

Open Access Publishing in High-Energy Physics:

the SCOAP³ model

- HEP & OA: a synergy
- The SCOAP³ model
- Status of fund-raising

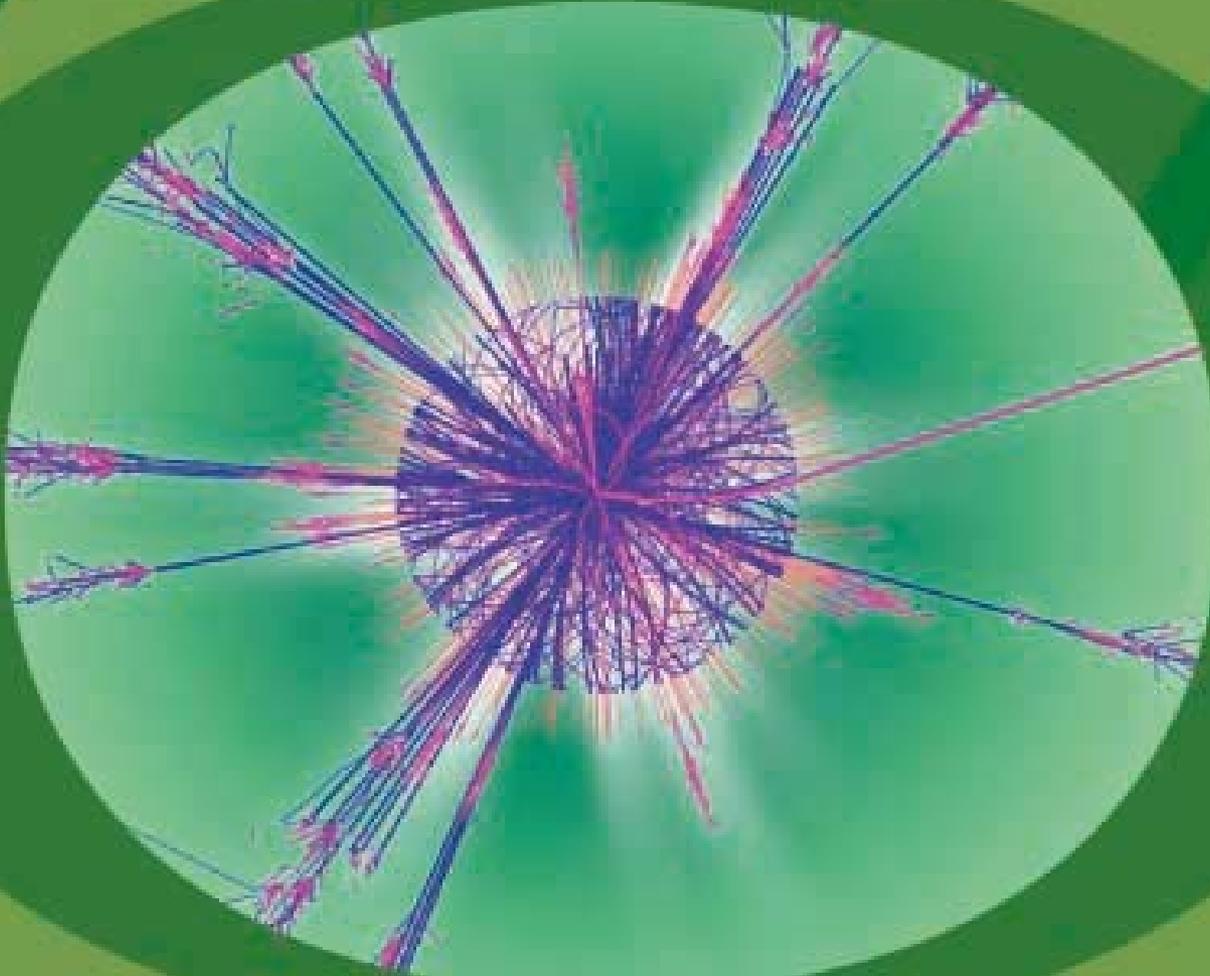
Salvatore Mele
CERN

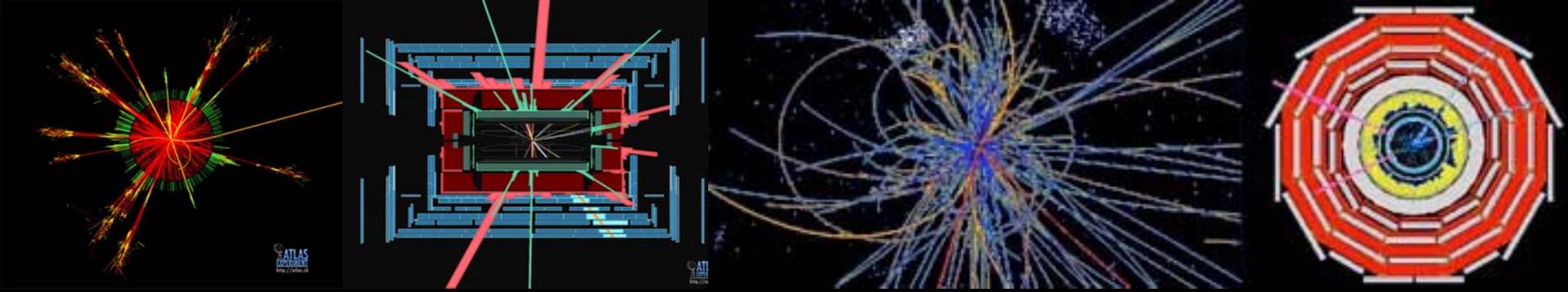
scoap3.org

<http://scoap3.org/files/Scoap3ExecutiveSummary.pdf>

<http://scoap3.org/files/Scoap3WPReport.pdf>

OA & HEP: a synergy





Open Access:
Grant anybody, anywhere and anytime
access to the (peer-reviewed)
results of (publicly-funded) research

...and contain costs.



HEP and Open Access: a synergy

- HEP is decades ahead in thinking Open Access:
 - Mountains of paper preprint shipped all over the world by HEP institutes for 40 years (at author/institute expenses!)
 - HEP launched arXiv (1991), the archetypal Open Archive
 - The first free peer-reviewed electronic journals:
 - *Journal of High Energy Physics* (1997) • *Physical Review Special Topics Accelerators and Beams* (1998) • *New Journal of Physics* (1998)
- Small and connected community (<20000 scientists)
- Small scientific output (<10000 articles)
- Small publishing landscape (< 10 journals)
- Reader and author communities largely overlap
- Open Access, second nature: posting on arXiv before even submitting to a journal is common practice.
 - No mandate, no debate. Author-driven. Evident benefits

Is it all about vocal librarians?

Strong support form the LHC collaborations

"We, the $_{-}^{}$ Collaboration, strongly encourage the usage of electronic publishing methods for $_{-}^{*}$ publications and support the principles of Open Access Publishing, which includes granting free access of our $_{-}^{*}$ publications to all. Furthermore, we encourage all $_{-}^{*}$ members to publish papers in easily accessible journals, following the principles of the Open Access Paradigm."*

$_{-}^{*}$ { ATLAS; approved on 23rd February 2007
CMS; approved on 2nd March 2007
ALICE; approved on 9th March 2007
LHCb; approved on 12th March 2007

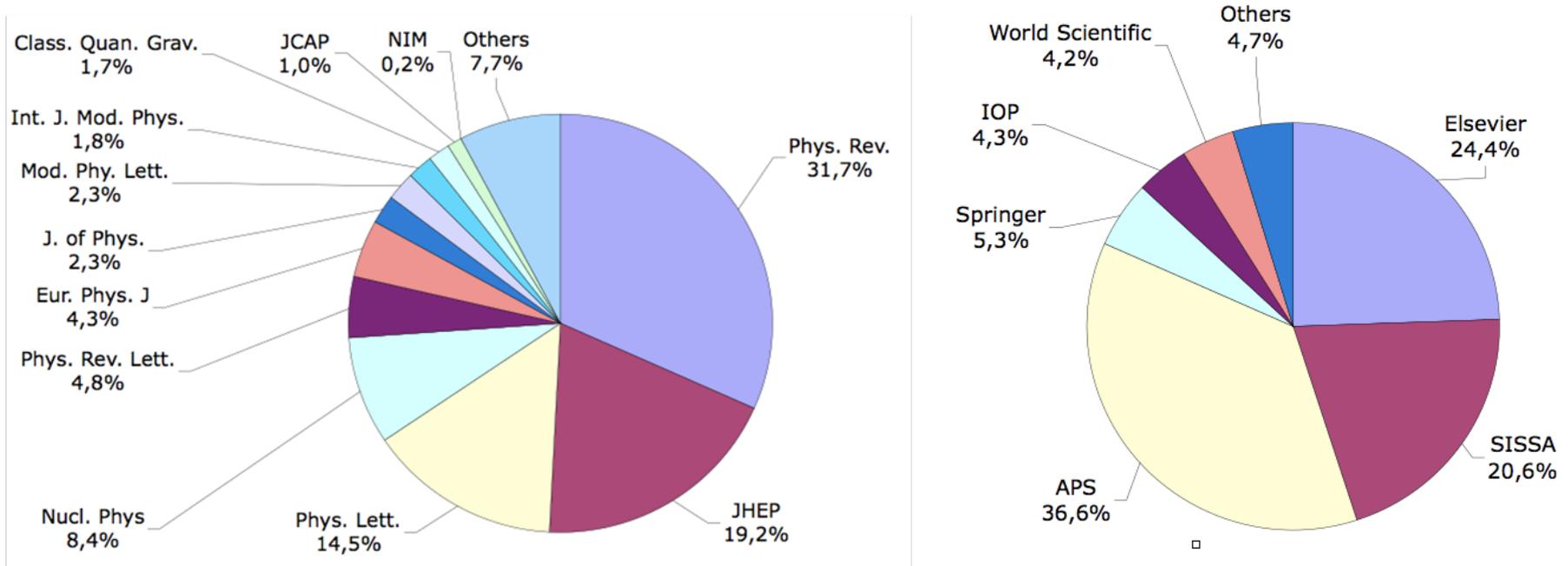
HEP and its journals

- Journals are on the way to lose (lost?) a century-old role as vehicles of scholarly communication.
- Still, evaluation of institutes and (young) researchers is based on high-quality peer-reviewed journals.
- The main role of journals is to assure high-quality peer-review and act as keepers-of-the-records
- The HEP community needs high-quality journals, our “interface with officialdom”
- Implicitly, the HEP community supports this role by purchasing subscriptions, as it reads off arXiv anyhow
- Subscription prices make the model unsustainable
- As an “all-arXiv discipline” HEP is at high risk to see its journal canceled by large multidisciplinary university libraries (when not already happened)

The HEP publishing landscape

S.Mele *et al.* JHEP 12(2006)S01 arXiv:cs.DL/0611130

5016 articles submitted to arXiv:hep in 2005 and published in peer-reviewed journals



90% of articles are in theory and by less than 3 authors

83% of articles published in 6 leading journals

87% of articles published by four publishers

57% of articles by not-for-profit (nor-for-loss) publishers



HEP and Open Access



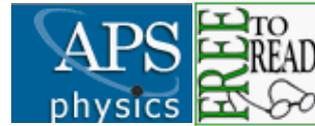
After preprints, arXiv and the web,
Open Access journals
are the natural evolution of
HEP scholarly communication



Open Access experiments



Sponsoring model: institutions fund journals. No author charges. All content free to read.



Hybrid model: authors can pay journals to make their articles OA. The rest of the journal is under subscriptions. Subscriptions reduced according to the fraction of OA articles.

- Springer in 2004, followed by APS and Elsevier
- Prices range from 975\$ to 3,000\$
- Little, if any, success

Open Access experiments

Φ DEUTSCHE PHYSIKALISCHE GESELLSCHAFT | IOP Institute of Physics

New Journal of Physics

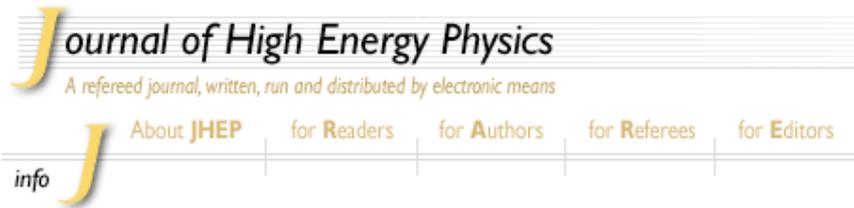
The open-access journal for physics

PMC Physics A

Author-pays: all content of the journal is free to read. After acceptance, authors pay journals for processing fees (page charges, reloaded)

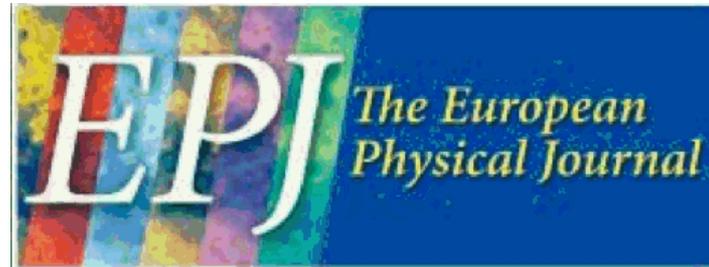
- Successful in Life Sciences (BioMedCentral) but sustainability problems are arising (subscriptions to other journals still there, budgets fixed or reducing)
- *New Journal of Physics* (IOP) since 1998, but attracts only a small HEP fraction, with 20 articles/year
- PhysMathCentral *Physics A*, a new HEP journal

Other Open Access experiments



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

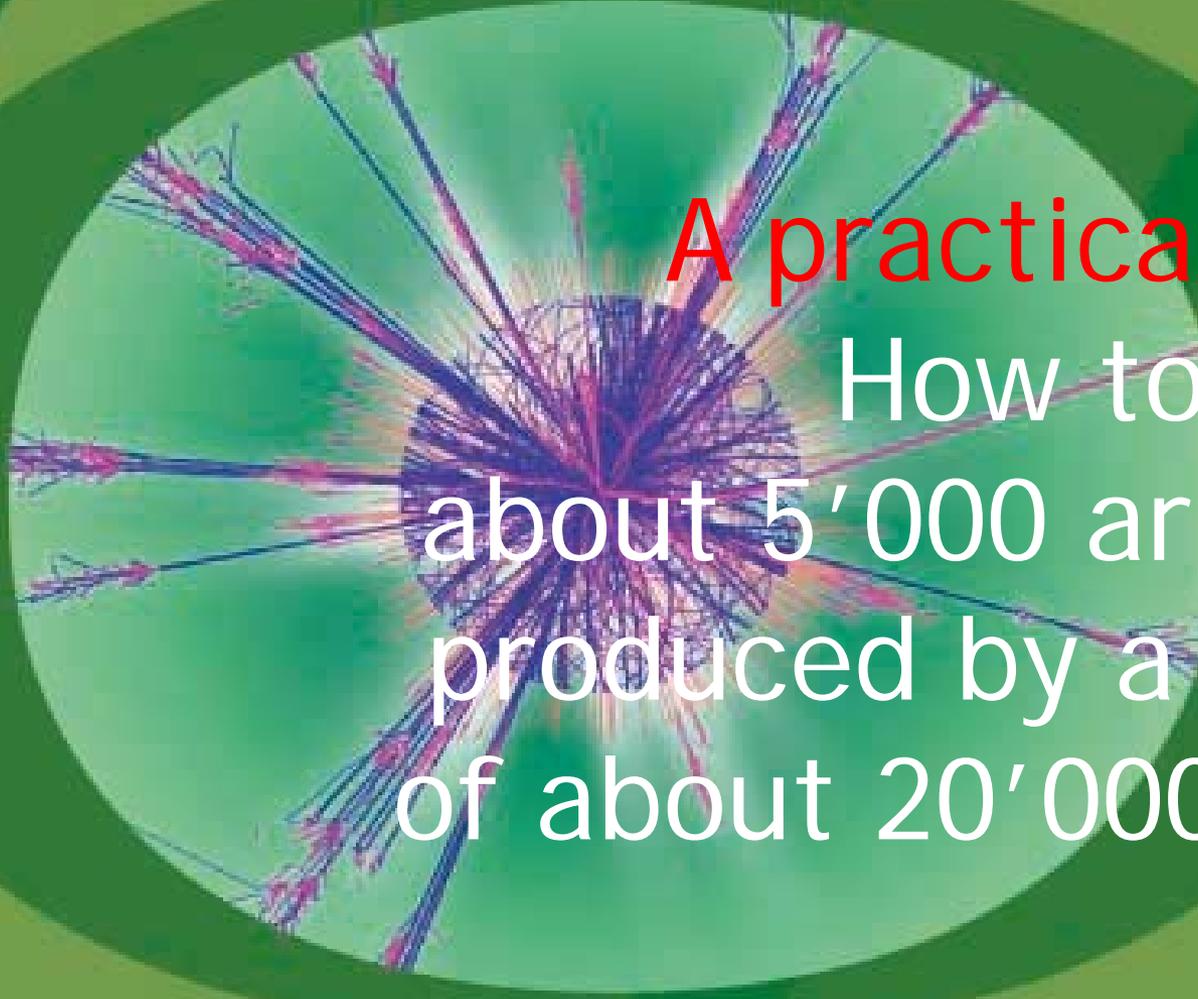
- SLAC, Fermilab, DESY, CERN, and the entire France trying this scheme.



“EPJC is willing to negotiate with funding agencies interested in Open Access to become fully Open Access. In anticipation of such successful negotiations, all experimental papers accepted by The European Physical Journal C will be published Open Access without any fees”

The SCOAP³ model

Sponsoring Consortium for Open Access Publishing
in Particle Physics



A practical approach:
How to publish OA
about 5'000 articles/year,
produced by a community
of about 20'000 scientists?

<http://scoap3.org/files/Scoap3ExecutiveSummary.pdf>

<http://scoap3.org/files/Scoap3WPReport.pdf>

SCOAP³ in one line

A consortium sponsors HEP publications and makes them OA by re-directing subscription money.

Today: (funding bodies through) libraries buy journal subscriptions to support the peer-review service and to allow their patrons to read articles.

Tomorrow: funding bodies and libraries contribute to the SCOAP³ consortium, which pays centrally for the peer-review service. Articles are free to read for everyone.

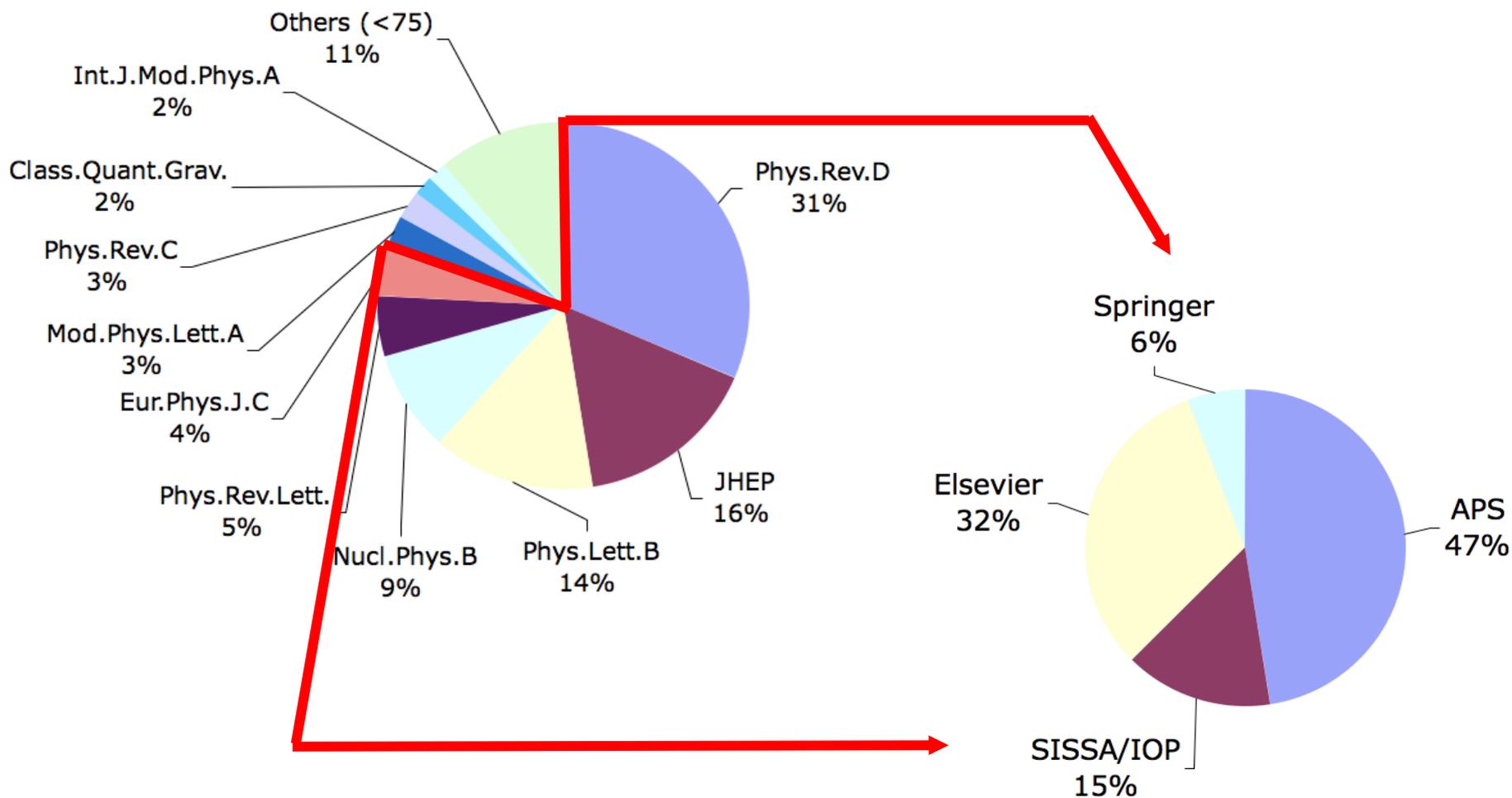
A mix of sponsoring and institutional membership,
on a world-wide scale

Towards Open Access journals

- Six journals cover 80% of central HEP literature
- Five “core” journals: *Physical Review D (APS)*, *Journal of High Energy Physics (SISSA/IOP)*, *Physics Letters B & Nuclear Physics B (Elsevier)*, *European Physical Journal C (Springer)*
 - Carry a majority of HEP content
 - 10%-30% Nuclear Physics and Astroparticle Physics
 - Aim to convert them entirely to Open Access
 - Reduce prices of “packages” accordingly
- One “broadband” journal: *Physical Review Letters (APS)*
 - 10% HEP (including Nuclear and Astroparticle Physics)
 - Sponsor the conversion to OA of this fraction
 - Reduce subscription price accordingly
- SCOAP³ is not limited to this initial set of journals but open to all high-quality HEP journals!

Potential initial partners of SCOAP³

Journals where HEP researchers mostly publish today



Guesstimating the budget envelope

(exchange rate of April '07)

- *Physical Review D* (APS) operates with **2.7M€/year** (31% of arXiv:hep)
- *Journal of High Energy Physics* (SISSA/IOP) needs **~1M€/year** (19% of arXiv:hep)

HEP Open Access price tag: 10M€/year

- A published PRD article costs APS **~1500€**
- 6-8 leading journals publish 5000-7000 articles a year

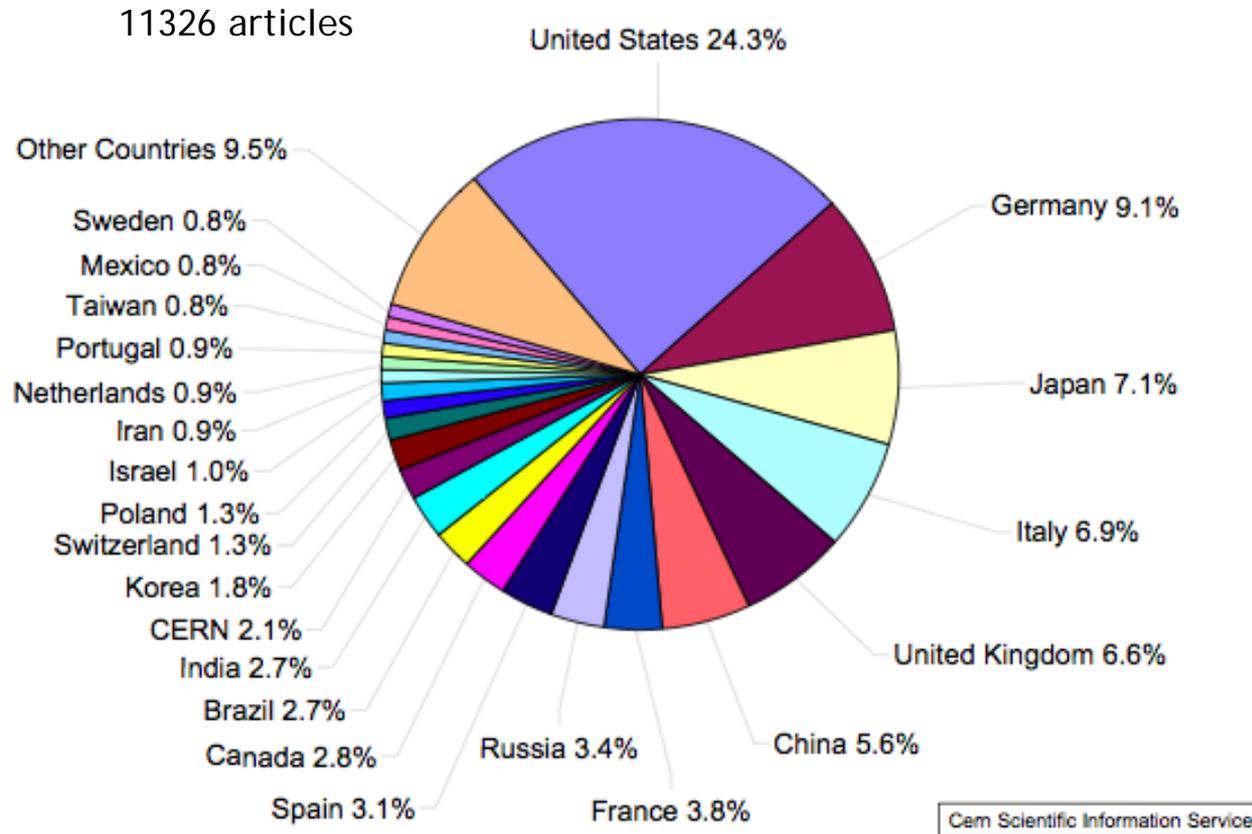
SCOAP³ financing

- SCOAP³ exact yearly cost to be known after a tender is sent to publishers.
- SCOAP³ financing to be distributed according to a “fair-share” model based on the distribution of HEP articles per country, accounting for co-authorship.
- Make a 10% allowance for developing countries who at the beginning might not contribute to the scheme.
- **The model is viable only if every country is on board!** Allowing only SCOAP³ partners to publish Open Access simply replicates the subscription scheme and does not solve the problems: need to buy/read what others write.

A study of HEP authorship in leading journals

J.Krause, C.M.Lindqvist, S.Mele CERN-OPEN-2007-014

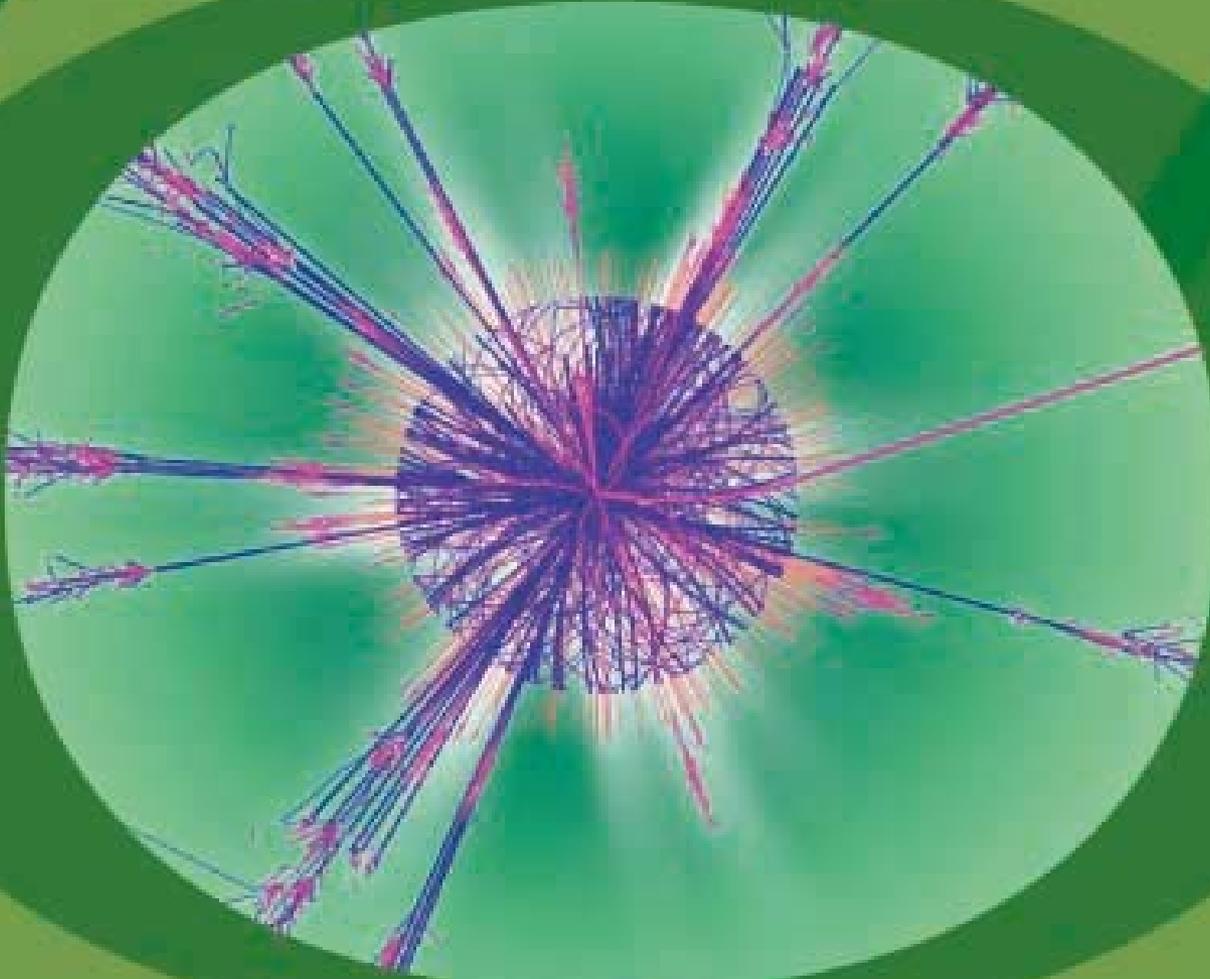
Distribution of HEP articles by country, average 2005-2006



All HEP "core" journals and HEP fraction of broadband journals.

Co-authorship is taken into account on a *pro-rata* basis by assigning articles to countries according to their number of authors.

Status of fund-raising



Timeline

- Formal proposal published in April.
- Evolve from consensus-building to fund-raising
- As of July, solicit and collect expressions of interest of potential funding partners: HEP funding bodies, libraries, and library consortia.
- Funding partners identify country-by-country schemes to re-direct journal subscriptions to SCOAP³.
- Once a sizeable fraction of budget is pledged send a tender to publishers and determine final budget
- Formal agreement to establish SCOAP³
- **Goal: have SCOAP³ operational for the first LHC articles!**

How far are you?

Distribution of HEP articles by country, average 2005-2006



France (CNRS), Germany (MPG+Helmholtz+DFG), Italy (INFN), Greece (University Alliance), Sweden (Royal Library) and CERN have already joined. Many European countries expected to join in the next weeks. Intense discussions in Asia and the Americas.

Fundraising status: received pledges

- Germany, 1M€ (Helmholtz, Max Planck, TIB)
 - Re-direction of library subscriptions with TIB backed by either DFG or consortia funds
- Italy, 0.7M€ (INFN)
 - Re-direction of INFN library subscriptions and recovery of remaining fraction from re-direction of consortia subscriptions
- France, 0.4M€ (CNRS/IN2P3)
 - Re-direction of library subscriptions, further nation-wide discussion with other agencies purchasing subscriptions in progress
- CERN, 0.2M€
 - Re-direction of subscriptions (and additional in-kind staff and infrastructure contribution)
- Sweden, 0.1M€ (Royal library, on behalf of consortia)
 - Re-direction of subscriptions
- Greece, 0.1M€ (Alliance of University Rectors)
 - Best-effort re-direction, backed by the Alliance of Universities
- Slovakia just expressed their interest

Total: 2.5M€

Fundraising status: under discussion

- UK, 730k€
 - STFC might organize re-direction of subscriptions paid by university libraries
- Spain, 340k€
 - There might be a political will at the ministry to appropriate the contribution
- Canada, 310k€
 - Library consortia are discussing re-direction of subscriptions
- Poland, 140k€
 - There might be a political will at the ministry to appropriate the contribution
- Portugal, 100k€
 - Re-direction of (centralized) library subscriptions under discussion
- Netherlands, 100k€
 - NIKHEF on behalf of its libraries is interested and contacting universities
- Belgium, 70k€
 - There is a funding agency will to make SCOAP³ happen
- Denmark, 60k€
 - Library consortia are discussing re-direction
- Norway, 30k€
 - Library consortia are discussing re-direction
- All remaining European countries and Russia contacted

Total: 1.9M€

Fundraising status: Asia

- Japan, 0.8M€
 - Contacts are established with MEXT and KEK. Internal discussions are underway.
- China, 0.6M€
 - Contacts are established with NSFC and CAS. Internal discussions are underway
- Korea, 0.2M€
 - Contacts are established

Total: 1.6M€

Fund-raising in the US (2.7M€)

A three-pronged approach

1. Possible re-direction of subscriptions of DoE libraries, led by Fermilab and SLAC, being discussed with others
2. Re-direction of subscriptions of individual university libraries, not organised in consortia
3. Re-direction of subscriptions by large consortia: Eol from California Digital Library (CDL) is imminent. Several members of the North Eastern Research Libraries (NERL) are interested in the scheme.

A quote from CDL "We find the model both intriguing and innovative and are impressed with the level of support that SCOAP3 has been able to garner in Europe to date. Any proposal that holds out promise for placing scholarly publication on a more sustainable and open footing is very welcome. We plan to study this initiative more closely in order to explore the feasibility of CDL becoming a SCOAP3 funding partner on behalf of the University of California Libraries."

SCOAP³ in a nutshell

- Establish Open Access in HEP publishing in a transparent way for authors.
- Convert existing high-quality peer-reviewed journals to Open Access, in a sustainable way.
- Operate along the organizational blueprint of large scientific collaborations (EoI, MoU, Governance).
- Price tag of 10M€/year to be shared according to the distribution of HEP articles per country. 25% of the budget has been pledged in a few weeks!
- The model has high potential but is only viable if every country contributing to HEP is on board!
- The model could be rapidly generalized to related fields: Nuclear and Astroparticle Physics and exported to many more tightly knit communities.

Thank you !

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scoap3.org

scoap3.org/files/Scoap3WPReport.pdf
scoap3.org/files/Scoap3ExecutiveSummary.pdf



**All that you always wanted to ask
about Open Access...
...and never dared.**

A.k.a. Backup Slides

About SCOAP³

Open Access - An opportunity A moral and an economical issue

- Grant universal access to the peer-reviewed results of scientific research.
- Author side, and not the reader side, has to bear the costs of the peer-review service of which it benefits.
- Bring spiraling subscription costs under control.
- Raise researcher awareness of economical implications of scientific publishing.
- Introduce competition in the market of scientific publishing by openly linking price to quality.
- Stabilize, ensuring diversity and choice, the present scenario and the long-term future of titles which served our community for many decades.

Roles in the SCOAP³ model: publishers

- Publishers receive and process articles as they do now, but make the final version available OA (and feed it to a SCOAP³ database, harvested by others).
- Publishers receive financial compensation by SCOAP³ for this quality-assurance service.
- Publishers continue to meet demand for additional *premium* products to interested libraries and/or authors (paper journals, reprints, color pages, ...).
- Most publishers of high-quality HEP journals are expected to be ready to enter negotiations provided long-term funding is available for SCOAP³

Roles of authors and funding agencies

- Authors read Open Access journals without any restriction and will not pay to publish.
- Funding agencies, library consortia and other relevant bodies organize on a country-by-country basis the transfer of subscription money to SCOAP³.
- Funding agencies engage their authors towards an Open Access aware publication culture.
- Costs to the public purse will be reduced, as Open Access will be eventually cheaper than subscriptions:
 - One partner & no access control: less administration
 - Cut non-essential services (no paper,...): obviously cheaper
 - Stimulate competition: reduce prices
 - Sustainability: reduce risk-mitigation overheads

Pillars of the SCOAP³ model (I)

What ?

- Online journals free to read for anybody, anywhere, anytime.
- Preserve high-quality peer-review process.
- Generate medium- and long-term savings for libraries and funding agencies by linking price with quality.
- Publishers receive and process articles as they do now, but make the final version available OA (and feed it to a SCOAP³ database, harvested by others) and receive financial compensation by SCOAP³ for this quality-assurance service.
- Publishers continue to meet demand for additional *premium* products to interested libraries and/or authors (paper journals, reprints, color pages, ...).

Pillars of the SCOAP³ model (II)

Who ?

- HEP funding agencies and library consortia worldwide.
- Publishers interested in the transition of their journals to OA.
- Achieve OA in a way financially transparent for authors, who have to be nonetheless proactive in their choices of journals.
- Most publishers of high-quality HEP journals are expected to be ready to enter negotiations provided long-term funding is available for SCOAP³.

Pillars of the SCOAP³ model (III)

How ?

- Assist publishers to convert existing high-quality peer-reviewed journals to Open Access.
- Do not ask individual authors/groups to directly pay to publish their articles Open Access.
- No “paying twice” for Open Access and subscriptions.
- Exploit the fact that in HEP the reader and the author communities largely overlap.
- Federate HEP funding agencies and library consortia worldwide.
- Re-direct money used for subscriptions to SCOAP³: a single commercial partner for publishers.

Journals candidate for conversion to OA

As from SPIRES, 8500 HEP articles in 2005: 62% in "core" HEP subjects (experiment, phenomenology, field th.) and 38% in related subject (instrument., nuclear physics, astroparticle, ...)

Journal	Publisher	IF	Articles	HEP Articles	"Core" HEP	f(HEP)	f("Core")
<i>Phys.Rev.D</i>	APS	4,9	2285	2101	1635	72%	92%
<i>JHEP</i>	SISSA/IOP	5,9	856	856	840	98%	100%
<i>Phys.Lett.B</i>	Elsevier	5,3	957	862	740	77%	90%
<i>Nucl.Phys.B</i>	Elsevier	5,5	522	481	465	89%	92%
<i>Phys.Rev.Lett.</i>	APS	7,5	3836	407	279	7%	11%
<i>Eur.Phys.J.C</i>	Springer	3,2	331	272	234	71%	82%
<i>Mod.Phys.Lett.A</i>	World Scient.	1,3	281	216	138	49%	77%
<i>Phys.Rev.C</i>	APS	3,6	853	298	136	16%	35%
<i>Class.Quant.Grav.</i>	IOP	2,9	491	255	89	18%	52%
<i>Int.J.Mod.Phys.A</i>	WSP	1,5	878	143	88	10%	16%
<i>J.Math.Phys.</i>	AIP	1,2	446	108	74	17%	24%
<i>Phys.Atom.Nucl.</i>	Springer	0,9	220	106	72	33%	48%
<i>J.Phys.A</i>	IOP	1,6	850	78	65	8%	9%
<i>Eur.Phys.J.A</i>	Springer	1,7	458	91	58	13%	20%
<i>JCAP</i>	SISSA/IOP	6,7	156	128	57	37%	82%
<i>J.Phys.G</i>	IOP	2,2	414	87	55	13%	21%
<i>Nucl.Instrum.Meth.A</i>	Elsevier	1,2	1371	312	16	1%	23%

80% of articles in "core" HEP subjects in 5-7 journals

Tendering requirements

1. Open to existing and new journals with HEP scope
2. Link quality and priceHigh quality journals
 - ISI Impact factor
 - Profile of the editorial board
 - Size of the authors and readers bases
3. Rigorous high-quality peer review
 - Disclosure of acceptance and rejection rates

Intended use of the articles

1. Upon acceptance:
 - Articles are available OA on publisher site
 - Feed article and metadata to SCOAP³ repository
 - This is harvested by any other repository
2. Free extraction and re-using of the figures, tables and numerical data included in the articles
3. Free use of the articles and metadata for text- and data-mining applications
4. Authors free to post pre-print and post-print to subject- and institutional repositories
5. Publishers pro-actively support publisher-independent long-term preservation through repositories and national libraries

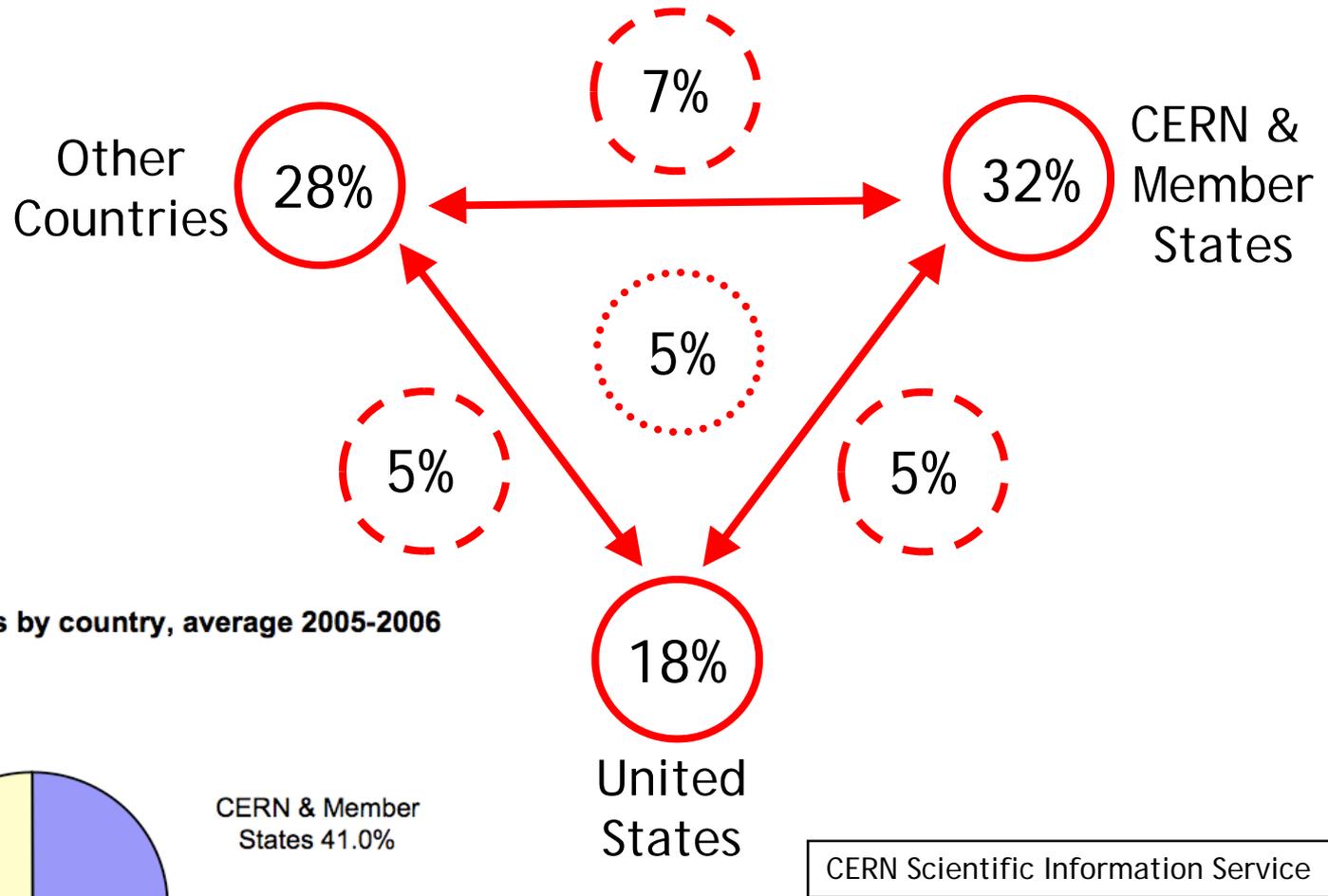
Transition period

1. Journal licence packages are un-bundled, the OA titles are removed and subscription prices are reduced accordingly
2. In the case of long-term subscription contracts, publishers will be required to reimburse subscription costs pertaining to OA journals
3. Libraries may forgo individual reimbursement as a contribution to SCOAP³

Additional bibliometric facts

Collaborative patterns in HEP

J.Krause, C.M.Lindqvist, S.Mele CERN-OPEN-2007-014

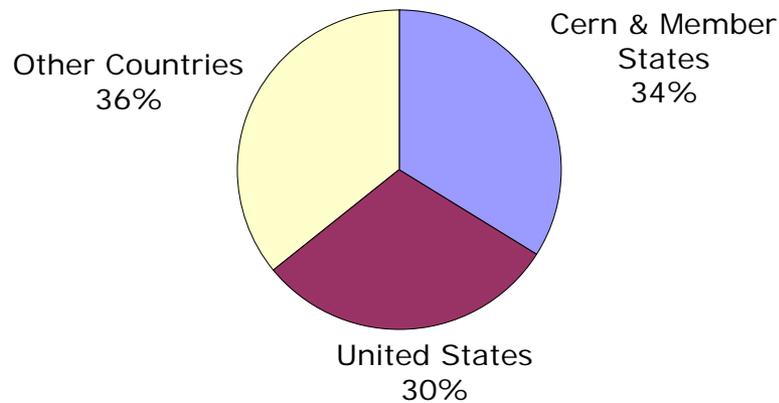


Study of 11326 HEP articles published in 2005 and 2006 in PRD, JHEP, PLB, NPB, EPJC, PRL, NIMA

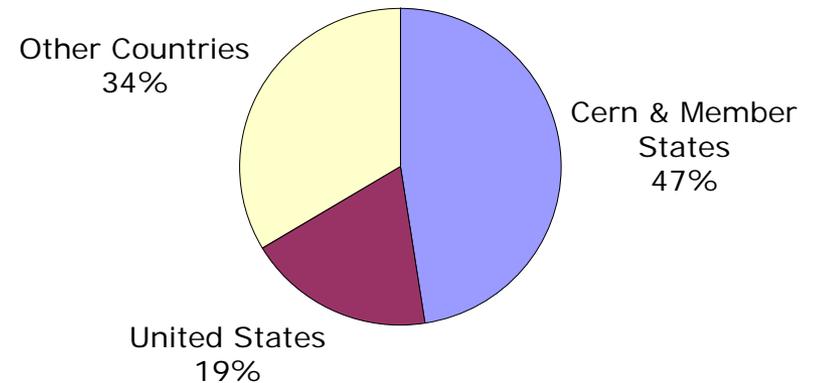
US and European journals

J.Krause, C.M.Lindqvist, S.Mele CERN-OPEN-2007-014

Origin of articles in US journals



Origin of articles in EU journals



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