

Towards Open Access Publishing in High Energy Physics

Executive Summary of the Report of the SCOAP³ Working Party¹

Background

The goal of “Open Access”² (OA) is to grant anyone, anywhere and anytime, free access to the results of scientific research. The OA debate has gained considerable momentum in recent years. It is driven mostly by two factors:

- The “serials crisis” of ever-rising costs of journals, which has forced libraries to cancel a steadily-increasing number of subscriptions, curtailing the access of researchers to important scientific literature.
- The increasing awareness that results of publicly-funded research should be made generally available. This need is amplified by the transformation of research activities towards “e-Science”, carried out by a global scientific community linked by strong networks.

High Energy Physics (HEP) pioneered OA through “repositories” containing collections of “pre-prints” freely accessible on the Internet. Today about 90% of HEP pre-prints are available in repositories. Thanks to the speed with which they make results available, repositories have become the lifeblood of HEP scientific information exchange. However, repositories do not perform peer review and may contain only the original versions of articles *submitted* to journals, and not necessarily the final, peer-reviewed, *published* versions.

Notwithstanding the success of repositories, there is consensus in the scientific community about the need for high-quality journals that will continue to provide:

- quality control through the peer review process;
- a platform for the evaluation and career evolution of scientists;
- a measure of the quality and productivity of research groups and institutes.

The price of an electronic journal is mainly driven by the costs of running the peer-review system and editorial processing. Most publishers quote a price in the range of 1'000–2'000 Euros per published article. On this basis we estimate that the annual budget for the transition of HEP publishing to OA would amount to a maximum of 10 Million Euros per year. In comparison, the annual list-price of a single “core” HEP journal today can be as high as 10'000 Euros; for 500 institutes worldwide actively involved in HEP, this represents an annual expenditure of 5 Million Euros.

The SCOAP³ model

The proposed initiative aims to convert high-quality HEP journals to OA, pursuing two goals:

¹ Extracted from the SCOAP³ Working Party Report
<http://cern.ch/oa/SCOAP3WPRreport.pdf> (Contact: Salvatore.Mele@cern.ch)

² <http://oa.mpg.de/openaccess-berlin/berlindeclaration.html>

- to provide open and unrestricted access to all HEP research literature in its final, peer-reviewed form;
- to contain the overall cost of journal publishing by increasing competition while assuring sustainability.

In this new model, the publishers' subscription income from multiple institutions is replaced by income from a single financial partner, the "Sponsoring Consortium for Open Access Publishing in Particle Physics" (SCOAP³). SCOAP³ is a global network of HEP funding agencies, research laboratories, and libraries. Each SCOAP³ partner will recover its contribution from the cancellation of its current journal subscriptions. This model avoids the obvious disadvantage of OA models in which authors are directly charged for the OA publication of their articles.

The financing and governance of SCOAP³ will follow as much as possible the example of large research collaborations and each country will contribute according to the number of its scientific publications, as presented in the appended figure. To cover publications from scientists from countries that cannot be reasonably expected to contribute to the consortium at this time, an allowance of not more than 10% of the SCOAP³ budget is foreseen.

In practice, the OA transition will be facilitated by the fact that the large majority of HEP articles are published in just six peer-reviewed journals from four publishers³. Five of those six journals carry a majority of HEP content. These are *Physical Review D* (published by the American Physical Society), *Physics Letters B* and *Nuclear Physics B* (Elsevier), *Journal of High Energy Physics* (SISSA/IOP) and the *European Physical Journal C* (Springer). The aim of the SCOAP³ model is to assist publishers to convert these "core" HEP journals entirely to OA and it is expected that the vast majority of the SCOAP³ budget will be spent to achieve this target. The sixth journal, *Physical Review Letters* (American Physical Society), is a "broadband" journal that carries only a small fraction (10%) of HEP content; it is the aim of SCOAP³ to sponsor the conversion to OA of this journal fraction. The same approach can be extended to another "broadband" journal popular with HEP instrumentation articles: *Nuclear Instruments and Methods in Physics Research A* (Elsevier) with about 25% HEP content.

HEP has a natural overlap with related fields such as, but not limited to, astroparticle physics and nuclear physics. The five "core" journals include between 10% and 30% of articles in these disciplines, which will be naturally and logically included in the OA transition. This is in the interest of the readership and promotes the long-term goal of an extension of the SCOAP³ model to these related disciplines. The fractions of "broadband" journals quoted above also include publications in these related disciplines.

Of course, the SCOAP³ model is open to any other, present or future, high-quality journals carrying HEP content. This will ensure a dynamic market with healthy competition and a broader choice.

The annual budget for the SCOAP³ operation will be established through a tendering procedure. The tender and the subsequent contracts with publishers will address the use of OA articles, the conditions for un-bundling OA journals from

³ S. Mele *et al.*, JHEP 12(2006)S01; arXiv:cs.DL/0611130.

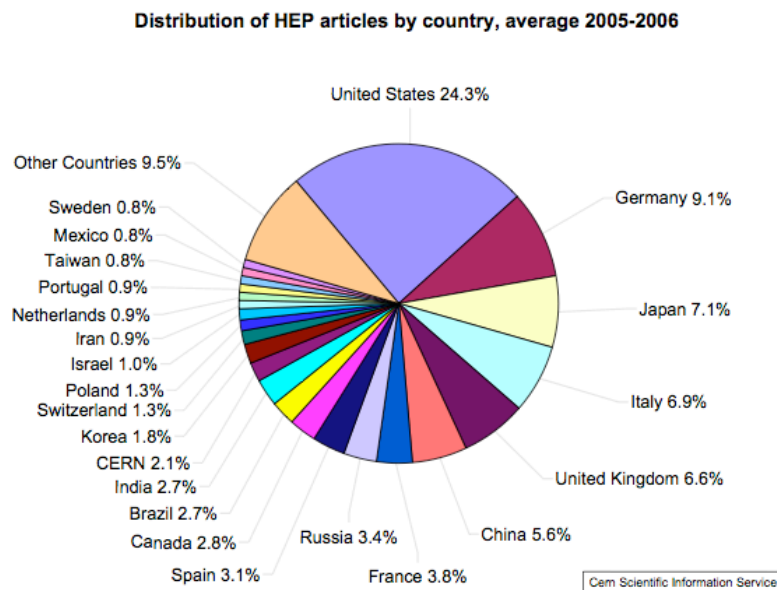
existing subscription packages, and the reduction of subscription prices for “broadband” journals following the conversion of a fraction of articles to OA.

Provided that the SCOAP³ funding partners are ready to engage in long-term commitments, many publishers are expected to be ready to enter into negotiations along the lines proposed here.

Timeline

Leading funding agencies and library consortia are currently signing Expression of Interest for the financial backing of the consortium. Once sufficient momentum is gained, the tendering procedure will take place determining the exact budget envelope. A Memorandum of Understanding detailing the financial contribution of each country and the governance of SCOAP³ will then be signed. Contracts will then be established with publishers in order to make Open Access publishing in High Energy Physics a reality in 2008.

The example of SCOAP³ will be an important milestone in the history of scientific publishing. It could rapidly be followed by other disciplines and, in particular, by fields related to HEP such as nuclear physics or astro-particle physics.



Contributions by country to the HEP scientific literature published in journals spotlighted for conversion to OA. Co-authorship is taken into account on a pro-rata basis, assigning fractions of each article to the countries in which the authors are affiliated. This study is based on all articles published in the years 2005 and 2006 in the five HEP “core” journals: Physical Review D, Physics Letters B, Nuclear Physics B, Journal of High Energy Physics and the European Physical Journal C, and the HEP articles published in two “broadband” journals: Physical Review Letters and Nuclear Instruments and Methods in Physics Research A. A total sample of almost 11’300 articles is considered. Countries with individual contributions less than 0.8% are aggregated in the “Other countries” category.