mln $
Journal P	800 $	50		
Journal W	5000 $	100		
...	...	...		