On the golden road -
Open access publishing in particle physics

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FEST, the first International Science Media Fair
Trieste, Italy
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
  – SCOAP³, 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)

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 over the last 18 months

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

Unfortunately only a very little fraction of these articles were effectively published Open Access as the pay-per-article models are not popular in high-energy physics, neither among authors, neither among funding agencies
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
SCOAP³
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$^3$

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$^3$

- Sponsor all publications in HEP high-quality journals; sponsor HEP articles in broad-band journals
- Fundraising by redirecting subscription budgets to SCOAP$^3$
- 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*
  
  $16,000€/year \times 300$ LHC institutes $= 4.8M \€/year$!
A highly complex move with many parties involved, but ...
SCOAP³ - 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: 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.
- 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