Funded by the Erasmus+ Programme of the European Union

Project number:
597912-EPP-1-2018-1-MD-EPPKA2-CBHE-SP

STRENGTHENING RESEARCH MANAGEMENT AND OPEN SCIENCE CAPACITIES OF HEIS IN MOLDOVA AND ARMENIA (MINERVA)

LAUNCHING CONFERENCE & INTERNATIONAL WORKSHOP ON OPEN SCIENCE

Open Access: USGM situation and best practices adopted in HEP research field

Prof. Matteo Martini

Università degli Studi Guglielmo Marconi (Italy)

Chișinău, Moldova, 5 March 2019

Talk layout

- My work experiences and activities related with Open Access
- USGM Structure
- USGM Nuclear, Subnuclear and Radiation Physics Department as case study
- Italian quality and hiring system for universities
- CERN as case study for Open Access approach
- Three different solutions to increase diffusion of scientific results and publications:
  - SCOAP3
  - cOAlition S
  - NILDE

Work experience and OA

- I am an Associate Professor of Experimental Physics in USGM (bibliometric sector)

- My research activity is focused on the design and construction of novel detectors for high energy experimental physics

- I currently collaborate with:
    - INFN, Italian Institute of Nuclear Physics (Italy)
    - CERN, Organisation européenne pour la recherche nucléaire (Genève, Switzerland)
    - Fermi National Accelerator Laboratory (Chicago, USA)

- I am Director of the Department of Nuclear, Subnuclear and Radiation Physics, DFNSR, in USGM

- I am member of the board of Administration of USGM

- I am the coordinator for INFN Frascati for the “Library Consortium of Roman Castle”, an association of public libraries to give access for library resources to everyone (researchers, students and common people)

USGM at a glance

- In USGM we have to face the challenge of giving access to scientific journals that is mandatory for every research field

- We have about 15K students divided into 6 schools (20 courses among BA and MA courses):

Science and Applied Tech | Law | Business | Arts | Political Science | Education Science

- And we have about 200 professors/researchers divided per research macro-interests into 6 departments:

Nucl, Subnucl. Physics | Sustainability engineering | Political Science | Human Science | Business Science | Innovation & Information

Italian quality system

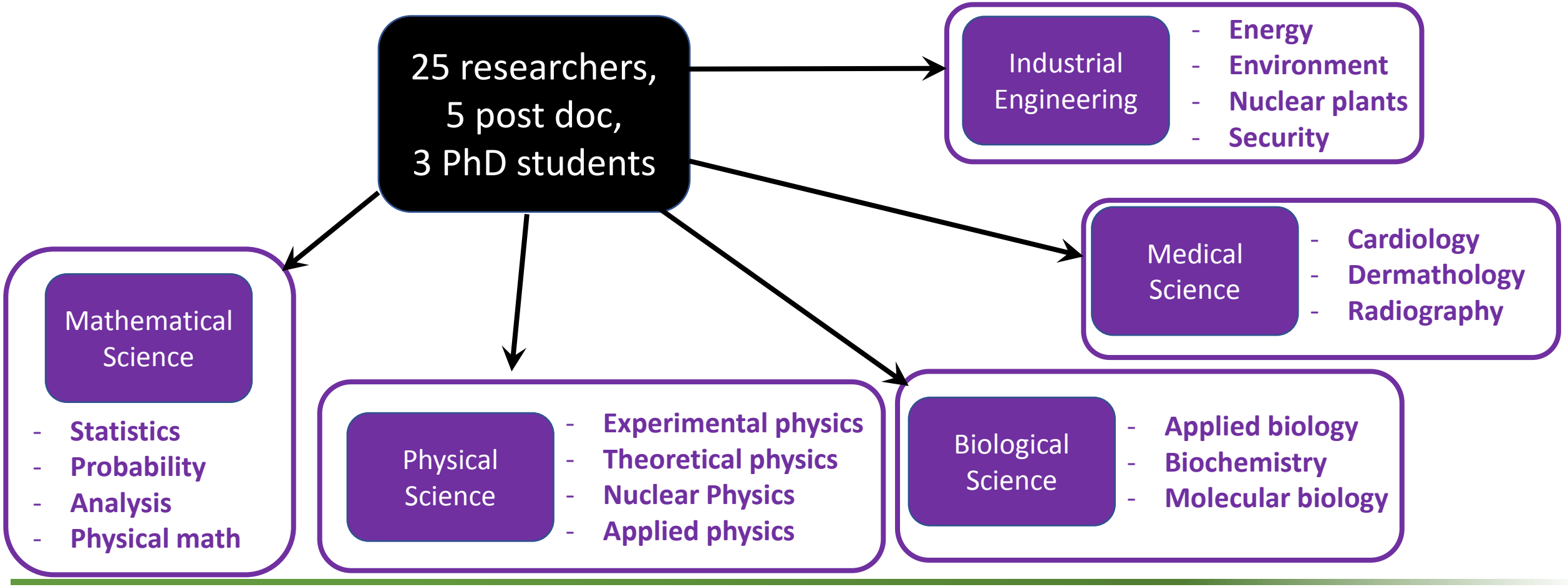
- USGM is considered a medium university in the Italian system when taking into account both number of students and researchers
- USGM is a open online university with only a small financing from Ministry
- USGM take particularly care about research since in Italy the **quality evaluation system** is based on bibliometrics parameters to evaluate universities, departments and single researcher, open PhD courses, open Departments, etc.
- Italian ministry evaluate quality through a national agency named ANVUR
- Study and know bibliography is mandatory in every research sector
- **To start analyzing quantitatively the problem, how many journals subscriptions I need in a typical university like USGM?**

ANVUR

- Agenzia Nazionale per la Valutazione del Sistema Universitario
- National Agency for the evaluation of the University system

DFNSR case study

- To answer to this question, let's consider the department I lead that contain different research interests in the field of basic sciences:



DFNSR case study

- To answer to this question, let's consider the department I lead that contain different field of basic sciences:

- **Only considering the journals in which DFNSR guys have published papers, we have 100+ journals titles**
- **This number can increase considering the entire bibliography of each sector**
- **And we have considered only 1 department over 6 of a medium university like USGM**

Mathematical Science
- Statistics
- Probability
- Analysis
- Physical math

Physical Science
- Theoretical physics
- Nuclear Physics
- Applied physics

Biological Science
- Applied biology
- Biochemistry
- Molecular biology

- Nuclear plants
- Security

- Cardiology
- Dermathology
- Radiography

The path to a professorship

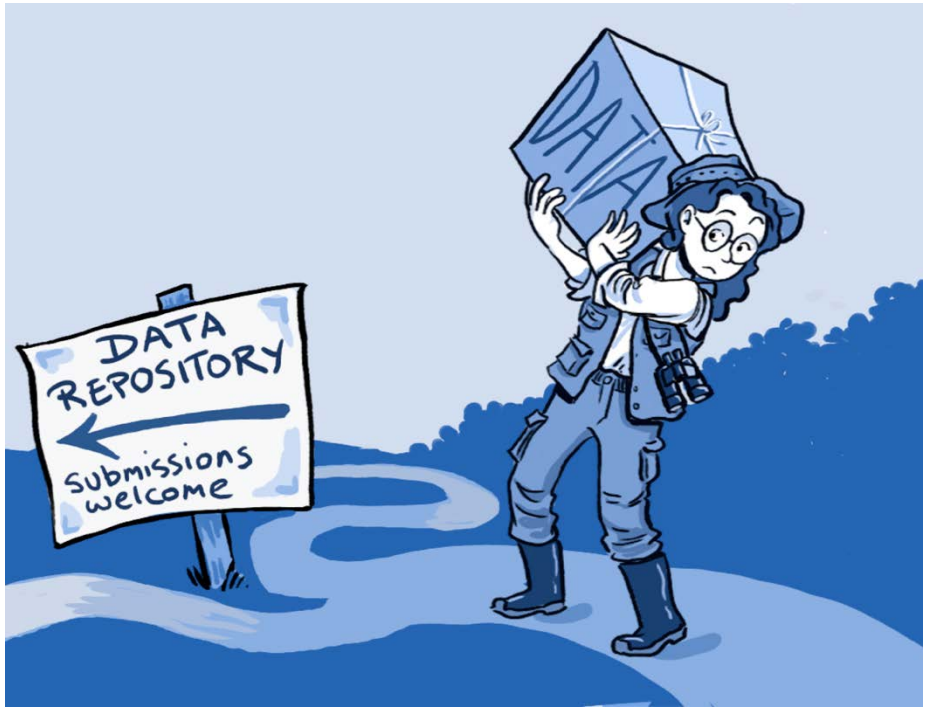
- There are two different point of views when discussing about OA: writers (researchers) and readers (researchers but also libraries)

- Moreover, to understand how important is this field in the university system let's take specifically the Italian case

- Let's suppose I am an *independent* researcher who want to become a university professor in Italy ….

- After years of sleepless nights, errors, suggestions, discussions, etc., let's suppose I have made an important research worthy to be published

- In an ideal world, at this step, the most laborious part of the research is finished ….. But we do not live in an ideal world!!



Where publish our work?

"Bibliometrix" (a dark secret art?)

What's the best choice to publish the result of my sleepless nights?

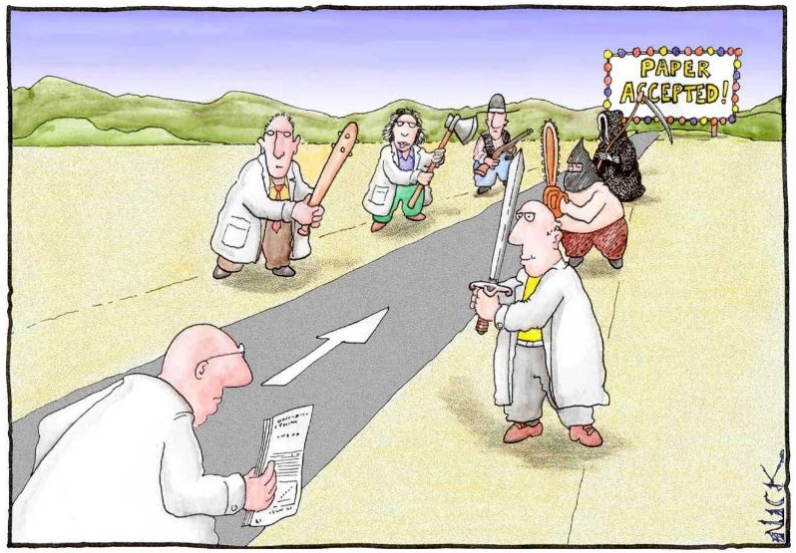
- *I have to publish in a journal with an high impact factor since I want to be cited to increase my h-index thus increasing the impact factor of the journal itself* (it seems like a circle of hell of "Divina Commedia")

- This is important because to become a professor, in different EU countries included Italy, before the selection in a university (based on bibliometrics) I have to obtain a **"Scientific National License"** (based on bibliometrics)

- The independent and blind peer review (fundamental in science) is done by researchers (always they) that offer this work for free (no cost for editors)

- **If everything goes well, I finally can publish my article**

- Is this the end of the story? Not at all especially from an economical point of view ….



The problem of articles access

- My article is published and I want to check/download it to send my work for selections, evaluations, etc.

ELSEVIER

Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment

Volume 718, 1 August 2013, Pages 95-96

QCALT: A tile calorimeter for KLOE-2 upgrade

A. Balla [a], P. Ciambrone [a], G. Corradi [a], M. Martini [a, b], C. Paglia [a], G. Pileggi [a], B. Ponzio [a], A. Saputi [a], D. Tagnani [c]

Show more

https://doi.org/10.1016/j.nima.2012.11.072

Get rights and content

Abstract

The upgrade of the DaΦne machine layout requires a modification of the size and position of the inner focusing quadrupoles of KLOE-2, thus asking for the realization of two new calorimeters, named QCALT, covering this area. To improve the reconstruction of $K_L \rightarrow 2\pi^0$ events with photons hitting the quadrupoles, a calorimeter with high efficiency to low energy photons (20–300 MeV), time resolution of less than 1 ns and space resolution of few cm, is needed. To match

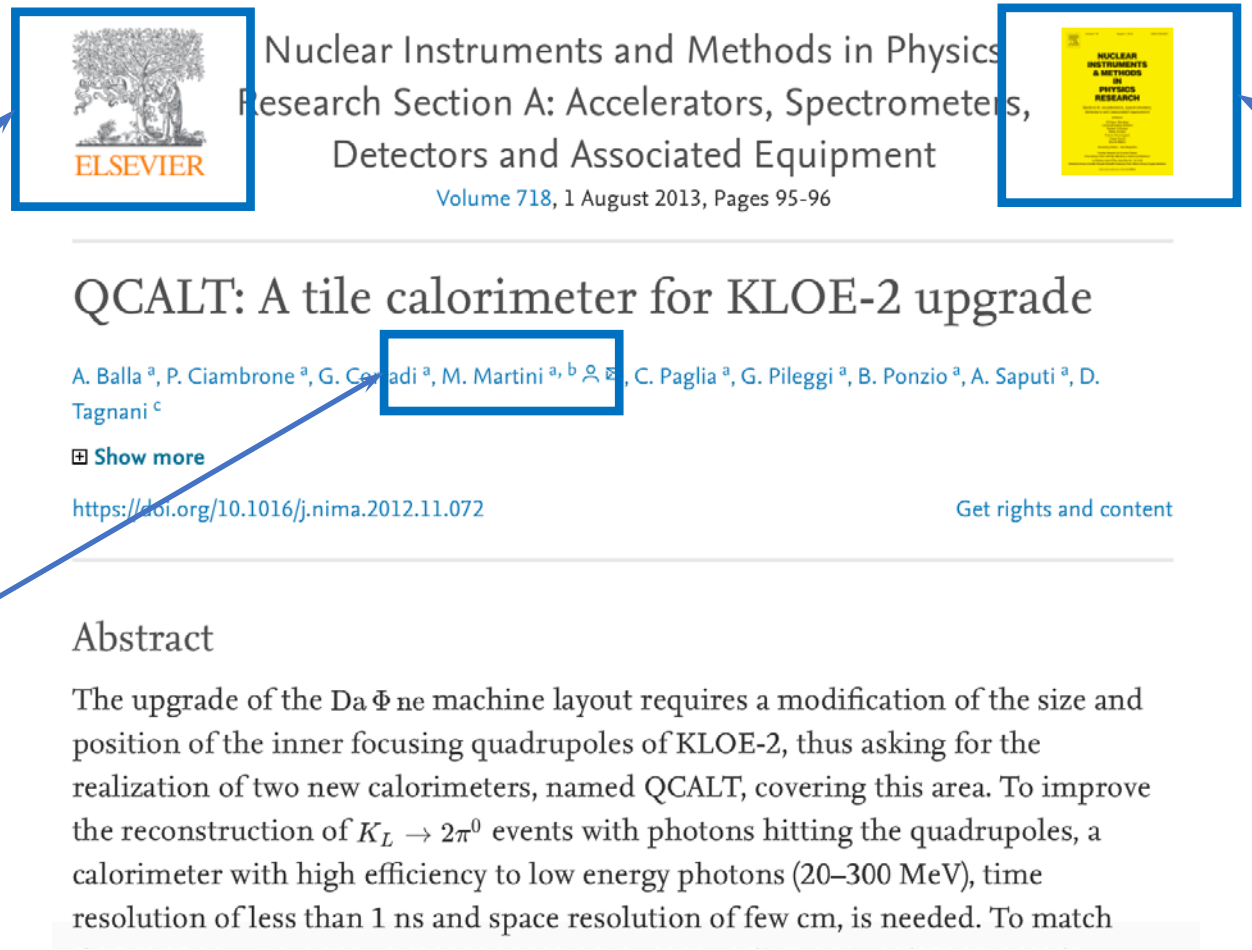
The problem of articles access

- My article is published and I want to check/download it to send my work for selections, evaluations, etc.

Very famous publisher

Very important journals for HEP detectors

NOT very famous author but PI



The problem of articles access

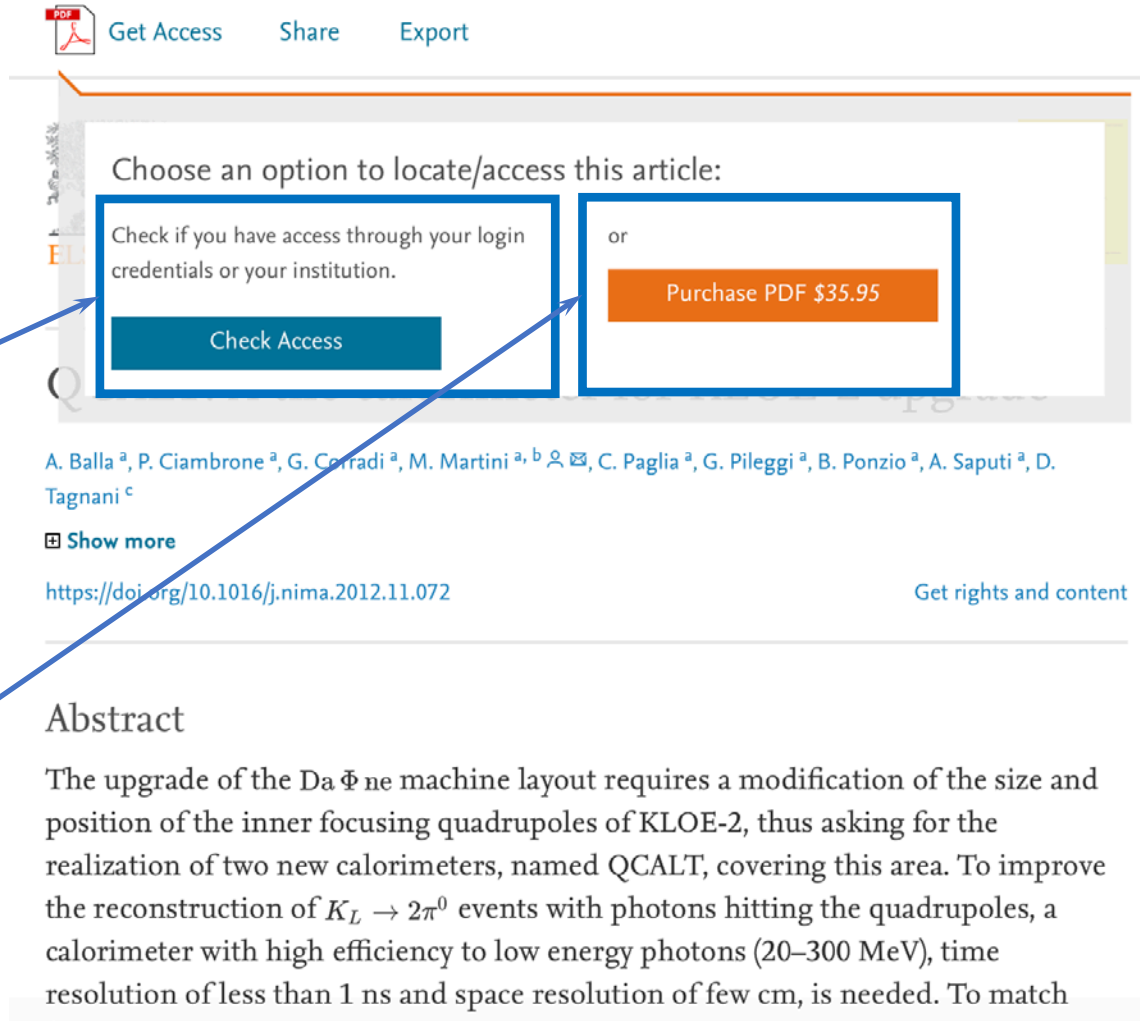
- My article is published and I want to check/download it to send my work for selections, evaluations, etc.

The problem of articles access

- My article is published and I want to check/download it to send my work for selections, evaluations, etc.

Subscription to journal to have access to articles

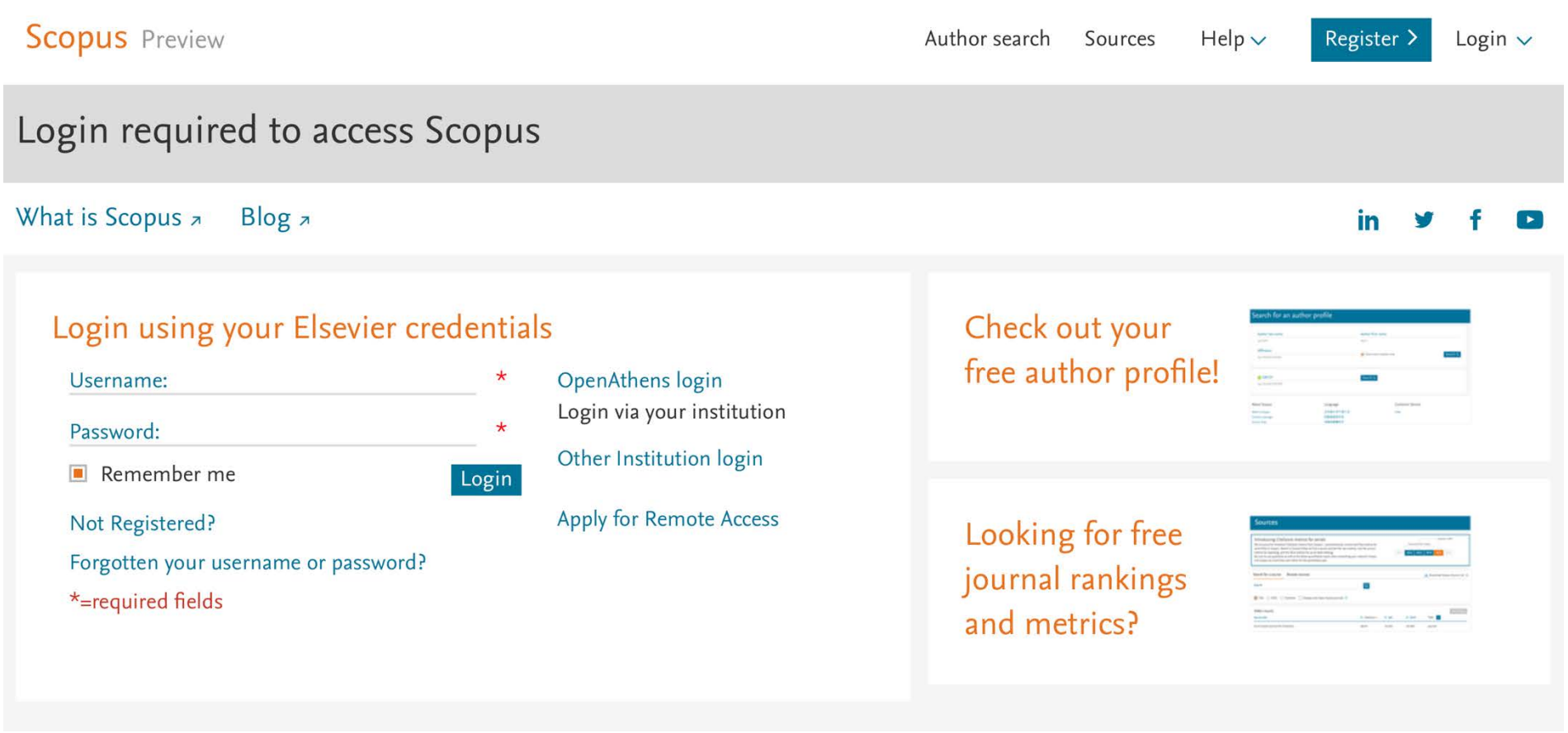
Pay per read



To publish your article, journal acquire copyright. In this specific case, I have not paid for publication but journal acquire copyright

The problem of articles access

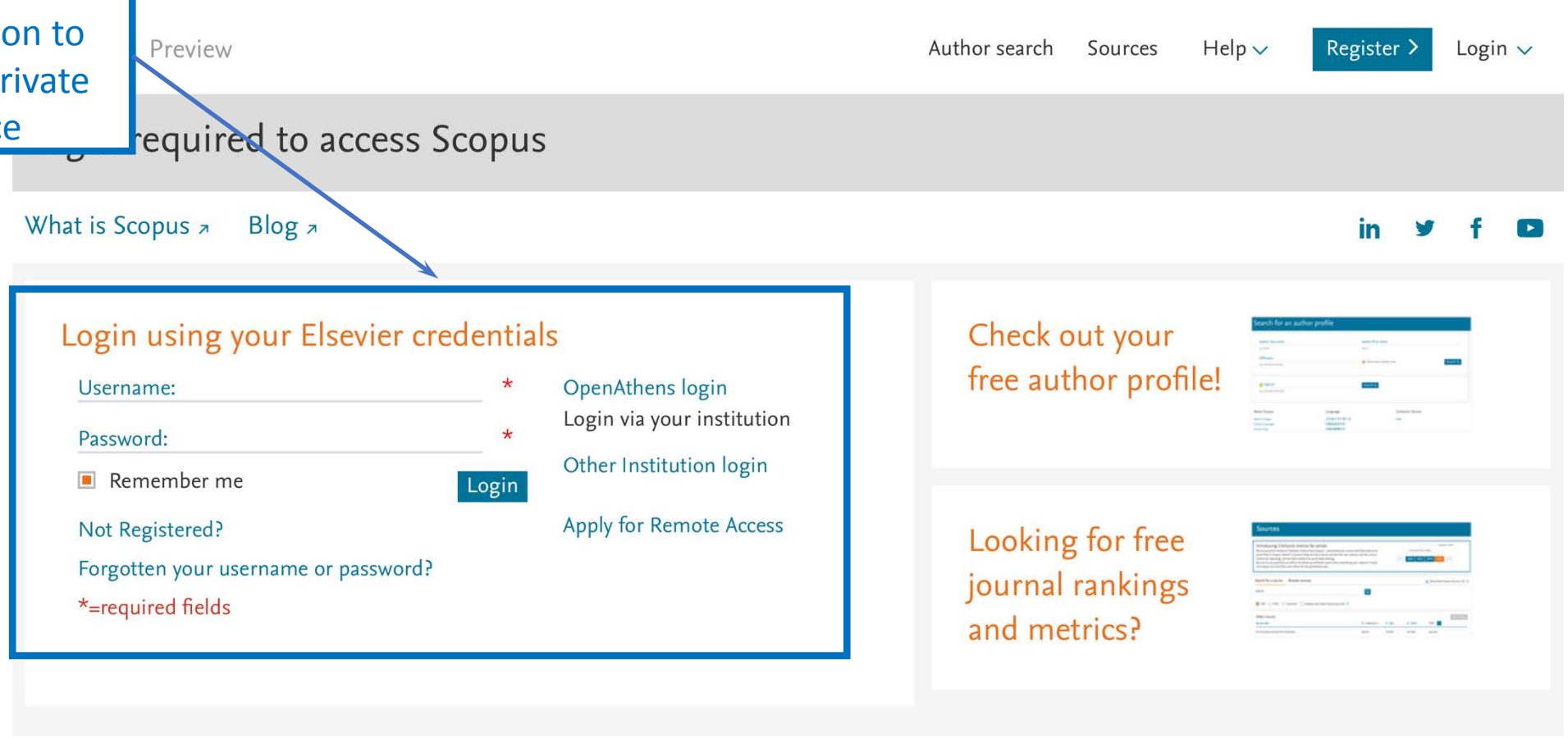
- And to know my bibliometric parameters like: number of articles, publications per year, h-index, etc.?



The problem of articles access

- And to know my bibliometric parameters like: number of articles, publications per year, h-index, etc.?

I need another subscription to another private service



Green and Gold OA

- The publication and diffusion of scientific research is today a real economic system connecting not only single scientists but also public universities and public research centers with private companies

- For writers, editors (normally) offers two possibilities:
  - Green Open Access: no cost for publication, embargo period before possibility to share article
  - Gold Open Access: high publication cost, CC-BY license

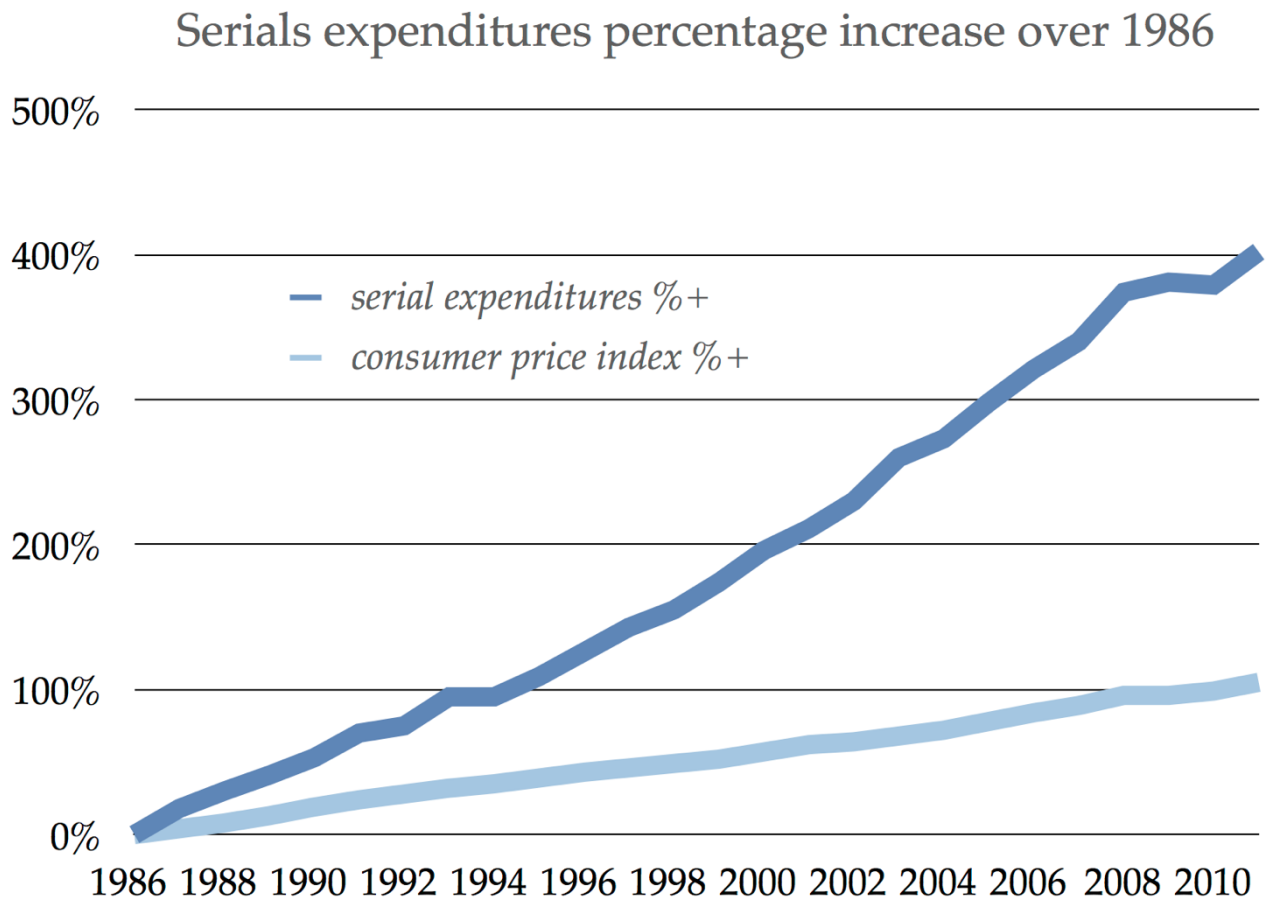
- When no cost is charged to author (Green OA), the APC is supported by subscribers

- **Too often editors apply double-dipping (cost for APC and cost for subscriptions)**

	Gold open access	Green open access (Sharing your subscription article)
Options	• Publish in an open access journal • or in a journal which supports open access (hybrid)	• Link to your article. • Select a journal that features an open archive • Select a journal that participates in CHORUS • Self-archive a version of your article
Access	• Public access is to the final published article • Access is immediate	• Free access to a version of your article • Time delay may apply (embargo period)
Fee	• Open access ↓ fee is paid by the author, or on their behalf for example by their institution or funding body. • Fees range between c$150 and c$5000 US Dollars excluding tax, depending on the journal with prices clearly displayed on our ↓ Article Publishing Charge (APC) price list and on journal homepages.	• No fee is payable by the author as publishing costs are covered by library subscriptions.
Use	• Authors can choose between a commercial and noncommercial user license.	• Accepted manuscripts should attach a CC-BY-NC-ND user license • Authors retain the right to reuse their articles for a wide range of purposes

Subscription costs

- What about these prices for subscriptions?
- To understand how high are journal prices, we can compare subscription prices increase versus consumer price index
- The rise during years is crazy!
- Is this rise justified?
- Journal do not pay authors for peer review, do not distribute royalties to authors, do not correct proof, often graphics editing is automatic, often apply double-dipping ….
- **Practically we are in a oligopoly market**



Ancient open access

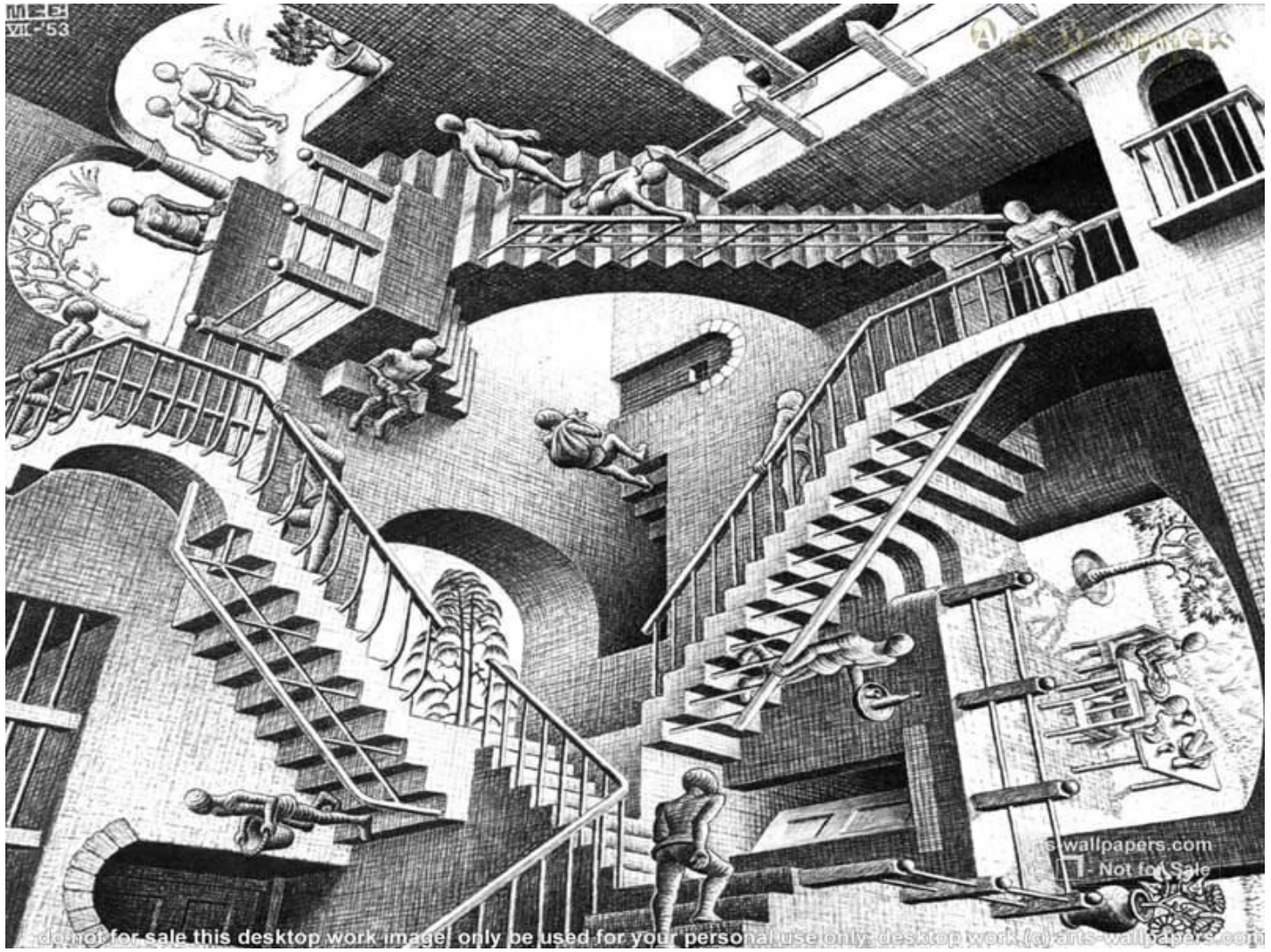
- Diamond Sutra is the oldest known printed book in the world (realized with xylography technique)

- Found in 1907 in Mongao Caves in China and now conserved in the British Library it is dated 11 May 868.

- Its colophon at the end claims: ***“Reverently made for universal free distribution by Wang Jie on behalf of his two parents»***

The need of Open Access

- After centuries something went wrong
- **Due to price increase, the more libraries cancel subscriptions, the more prices grow**
- **NO WAY OUT!**
- The need of open access is hence a real need in scientific communities
- Due to the volume of this business, we really need a new “economic model”
- HEP community (high energy physics) is very active in studying new OA solution



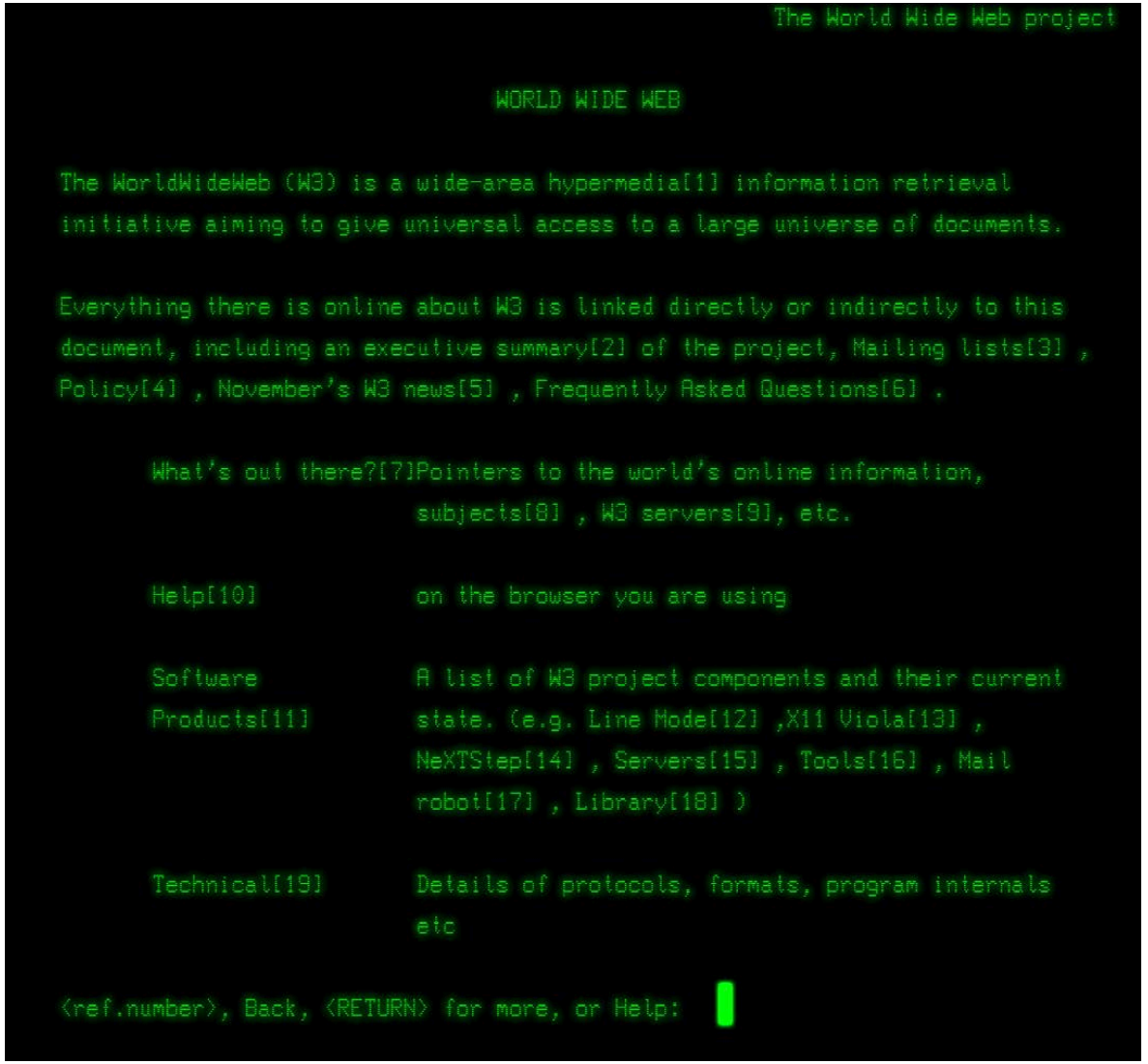
The CERN approach

- **CERN, the largest laboratories for HEP always push and encourage Open Access of any resources**

- **The most important example:** On 30 April 1993 CERN published a statement that made World Wide Web technology available on a royalty free basis, allowing the web to flourish

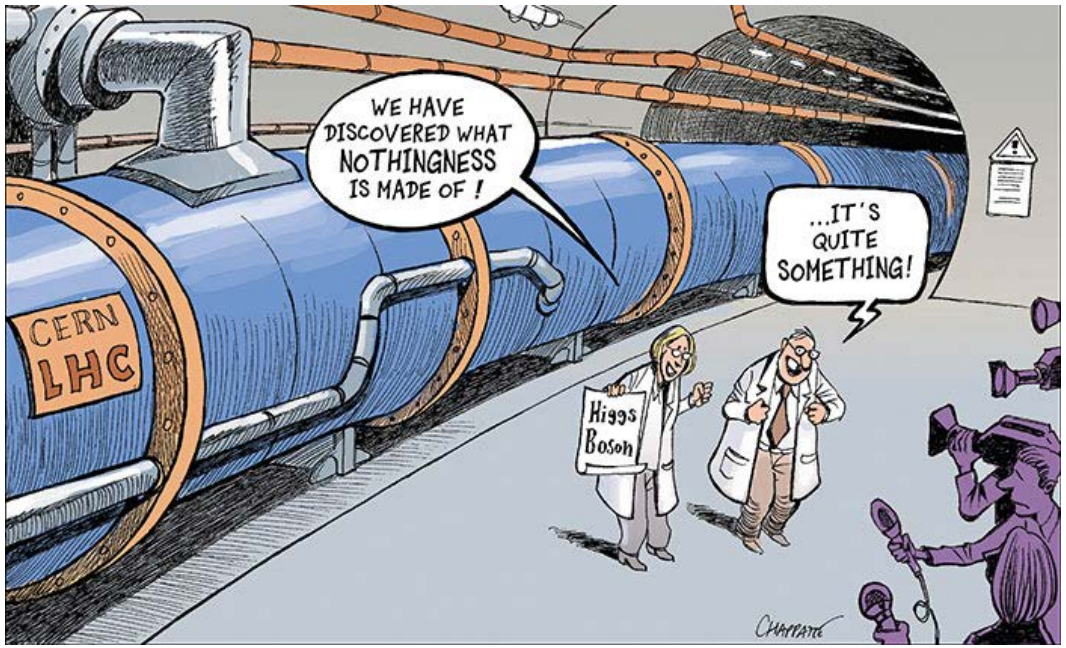
- Web is not an exception for CERN: touchscreen, trackball and other invention come from CERN experiment and were released royalty free

SPS accelerator control exploit the first capacitive touchscreen



The CERN approach

- Today, CERN, like all other laboratories and universities worldwide, is facing the challenge of Open Access not only for ”Material Invention” but also for publications
- The 4 experiments at LHC count 5000 scientists from 54 countries
- This is the largest scientific community in the world



The 4 groups ATLAS, CMS, LHCB and ALICE approved this statement: *"We strongly encourage the usage of electronic publishing methods for our publications and support the principles of Open Access Publishing, which includes granting free access of our publications to all. Furthermore, we encourage all our members to publish papers in easily accessible journals, following the principles of the Open Access Paradigm."*

Solution?

Three different solutions, very different also in the philosophy, developed for HEP research field will be discussed:

cOAlition S

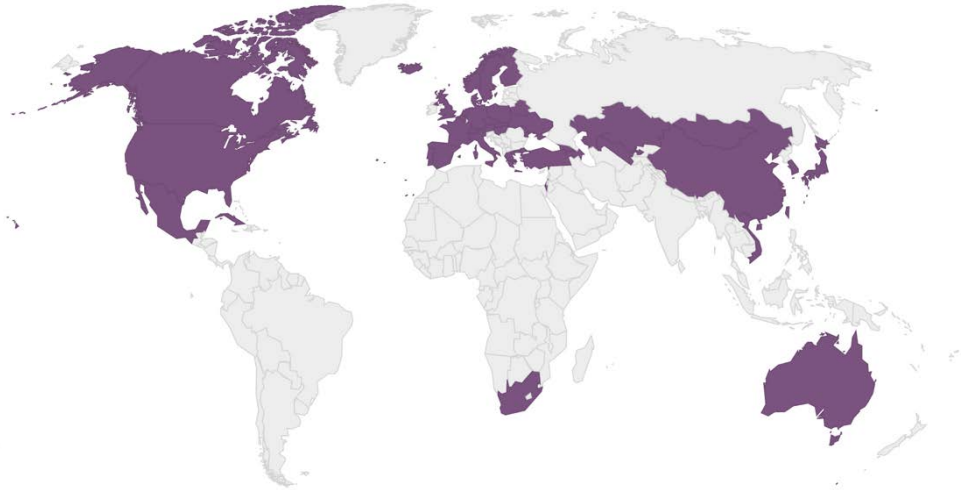
SCOAP3

SCOAP^3 – Sponsoring Consortium for Open Access Publishing in Particle Physics

- To reduce subscription cost, push open access and fight double dipping, the key is work together to have more contractual strength with publishers and to find novel solutions

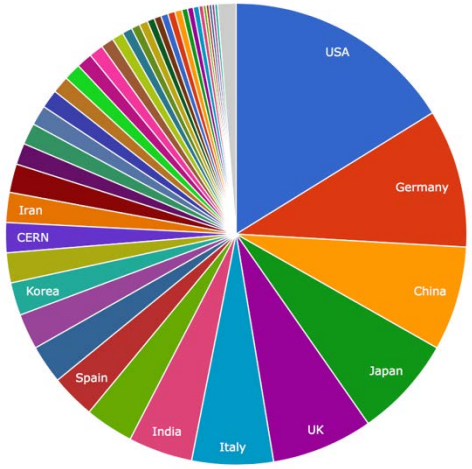
- In this sense, CERN created in 2014 SCOAP^3 a consortium of over three thousand libraries, key funding agencies and research centers in 44 countries and 3 intergovernmental organizations.

- The philosophy is simple: participating libraries redirect the money previously used for subscribing to the SCOAP^3 journals into a common fund that is used to pay APC of articles



SCOAP^3 – Sponsoring Consortium for Open Access Publishing in Particle Physics

- SCOAP^3 centrally pays publishers for costs involved in providing at least Green Open Access.
- Publishers, in turn, reduce subscription fees to all their customers, who can re-direct these funds to contribute to SCOAP^3.
- Working with leading publishers, SCOAP^3 has converted key journals in the field of High-Energy Physics to Open Access at no cost for authors.
- Singles journals are selected through public tender to cover the majority of HEP publications
- APC are re-discussed every 3 years ensuring competitive price
- Each country contributes in a way commensurate to its scientific output in the field.
- Italy participate with CRUI the Italian conference of the Rectors.



SCOAP^3 Tender Results
(alphabetical order)

Publisher	Journal	SCOAP^3 Articles (2011)	SCOAP^3 Percentage (2011)	APC*
APS	Physical Review D	2989	ALL	1900 USD
APS	Physical Review C	107	9.9%	1900 USD
Elsevier	Nuclear Physics B	284	ALL	1800 USD
Elsevier	Physics Letters B	1010	ALL	2000 USD
Hindawi	AHEP	28	ALL	1000 USD
IOPp/DPG	New Journal of Physics	20	2.7%	1000 GBP
IOPp/SISSA	JCAP	138	30.9%	1200 GBP
IOPp/CAS	Chinese Physics C	16	7.2%	1400 GBP
Jagellonian	Acta physica polonica B	23	22.1%	500 EUR
Springer/SISSA	JHEP	1652	ALL	1000 GBP
Springer/SIF	EPJC	326	ALL	1500 EUR
OUP/PSP	PTP	46	36.2%	1200 EUR

*APC = Article Processing Charges

SCOAP^3 – Sponsoring Consortium for Open Access Publishing in Particle Physics

- In table journals for the period 2017-2019
- The amount payed to each publisher is public
- 26000+ articles funded since 2014 with CC-BY license

Measurement of the charge asymmetry for the K S → π e ν decay and test of CPT symmetry with the KLOE detector

Anastasi, A. (Dipartimento di Scienze Matematiche e Informatiche, Scienze Fisiche e Scienze della Terra dell'Università di Messina, Messina, Italy) (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Babusci, D. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Berlowski, M. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) (0000 0001 0941 0848, National Centre for Nuclear Research, Warsaw, Poland) ; Bloise, C. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Bossi, F. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Branchini, P. (INFN Sezione di Roma Tre, Roma, Italy) ; Budano, A. (Dipartimento di Matematica e Fisica dell'Università "Roma Tre", Roma, Italy) (INFN Sezione di Roma Tre, Roma, Italy) ; Cao, B. (0000 0004 1936 9457, Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden) ; Capon, G. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Ceradini, F. (Dipartimento di Matematica e Fisica dell'Università "Roma Tre", Roma, Italy) (INFN Sezione di Roma Tre, Roma, Italy) ; Ciambrone, P. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Curciarello, F. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Czerwinski, E. (0000 0001 2162 9631, Institute of Physics, Jagiellonian University, Cracow, Poland) ; D'Agostini, G. (Dipartimento di Fisica dell'Università "Sapienza", Roma, Italy) (INFN Sezione di Roma, Roma, Italy) ; Dané, E. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Leo, V. (INFN Sezione di Roma Tor Vergata, Roma, Italy) ; Lucia, E. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Santis, A. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Simone, P. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Cicco, A. (Dipartimento di Matematica e Fisica dell'Università "Roma Tre", Roma, Italy) (INFN Sezione di Roma Tre, Roma, Italy) ; Domenico, A. (Dipartimento di Fisica dell'Università "Sapienza", Roma, Italy) (INFN Sezione di Roma, Roma, Italy) ; Domenici, D. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; D'Uffizi, A. (0000 0004 0648 0236, Laboratori Nazionali di Frascati dell'INFN, Frascati, Italy) ; Fantini, A. (Dipartimento di Fisica dell'Università "Tor Vergata", Roma, Italy) (INFN Sezione di Roma Tor Vergata, Roma, Italy) ; Fantini, G. (Gran Sasso Science Institute, L'Aquila, Italy) [...] Show all 60 authors

07 September 2018

Abstract: Using 1.63 fb −1 of integrated luminosity collected by the KLOE experiment about 7 × 10 4 K S → π ± e ∓ ν decays have been reconstructed. The measured value of the charge asymmetry for this decay is A S = (−4.9 ± 5.7 stat ± 2.6 syst) × 10 −3 , which is almost twice more precise than the previous KLOE result. The combination of these two measurements gives A S = (−3.8 ± 5.0 stat ± 2.6 syst) × 10 −3 and, together with the asymmetry of the K L semileptonic decay, provides significant tests of the CPT symmetry. The obtained results are in agreement with CPT invariance.

Published in: JHEP 1809 (2018) 021
Published by: Springer/SISSA
DOI: 10.1007/JHEP09(2018)021
arXiv: 1806.08654

Publisher	Journal	Article since 2014	SCOAP3 coverage
	Acta Physica Polonica B	82	8%
	Advanced in High Energy Physics	880	32%
IOP	Chinese Physics C	237	13%
Springer	The European Physics Journal C	3938	100%
Springer	The Journal of High Energy Physics	10924	100%
ELSEVIER	Nuclear Physics B	1688	100%
ELSEVIER	Physics Letter B	4689	100%
APS physics	Physics Review C	96	9%
APS physics	Physics Review D	2362	64%
APS physics	Physics Review Letter	316	10%
OXFORD JPS	Progress of Theoretical and Experimental Physics	424	43%

“cOAlition S” and “Plan S”

- Scoap^3 is up and working and it is a concrete example of action for Open Access

- HEP community is always working to find new solutions

- As stated in Budapest Open Access Initiative, results from public funded research must be open to everyone

- The ambitious initiative is the end of the reign of the paywalls

“cOAlition S” and “Plan S”

- On 4 September 2018, a group of national research funding organizations, with the support of the European Commission and the European Research Council (ERC), announced the launch of cOAlition S, an initiative to make full and immediate Open Access to research publications a reality.

- It is built around Plan S, which consists of one target and 10 principles.

National funders

01 Authors retain copyright of their publication with no restrictions. All publications must be published under an open license, preferably the Creative Commons Attribution Licence CC BY. In all cases, the license applied should fulfil the requirements defined by the Berlin Declaration;

02 The Funders will ensure jointly the establishment of robust criteria and requirements for the services that compliant high quality Open Access journals and Open Access platforms must provide;

03 In case such high quality Open Access journals or platforms do not yet exist, the Funders will, in a coordinated way, provide incentives to establish and support them when appropriate; support will also be provided for Open Access infrastructures where necessary;

04 Where applicable, Open Access publication fees are covered by the Funders or universities, not by individual researchers; it is acknowledged that all scientists should be able to publish their work Open Access even if their institutions have limited means;

05 When Open Access publication fees are applied, their funding is standardised and capped (across Europe);

06 The Funders will ask universities, research organisations, and libraries to align their policies and strategies, notably to ensure transparency;

07 The above principles shall apply to all types of scholarly publications, but it is understood that the timeline to achieve Open Access for monographs and books may be longer than 1 January 2020;

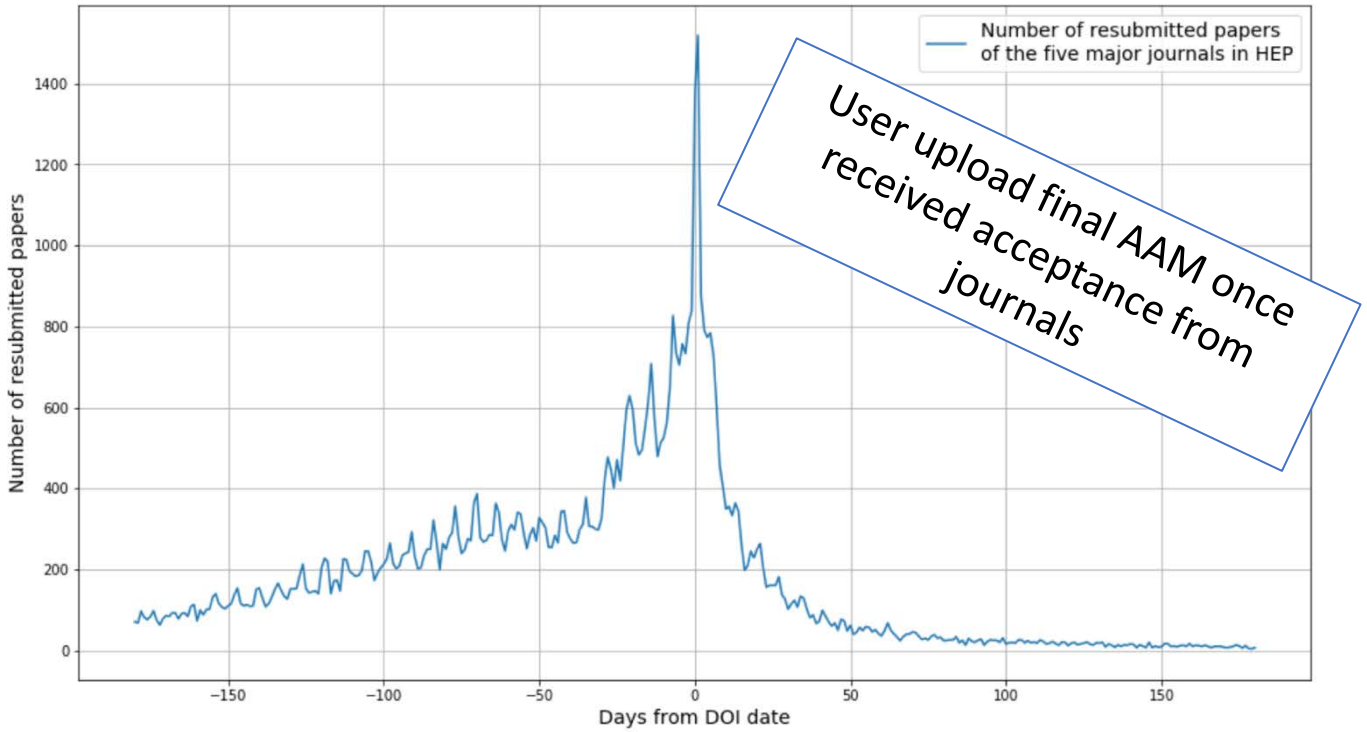
08 The importance of open archives and repositories for hosting research outputs is acknowledged because of their long-term archiving function and their potential for editorial innovation;

09 The ‘hybrid’ model of publishing is not compliant with the above principles;

10 The Funders will monitor compliance and sanction non-compliance.

“cOAlition S” and “Plan S”

- No publication on journal with double dipping
- Maximum APC discussed
- Support mechanisms for establishing Open Access journals, platforms, and infrastructures where necessary in order to provide routes to open access publication in all disciplines
- **Immediate publication on repositories/archives certified and open access**
- For HEP we already have the arXiv.org the e-print archive managed by Cornell University funded in 1991

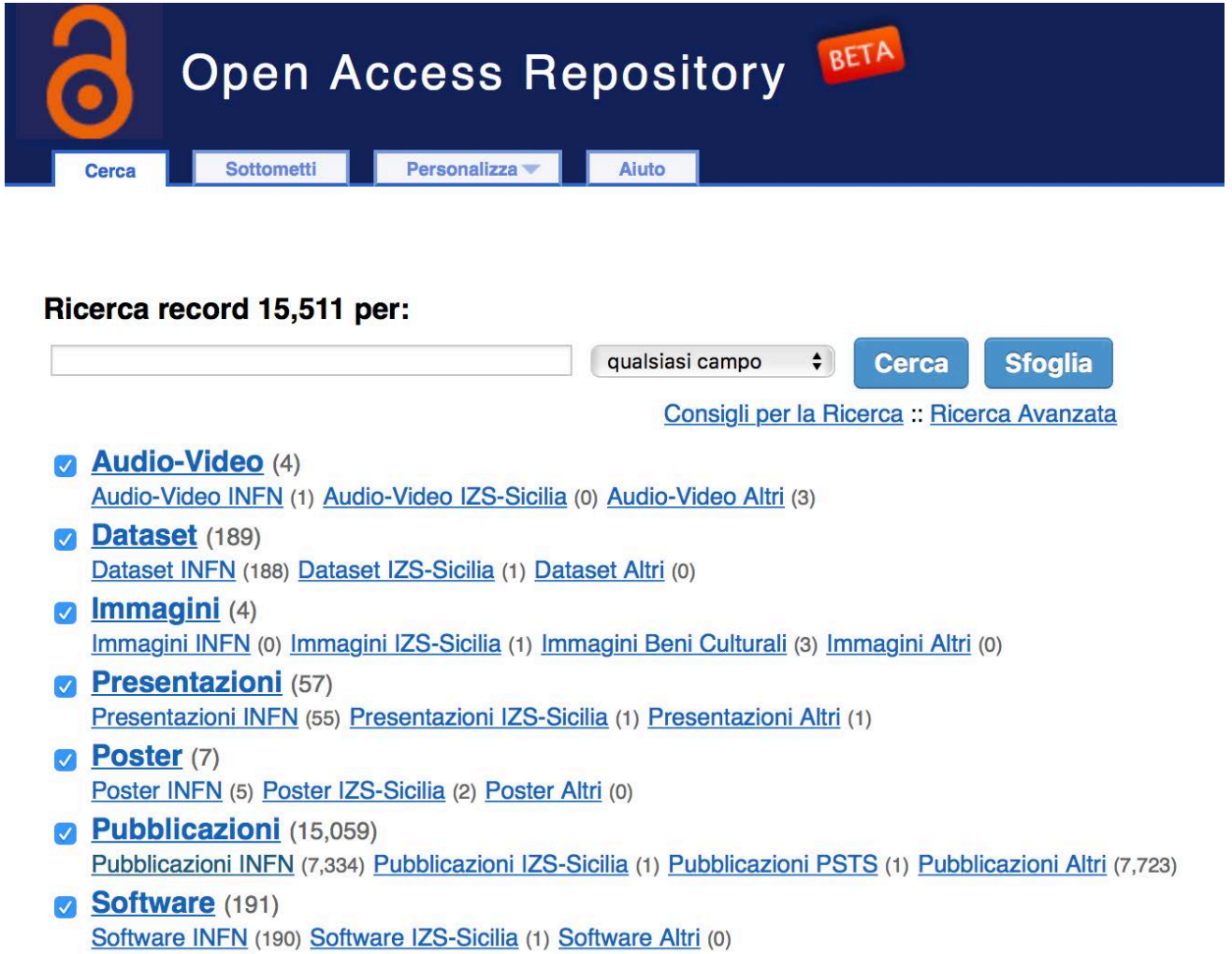


- In this mechanism authors published the Author’s Accepted Manuscripts (AAM) when peer review is finished
- about 110K preprint later published in PLB, NPB, JHEP, EPJC, PRD 1992-2016

“cOAlition S” and “Plan S”

- INFN is building his own database
- PlanS support the San Francisco declaration on research assessment (SF DORA) that asks for no journal-based metrics to evaluate researchers, distribute funding, promotions, etc.
- **Research should be evaluated on its own merits rather than on the basis of the journal in which the research is published**

Sign DORA



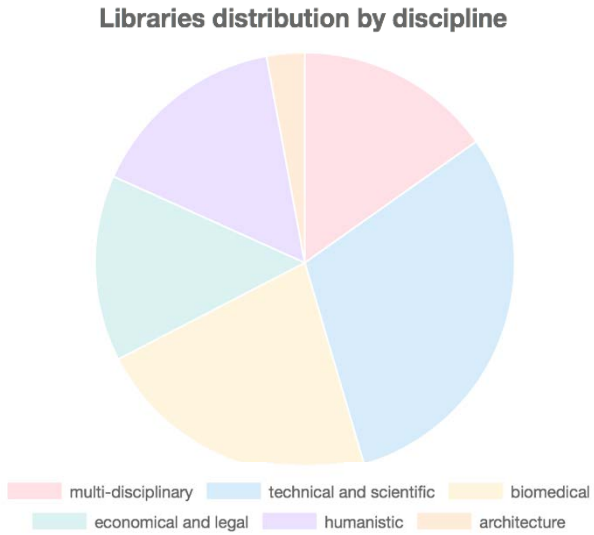
Other “solutions”

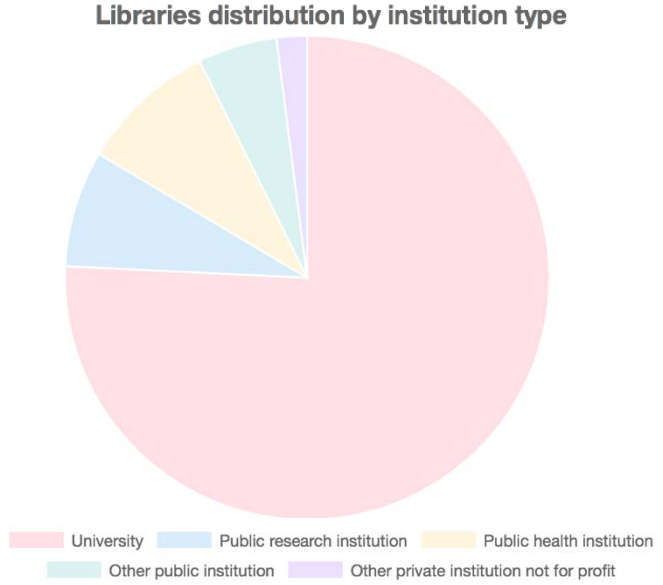
- Obviously, work for OA publication is the most important goal of every initiative
- In the meanwhile, to have access to scientific publication, a different “trick” used is NILDE
- NILDE is a consortium of libraries born in Italian CNR to permit the documents delivery
- CNR is itself a consortium of various public research institutes economically independent that very often have single subscription with editors and journals
- NILDE was born to put these libraries in contact!

NILDE World
Network Inter-Library Document Exchange

Other “solutions”

- A researcher goes to one library of the consortium and ask for an article
- The library staff fill a module with all references
- All libraries of the consortium receive an alert and if one has the subscription to the specific journal/year/volume the document could be shared
- At this point, using a software, the library prepare the Digital Hard Copy of the paper, a PNG 200 dpi image with less quality of the original
- The DHC is sent to the requesting library that print the file, give to the requester the paper copy and erase the electronic version
- In this process it is of fundamental importance the contract with the editor permitting the DHC
- Nilde is not a repository nor a database is a Document Delivery Service to make scientific papers available for associated researchers





Conclusions

- We have two different point of views to be considered in this business: the possibility for researchers to publish and the possibility for researchers to read publications

- USGM is a “good” example of the “worst” situation

- Nowadays, Open Access is not a formal exercise but a NECESSITY

- HEP community is always involved to find new solutions at this problem

- A collaboration between universities, research centers, funding agencies, different scientific sectors and …. **Editors**, is mandatory to find the best suitable solution

- **MINERVA is important for USGM to share experiences and find novel solutions**