

# On the golden road - Open access publishing in particle physics

A central circular image showing a complex, multi-colored particle detector visualization, likely a bubble chamber or similar detector, with numerous tracks radiating from a central point. The tracks are primarily purple and blue, with some red and yellow highlights. The background is a light greenish-blue. This image is set against a larger background of various shades of green, with a faint, stylized 'A' logo in the bottom right corner.

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# Scholarly communication High-Energy Physics - a quick overview

- Communication patterns in HEP
  - Striking article by Luisella Goldschmidt-Clermont, preprinted 1965 (only published in 2002)
- The publishing landscape of HEP
  - A quantitative analysis (S. Mele et al. 2006)
- A model for OA publishing in HEP
  - SCOAP<sup>3</sup>, as proposed by the Working Party



# Communication patterns in HEP (I)

## Green Open Access, based on a long tradition

- Preprints are the main vehicle of information exchange
- 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.*”

## Moving towards gold Open Access is now a priority

- Preserve the existence of the peer-review process
- Populating the repositories with final versions of peer-reviewed articles in addition to preprints will soon become the norm

## Sometimes funny reactions...

- “*Most of us, admittedly, will not have much use for free access to new discoveries in, say, particle physics.*”, New York Times, August 7, 2003



## Communication patterns in HEP (II)

### Very close to full E-print Coverage

- Some culture variations within the field
  - 90% of the total of HEP articles represent theoretical physics, the rest is distributed over experimental results and descriptions of instrumentation, at CERN we observe:
    - Theory: close to 100%
    - Experimental results: about 70%
    - Instrumentation papers: **only 30%**
- Subject repositories vs. regional and institutional
- The community is ready for OA gold



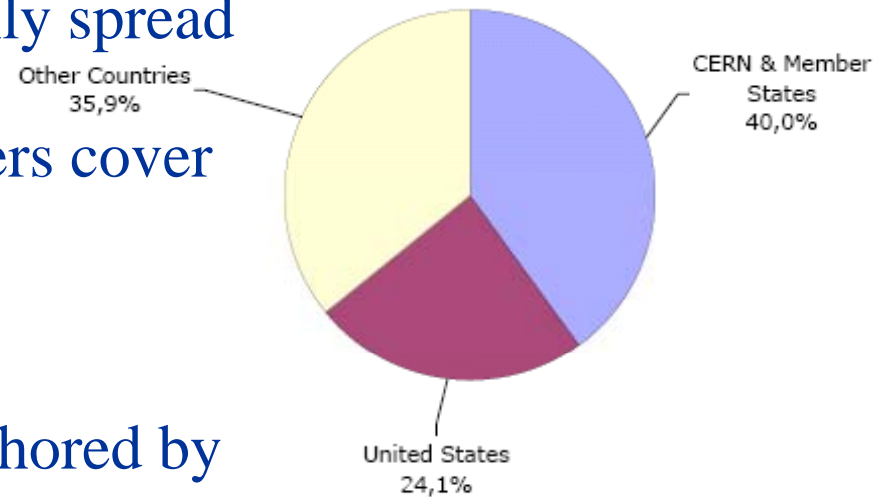
# The HEP publishing landscape (I)

Small enough to be manageable

- Less than 10.000 articles/year evenly spread across the world
- Less than 10 journals by 5 publishers cover 95% of this corpus

A strong collaboration culture

- Experimental papers (10%) co-authored by several 100s-1000s physicists
- Theoretical papers (90%) by small groups, but often across countries

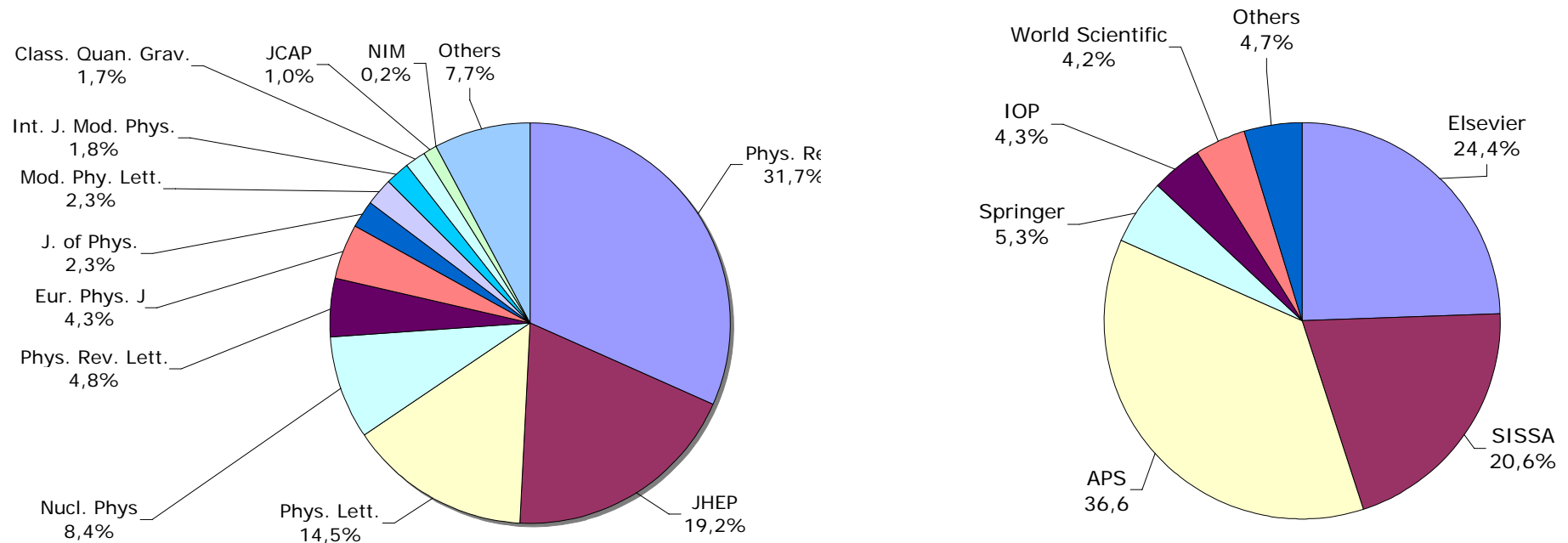




# The HEP publishing landscape (II)

S. Mele et al. [JHEP 12\(2006\)S01](#)  
arXiv:cs.DL/0611130

5051 articles submitted to arXiv:hep in 2005 and published in peer-reviewed journals



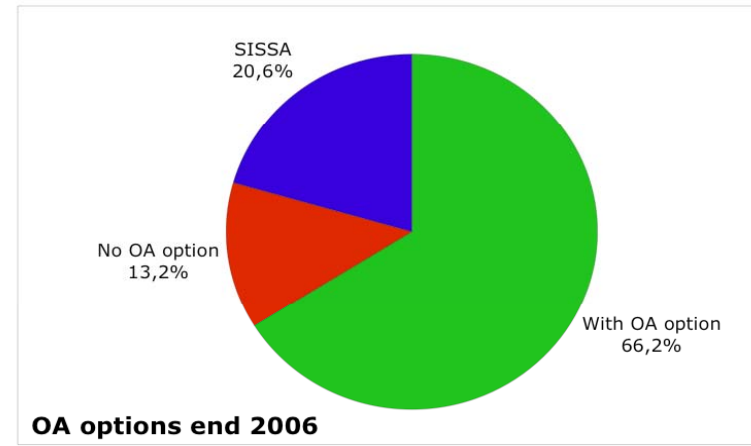
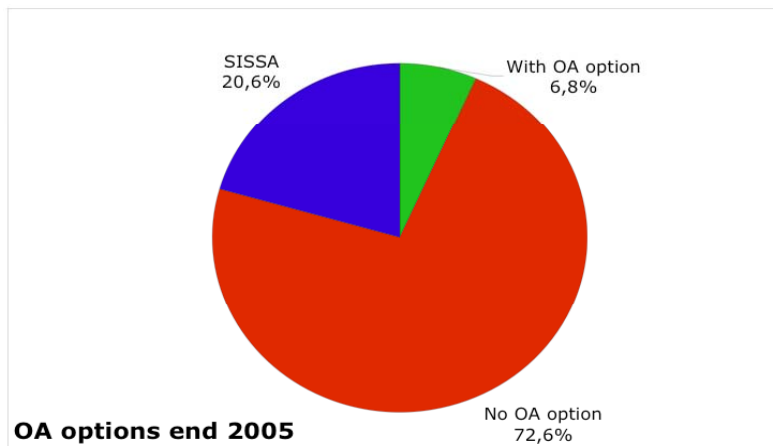
**90% of articles in theoretical physics**  
**83% of articles published in 6 leading journals**  
**87% of articles published by four publishers**



# The HEP publishing landscape (III)

Expansion of OA offers from 2005 to 2006

Published articles by journal OA policy:  
had authors wanted, could their articles be published OA?



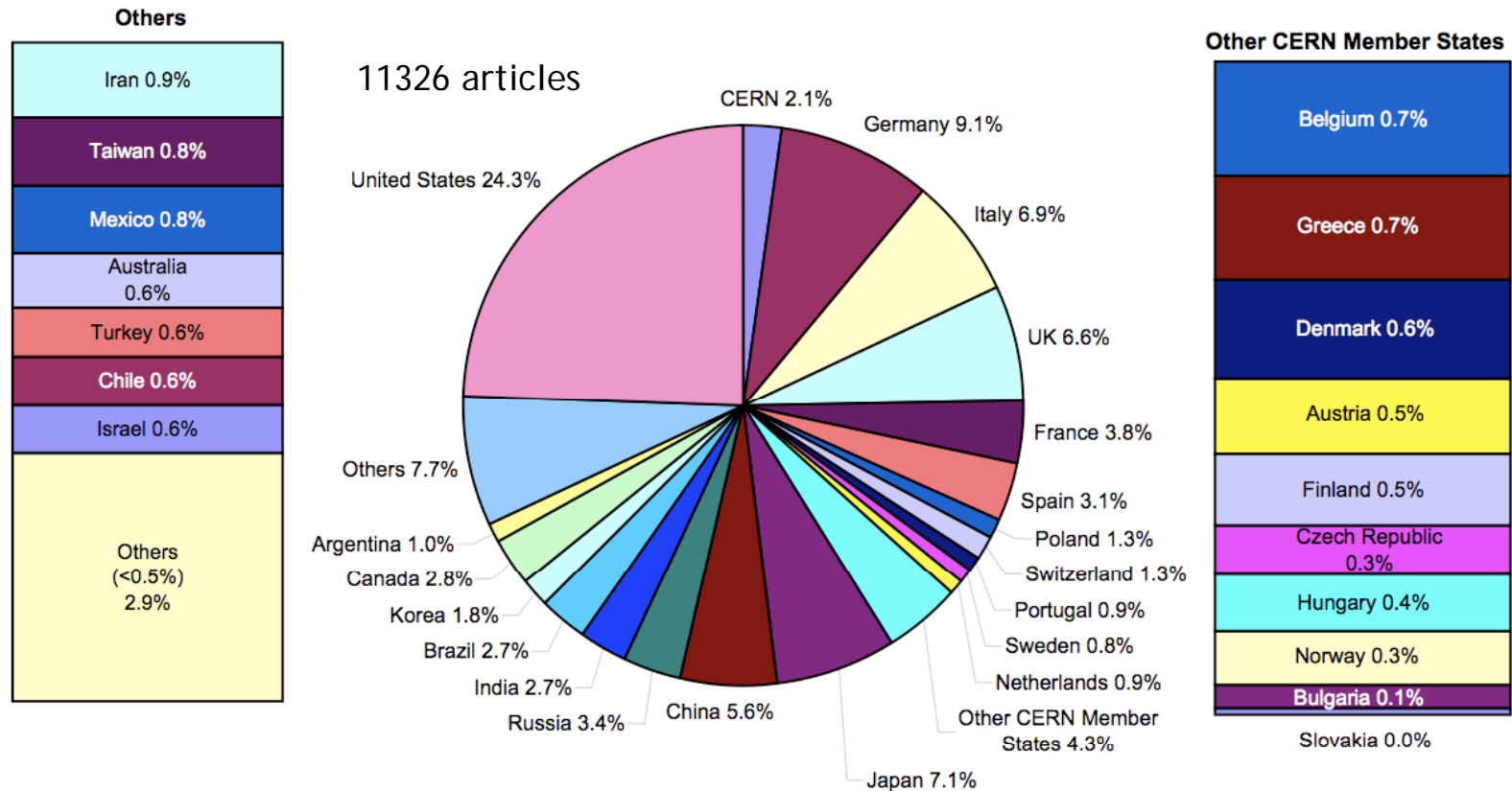
5015 articles submitted to hep-ex, hep-ph, hep-lat and hep-th in 2005  
and subsequently published in peer-reviewed journals



# The HEP publishing landscape (IV)

A detailed study of the 7 core journals

Distribution of HEP articles by country, average 2005-2006



Cern Scientific Information Service

All of PRD, JHEP, PLB, NPB, EPJC. Only HEP fraction of PRL (11%) and NIMA (23%)  
 Co-authorship is taken into account on a *pro-rata* basis  
 by assigning articles to countries according to their number of authors.



# A model for OA publishing in HEP

Sponsoring Consortium for  
Open Access Publishing  
in Particle Physics  
SCOAP<sup>3</sup>

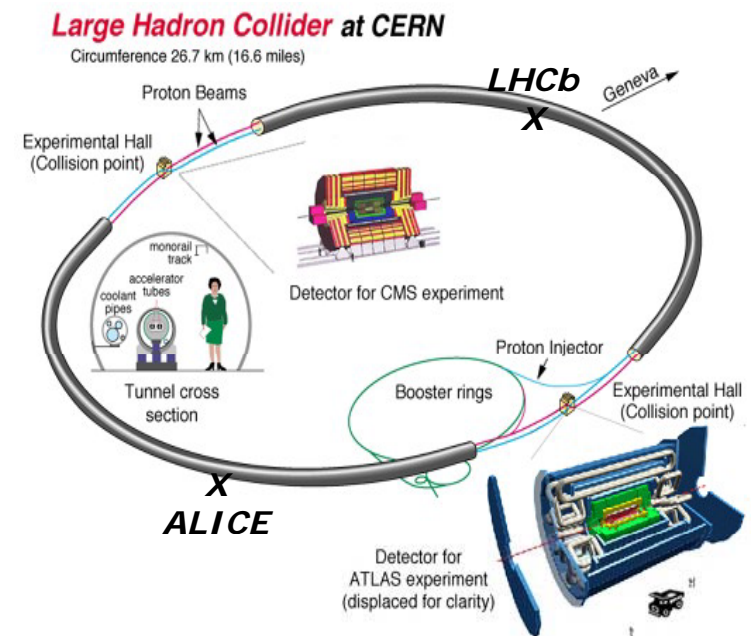




# The startup of the LHC machine

A watershed for particle physics

- Long-awaited new results will soon be published
- A unique opportunity to publish under a new model: the subscription model is not any longer sustainable for the scientific community
- Based on solid pillars
  - Sound competition among publishers
  - Academic freedom
  - Publishing costs should be considered as part of research costs
  - Top quality (based on peer-review) and Open Access publishing
  - Libraries should ensure long-term access





## Our goals

- Access to the literature with no restriction for any reader
- OA Publishing without financial barriers for any author
- Maintain and stimulate a wide choice of high-quality journals
- An “author-friendly” copyright agreement
- High peer-review and editorial standards
- Competition among journals
- Get spiraling subscription costs under control





# SCOAP<sup>3</sup>

## Sponsoring Consortium for Open Access Publishing in Particle Physics

- Sponsor publications in OA journals through a consortium is the most promising and feasible business model for particle physics
- Potential partners:
  - Funding agencies
  - Major particle physics laboratories
  - Major author communities
  - Libraries in and outside particle physics





# The approach of SCOAP<sup>3</sup>

- Sponsor all publications in HEP high-quality journals; sponsor HEP articles in broad-band journals
- Fundraising by redirecting subscription budgets to SCOAP<sup>3</sup>
- Open tendering process and sign contracts with qualified publishers
- Make all sponsored articles available through a single repository. Offer additional services to the community, i.e. citation analysis, text mining.
- **Sponsor all articles relevant for the field; estimated cost 5-10 M€/year**
- May seem a lot, but compare it to traditional journal subscriptions integrated over all particle physics institutes:

**One title only:** *Nuclear instruments and methods in physics research*  
16,000€/year × 300 LHC institutes = **4.8M €/year!**





A highly complex move with many parties involved, but ...

**40 Funding agencies**

**400 M€**  
(Excluding manpower costs)

**1000 Industrial contracts**

**the ATLAS detector is being completed for the LHC!**



# SCOAP<sup>3</sup> - CERN collaborative experience

**40 Funding agencies**

**5-10 M€**

**10 contracts with publishers**

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



## Conclusions: SCOAP<sup>3</sup> 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.
- Generate savings through negotiating power, author awareness and competition among journals.
- 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!
- Self archiving and open access publishing : a synergy