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A sustainable business model for Open-Access journal publishing : a proposed plan for High-Energy Physics

- HEP & OA: a synergy
- The SCOAP³ model
- Conclusions & outlook

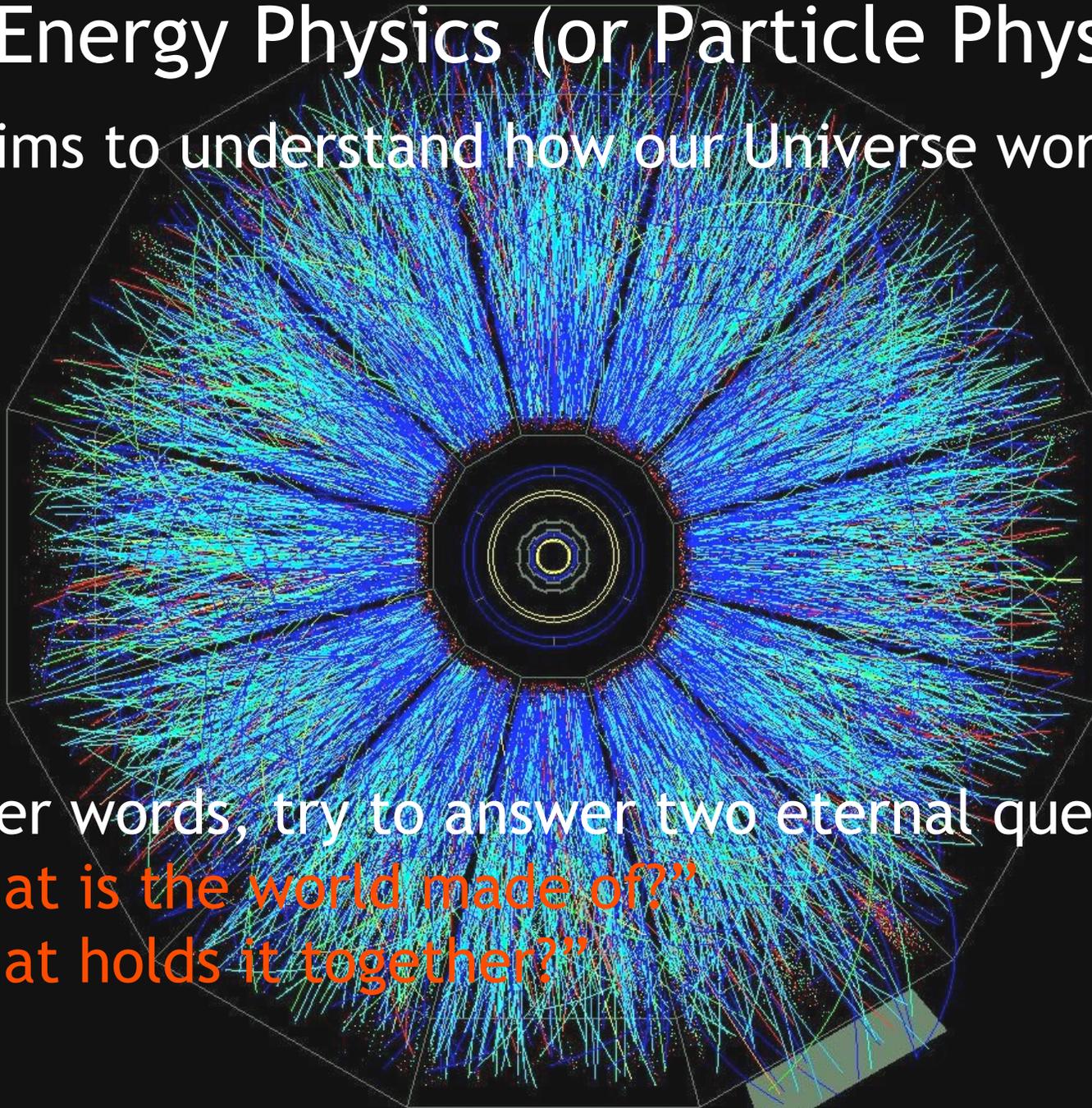
Jens Vigen, CERN

LIBER, Warsaw, Poland, 5th July 2007

<http://cern.ch/oa/Scoap3WPReport.pdf>

High-Energy Physics (or Particle Physics)

HEP aims to understand how our Universe works



in other words, try to answer two eternal questions:

- "What is the world made of?"
- "What holds it together?"



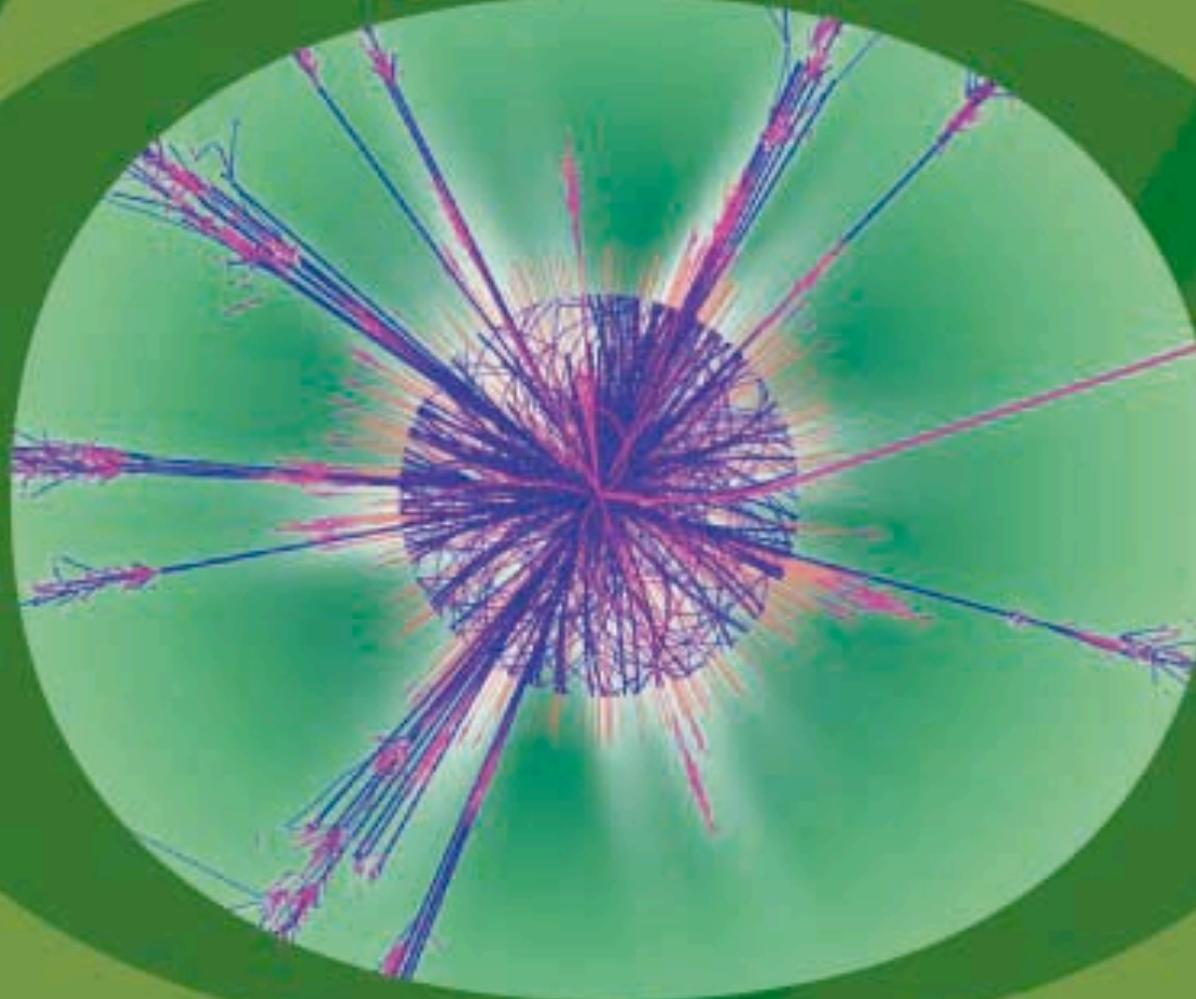
CERN: European Organisation for Nuclear Research

- HEP laboratory, Geneva (CH)
 - 3 Nobel prizes, 2500 staff and 8000 visiting scientists
- Invented the Web, currently developing the Grid
- About to complete the 27-km Large Hadron Collider

The CERN Convention (1953) contains what is effectively an early Open Access manifesto:

“... the results of its experimental and theoretical work shall be published or otherwise made generally available”

OA & HEP: a synergy



The unique situation of HEP

- HEP is decades ahead in thinking Open Access:
 - Paper preprints shipped all over the world for 40 years
 - HEP embraced arXiv (1991), the archetypal Open Archive
 - OA peer-reviewed journals before OA became a concept:
 - *Journal of High Energy Physics* (1997) • *Physical Review Special Topics Accelerators and Beams* (1998) • *New Journal of Physics* (1998)
- Well organized community (<20.000 scientists)
- Small total scientific output (<10.000 articles/year)
- Simple publishing landscape (< 10 main journals)
- Reader and author communities largely overlap
- “Green OA” well established: authors post on arXiv before even thinking of submitting to a journal
 - Author-driven, no mandate needed

Strong author drive for OA publishing

*"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."*

5400 scientists
building the largest
scientific instruments ever

 *

ATLAS; approved on 23rd February 2007
CMS; approved on 2nd March 2007
ALICE; approved on 9th March 2007
LHCb; approved on 12th March 2007

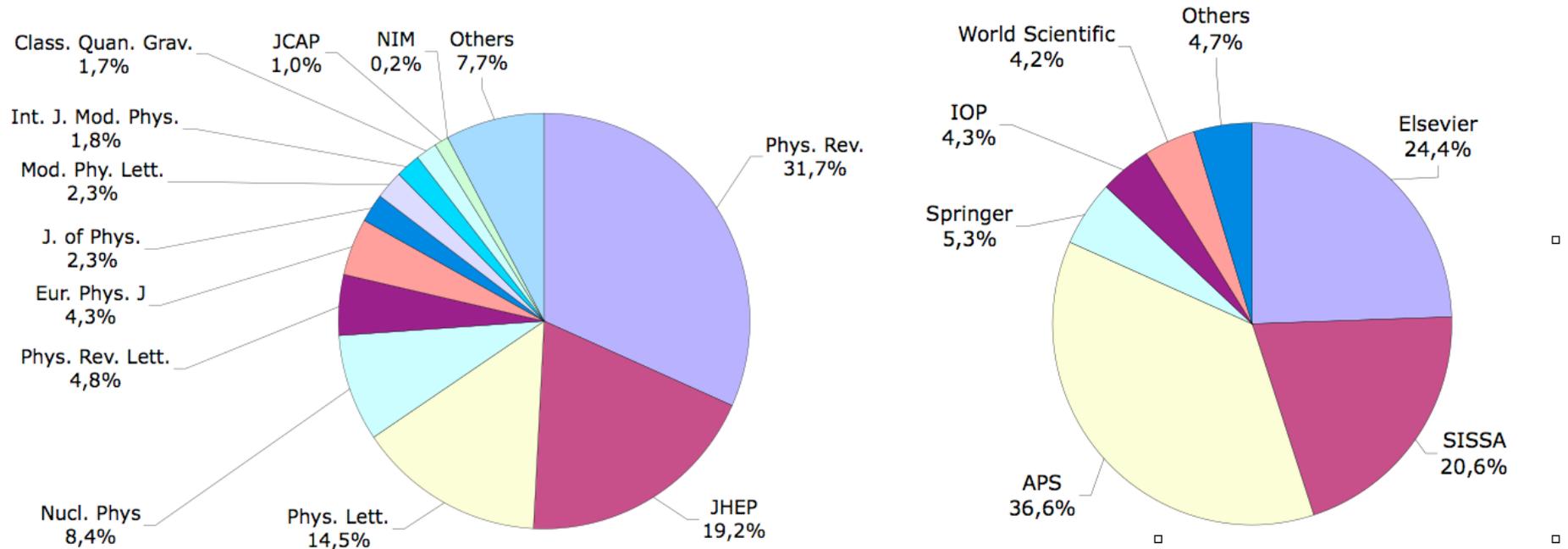
HEP and its journals

- Journals are on the way to lose (have lost?) their role as vehicle of scholarly communication
- But ... still evaluations of institutes and (young) researchers are based on high-quality peer-reviewed journals. **Journals remain the communication line with officialdom**
- The HEP community **needs** high-quality journals. The main role of journals is to assure high-quality peer-review
- Implicitly, the HEP community supports this role by purchasing subscriptions, as it reads the papers off arXiv anyhow
- HEP is an “all-arXiv discipline”: journals at high cancellation risk by large multidisciplinary libraries. At CERN only 1000 full-text downloads/year for leading HEP journals!
- OA journals will open possibilities for doing science smarter and quicker: text mining, automatic clustering of related material *etc.* Libraries have the opportunity to play the pivot **role in building eScience tools**

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

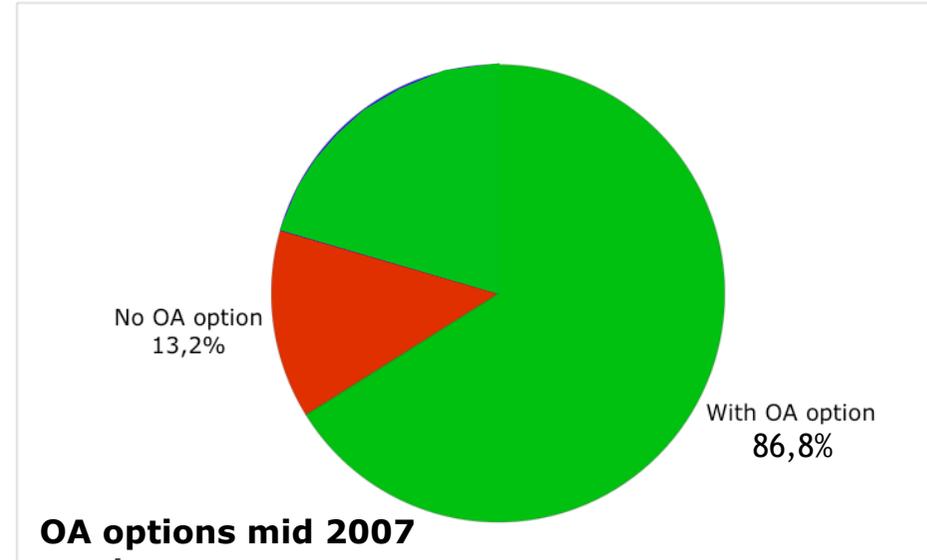
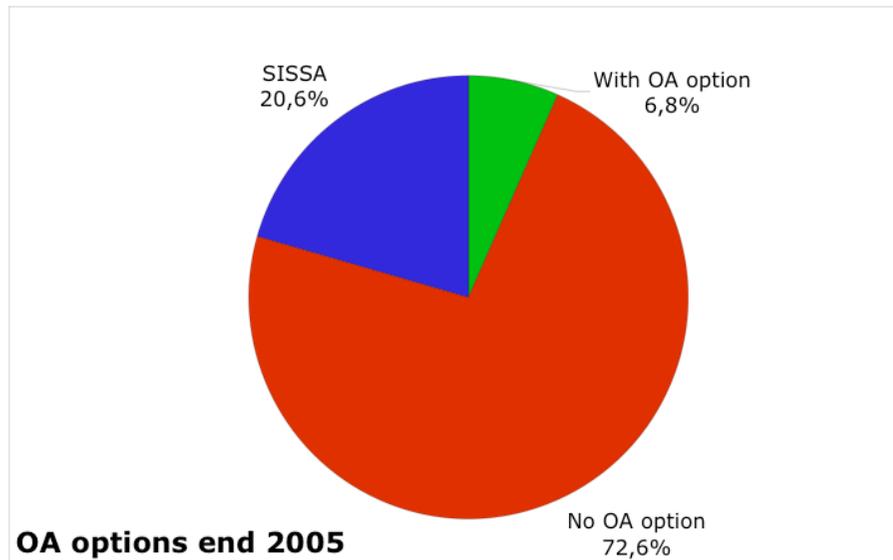


90% of articles are in theory and by less than 3 authors
83% of articles published in 6 leading journals
87% of articles published by four publishers

Expansion of OA offers from 2005 to 2007

Published articles by journal OA policy:

had authors wanted, could their articles be published OA?



5015 articles submitted to hep-ex, hep-ph, hep-lat and hep-th in 2005 and subsequently published in peer-reviewed journals

- These articles were NOT OA. Had funding mechanism been in place, they would have been.
- Publishers expand their OA options as a consequence of the debate on OA within the HEP community.

The **SCOAP**³ model Sponsoring Consortium for Open Access Publishing in Particle Physics

A practical approach

Towards the SCOAP³ consortium

- Tripartite task force of HEP funding agencies, publishers and authors indicated sponsoring as a way to achieve Open Access publishing in HEP
- European HEP funding agencies, library consortia and the research community charged a Working Party to propose a blueprint for a sponsoring consortium

Towards Open Access Publishing
in High Energy Physics

Report of the SCOAP³ Working Party

The SCOAP³ Working Party*

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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 readers to access articles.

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

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

Pillars of the SCOAP³ model (I)

What ?

- Offer online journals free to read for anybody, anywhere, anytime. Publishers will receive financial compensation by SCOAP³ for quality-assurance service
- Preserve high-quality peer-review process
- Preserve choice and academic freedom for authors
- Generate medium- and long-term savings for libraries and funding agencies by linking price with quality
- Publishers are invited to continue to meet demand for additional *premium* products to interested libraries and/or authors (paper journals, reprints, colour pages, ...)

Pillars of the SCOAP³ model (II)

Who ?

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

Pillars of the SCOAP³ model (III)

How ?

- Assist publishers to convert existing high-quality peer-reviewed journals to Open Access by re-direct money currently used for subscriptions
- Do not ask individual authors/groups to directly pay to publish their articles Open Access
- No “paying twice” for Open Access and subscriptions
- Ensure that converted journals are removed from packages and prices reduced accordingly
- Ensure long-term archiving through libraries

Towards Open Access journals

- Six journals cover 80% of central HEP literature
- Aim to convert the five core titles entirely to OA
 - Carry a majority of HEP content, 10%-30% Nuclear Physics and Astroparticle Physics
 - Reduce prices of “packages” accordingly
- Aim to convert HEP part of one “broadband” journal
 - 10% HEP (including Nuclear and Astroparticle Physics)
 - Reduce subscription price accordingly
- SCOAP³ is not limited to this initial set of journals but open to all high-quality HEP journals! The results of the tendering process in preparation will show

Guesstimating the budget envelope

- *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

- Learned societies quote a price per published article of **~1500€**
- 6-8 leading journals publish 5000-7000 articles a year

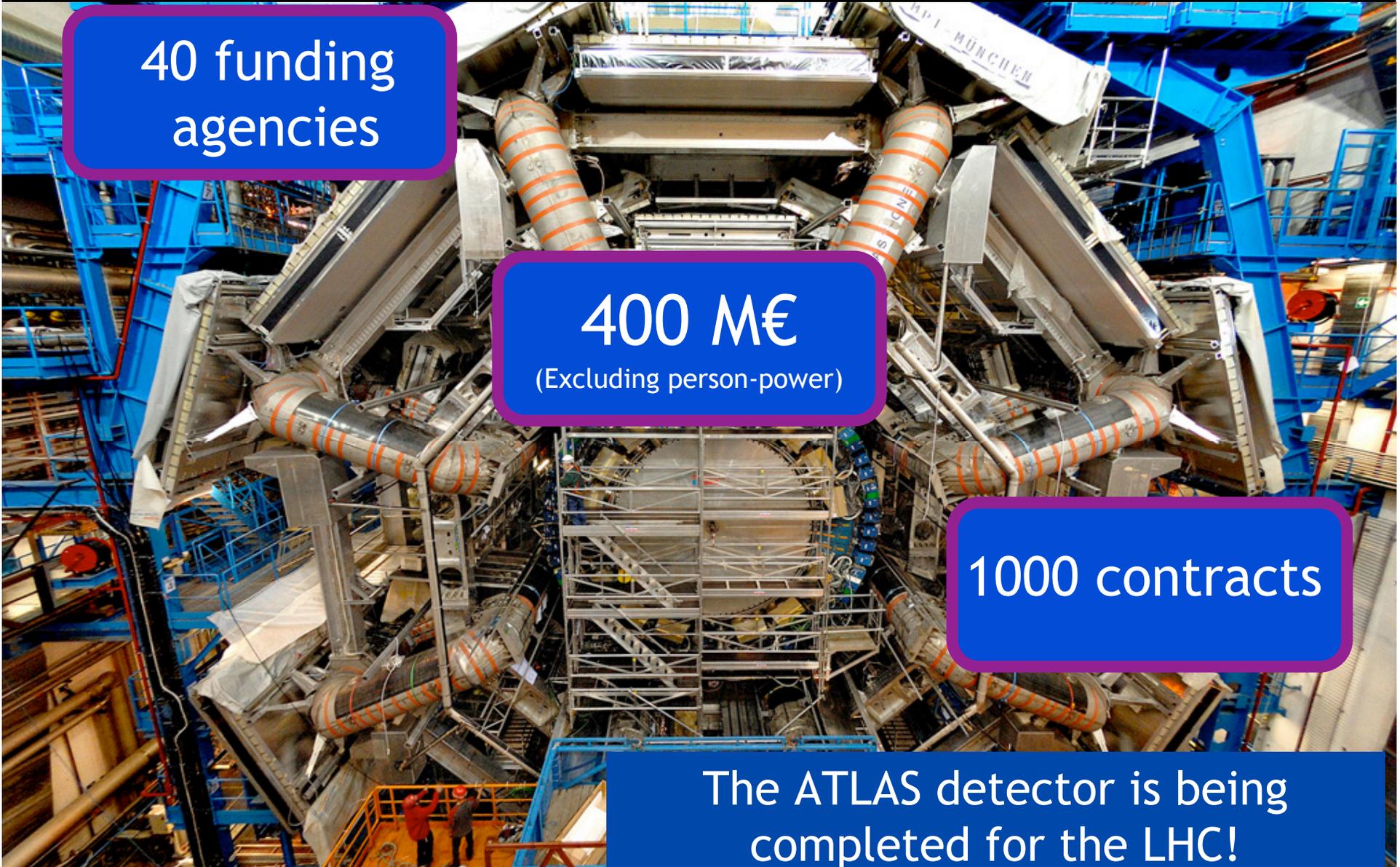
How to put it together?

40 funding agencies

400 M€
(Excluding person-power)

1000 contracts

The ATLAS detector is being completed for the LHC!



SCOAP³ - HEP collaborative experience

O(50) funding
bodies

10 M€

O(10) contracts
with publishers

Establish OA publishing by using the blueprint used
to finance and build the largest experiments ever!

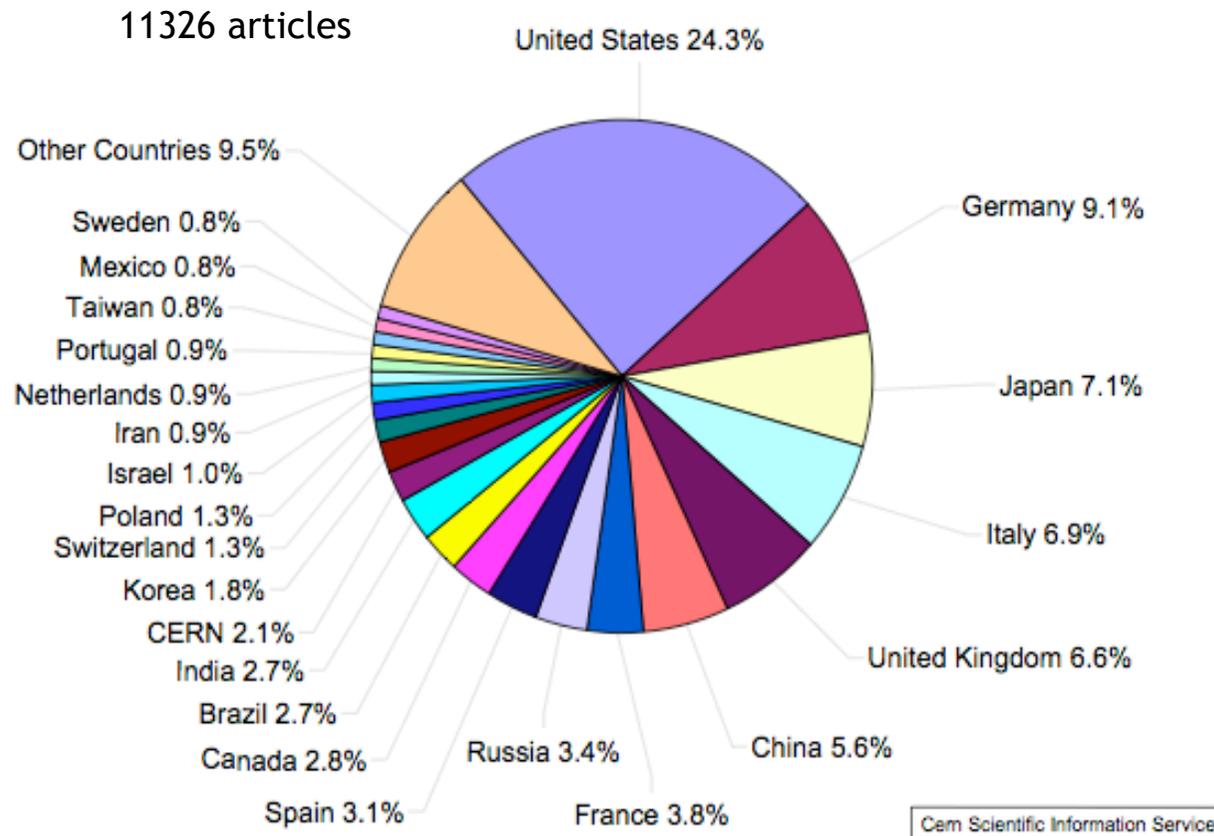
SCOAP³ financing

- SCOAP³ exact yearly cost to be known after a tender is sent to publishers; to be repeated regularly
- SCOAP³ financing to be distributed yearly according to a “fair-share” model based on the distribution of HEP articles per country, accounting for co-authorship
- Make an allowance for developing countries that cannot be expected to contribute to the scheme

A study of HEP authorship in leading journals

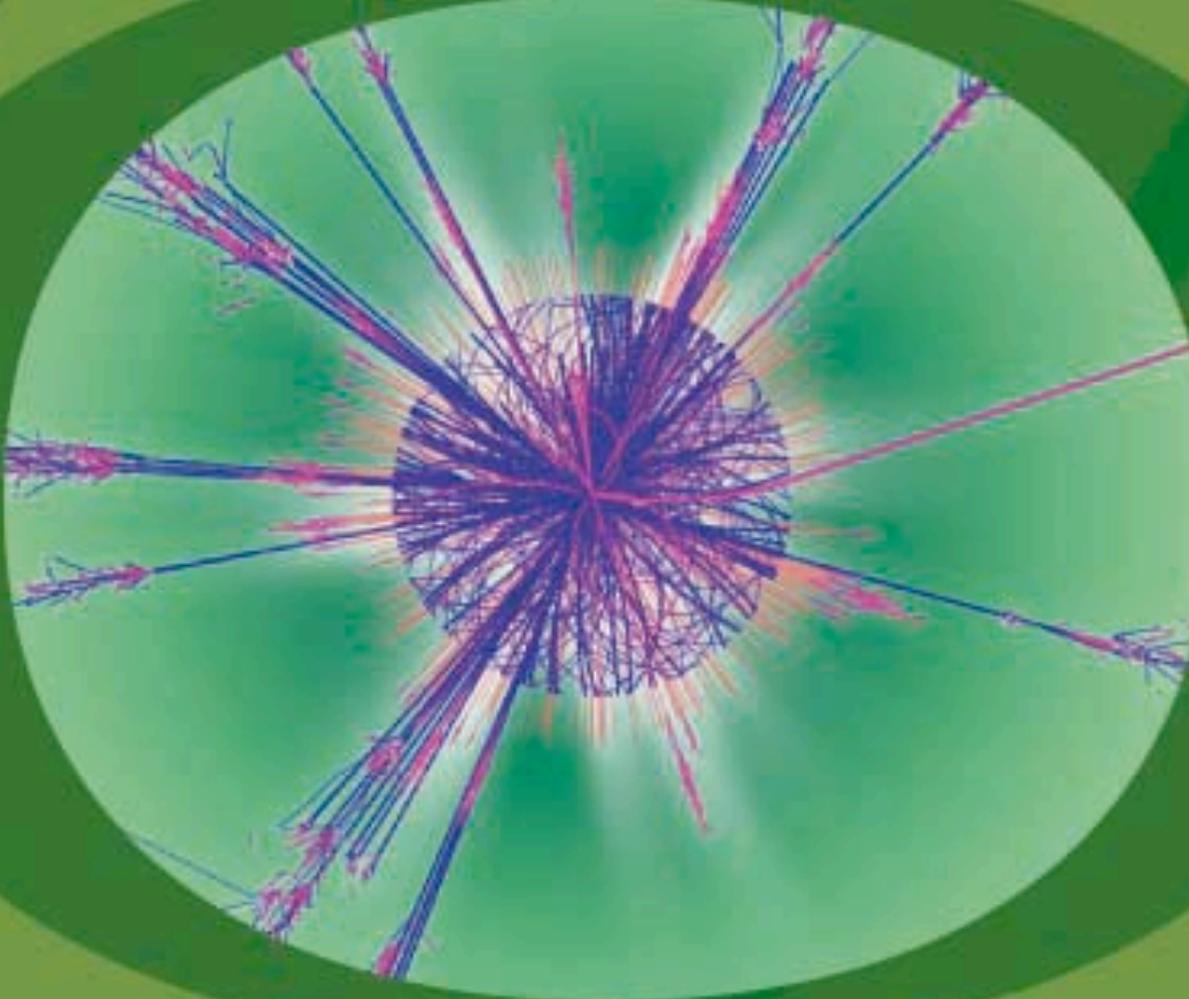
J.Krause,C.M.Lindqvist,S.Mele CERN-OPEN-2007-014

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.

Conclusion & outlook



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 blueprint of large scientific collaborations
- Price tag of 10M€/year to be shared according to the distribution of HEP articles per country.
- The model has high potential but is only viable if every country contributing to HEP is on board!
- SCOAP³ model could be rapidly generalized to related fields: Nuclear and Astroparticle Physics

Next steps

(Formal proposal published in April 2007)

- July-> Solicit and collect expressions of interest of potential funding partners
- Funding partners identify country-by-country schemes to re-direct journal subscriptions to SCOAP³
- Once funding partners commit a sizeable fraction of budget send a tender to publishers and
 - determine final budget
 - enlist remaining partners
- Formal agreement to establish SCOAP³

Have SCOAP³ operational to accommodate the first LHC results in 2008!