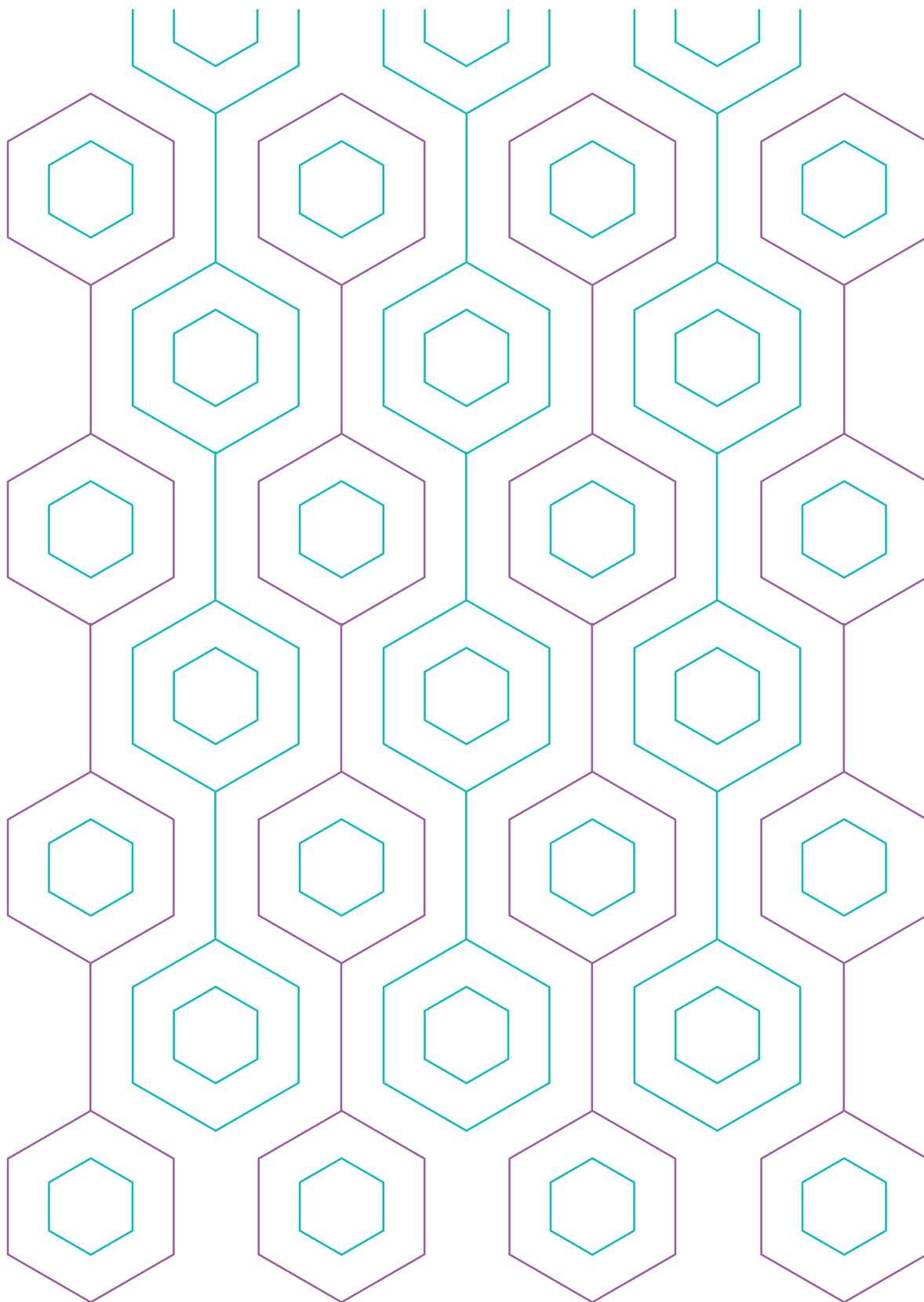


SIS Activity Report **2022**



Scientific
Information
Service



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WELCOME MESSAGE

CERN was created to bring together scientists from different nations to collaborate and advance the frontiers of human knowledge for the benefit of all. This noble idea has never been outdated and is more important today than ever before. CERN sets the example for international collaboration and is committed to openly and freely sharing its findings for all of humanity. The Scientific Information Service (SIS) plays a vital role in this endeavour. The team constantly seeks opportunities to make it easier and more efficient to exchange scientific information for the CERN community, and to make our knowledge accessible and discoverable.

As you will read in this report, the SIS team worked on a wide range of projects during the year 2022, to advance our mission to efficiently manage, preserve and disseminate scientific information to make it openly accessible and reusable to CERN and the worldwide High-Energy Physics (HEP) community. CERN's largest collaboration (in terms of member institutions), the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP3) continues to drive open access to scientific publications in particle physics. INSPIRE expanded its scientific scope and has made it easier for researchers to find relevant information. The CERN Open Science Policy creates a framework for openness across all aspects of scientific practices. The CERN Library undergoes a major renovation and the SIS Archive team is working with the CERN accelerator community to digitise all the historic documentation related to the early machines of the CERN accelerator complex. All of the projects follow this one overarching objective: to accelerate the exchange of knowledge. This is not only an important goal in itself, it also serves as a permanent motivation and inspiration for the entire team, as the benefits are immediately visible for CERN researchers. But how can we measure the wider global impact of our work? This is one of the ongoing challenges that the SIS team—together with colleagues from all across CERN—will continue to explore, particularly relating to the implementation of the CERN Open Science policy and the development of meaningful KPIs to measure its success. Creating the organisational and technical environment for openness, promoting these principles, and measuring success: these are all domains SIS is now actively involved in. And we have only just started...



Alexander Kohls
Group Leader Scientific Information Service

2022 HIGHLIGHTS

CERN'S FIRST EVER OPEN SCIENCE POLICY

Open Science has a long tradition at CERN. Since CERN's creation almost 70 years ago, researchers have openly shared their scientific results. Countless open-source initiatives were born out of CERN (including the World Wide Web) and with SCOAP3, CERN pioneered Open Access to peer-reviewed scientific articles at no cost to authors. But all these efforts were born from initiatives of open science enthusiasts around the Organization. In 2022, the Open Science team of the Scientific Information Service brought all these experts together to formulate a holistic and progressive Open Science policy for CERN. Following months of deliberation and ultimate presentation to the CERN Council in September 2022, CERN's inaugural Open Science Policy was formally adopted on October 1st, 2022. Read more on page 14.

SCOAP3 FOR BOOKS: THE PILOT GROWS UP

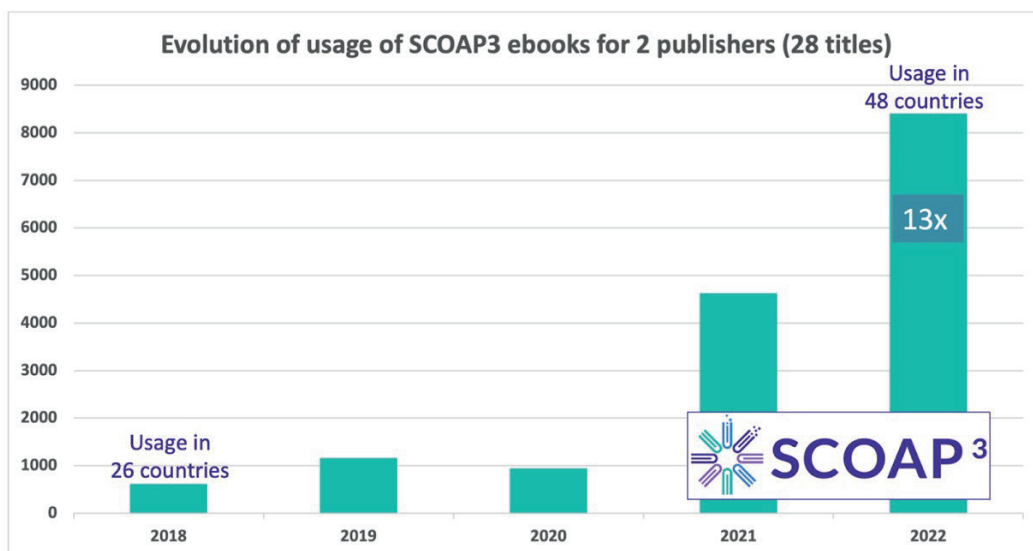
While the SCOAP3 Collaboration was preparing its strategy for the next contract cycle for the journal programme, the successful SCOAP3 For Books pilot began to deliver some concrete results. With around 60 monographs and textbooks being converted already to Open Access, a preliminary usage analysis (using the 28 first books in the pilot by two publishers) demonstrated a tremendous increase in book downloads (+1200% compared to the years before conversion to OA). These increased downloads represented a much wider global readership: while before readers from 26 countries consumed the titles, the same books enjoyed readership across 48 countries. Based on these impressive results, the SCOAP3 Governing Council approved a new proposal to implement an ongoing OA Books programme as part of the collaboration's activities. Read more on page 17.

LIBRARY RENOVATION UNDERWAY

The library reading room is the most visible service of the SIS group at CERN. It is the central place at CERN for users and visitors to sit down and study or work. For several years now, the library team has prepared for the renovation of the 65-year-old premises. Following a thorough preparatory phase which involved user surveys, generation of usage statistics, and advice from specialized interior architects, renovation works commenced on October 4th, 2022 and are now progressing well. The work entails a complete renovation and installation of new modern equipment, but also a redesign of the space to meet today's needs. The new library and bookshop will open for the CERN community in autumn of 2023. Read more on page 11.



First stone ceremony

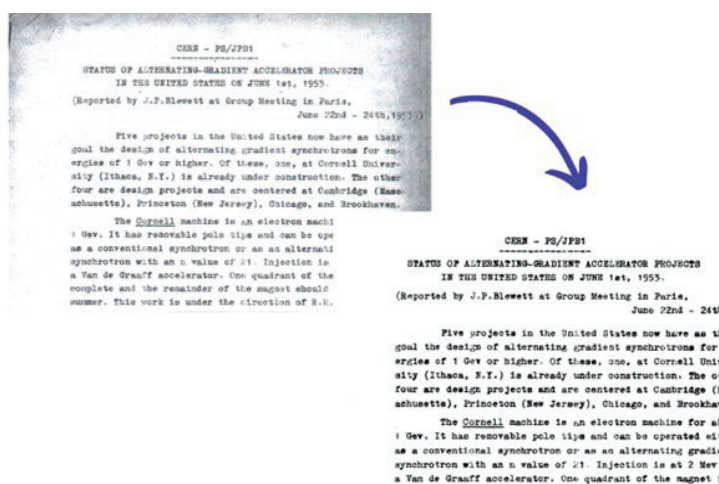


SCOAP3 ebooks usage

ARCHIVE

PS DIGITIZATION PROJECT

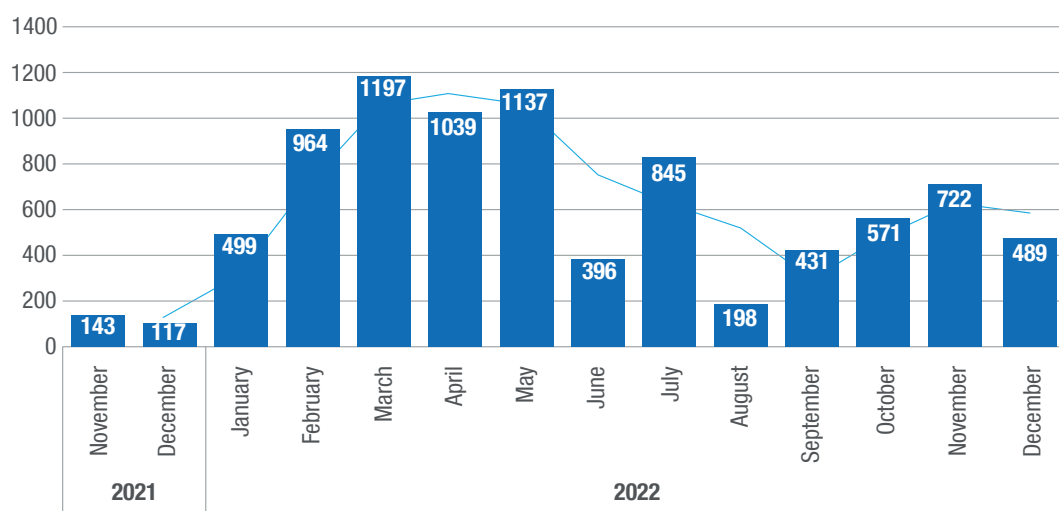
The Proton Synchrotron digitization project commenced in 2021 with the aim to make the PS archives available online for the benefit of the researchers and the entire community. Documents are scanned with significant work of cleaning (see Fig. 1) and adding OCR functionality (text recognition) to the PDFs, as well as the addition of metadata in MARCXML format and a master copy in TIFF format.



Digitisation example

New digitized documents are processed every month (see Fig. 2) and after checking the metadata, all records are uploaded to the [CERN Document Server](#) thanks to a collaboration between the Archive & Library and Tools & Services sections at SIS with the CERN IT team.

Amount of records per month



Digitised records per month

The PS collection contains approximately 20,000 documents and 260,000 pages in total. 8,749 records are online now in the [CERN Document Server](#), representing 97,046 digitized pages.

The collection has been divided into 3 batches. Batch number 1 has been scanned and processing of files and records is in progress. Batch number 2 will be scanned in 2023.

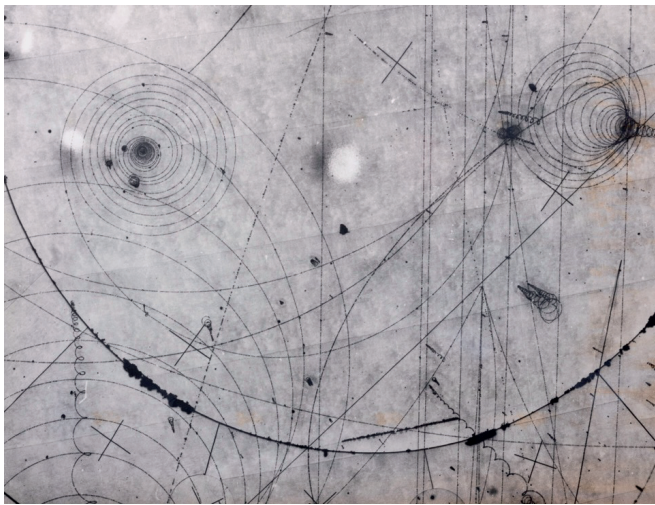
- Batch No. 1: 11,038 documents;
- Batch No. 2: 4,224 documents;
- Batch No. 3: a third and last batch is planned for the end of 2023/beginning of 2024.

Links between the archival records and the full-text documents allow users to navigate via the [structure of the PS document collection](#); a navigation by groups/series has also been implemented in the [PS Archive collection](#).

EXHIBITIONS IN BOLOGNA AND ESSEN

Bubble chamber photographs have been loaned for the exhibitions 'Image Capital' by the artists Estelle Blaschke and Armin Linke about the history and present of photography and 'its myriad utilitarian uses and its function as an information technology, creating, processing and securing the flow of visual information/data'. One of the questions raised by the exhibition was: 'what role do archives and organizational systems play in not only preserving photographic 'data' but of generating new information and potentially new insights?'

<https://image-capital.com/>



Bubble chamber photographs

SOME FACTS & FIGURES ABOUT THE ARCHIVE IN 2022

365 NEW ENTRIES IN THE ARCHIVE DATABASE (CATALOGING AND PHYSICAL TREATMENT)

53 ENQUIRIES & VISITS (OF WHICH SOME LASTED FOR MORE THAN A WEEK WITH UP TO THREE RESEARCHERS IN THE GROUP)

10 NEW COLLECTIONS ACQUIRED

CURATION OF HISTORICAL PHOTOS

The curation of the historical photo-collection is ongoing. The progress is slow, but steady—it is simply a function of the available resources and the volume of images to sort out. However, having worked with the collection for a long time, the Archive staff can now upon request from users, in most cases, easily find the requested material even if it is not yet curated.

The pictures below show James Randi presenting his show "The search for the Chimera" at the CERN Colloquium, Thursday 6 June 1991. Randi was a magician, author and scientific sceptic who extensively challenged paranormal and pseudo-scientific claims—clearly well appreciated by CERN colleagues at the time.



James Randi pictures

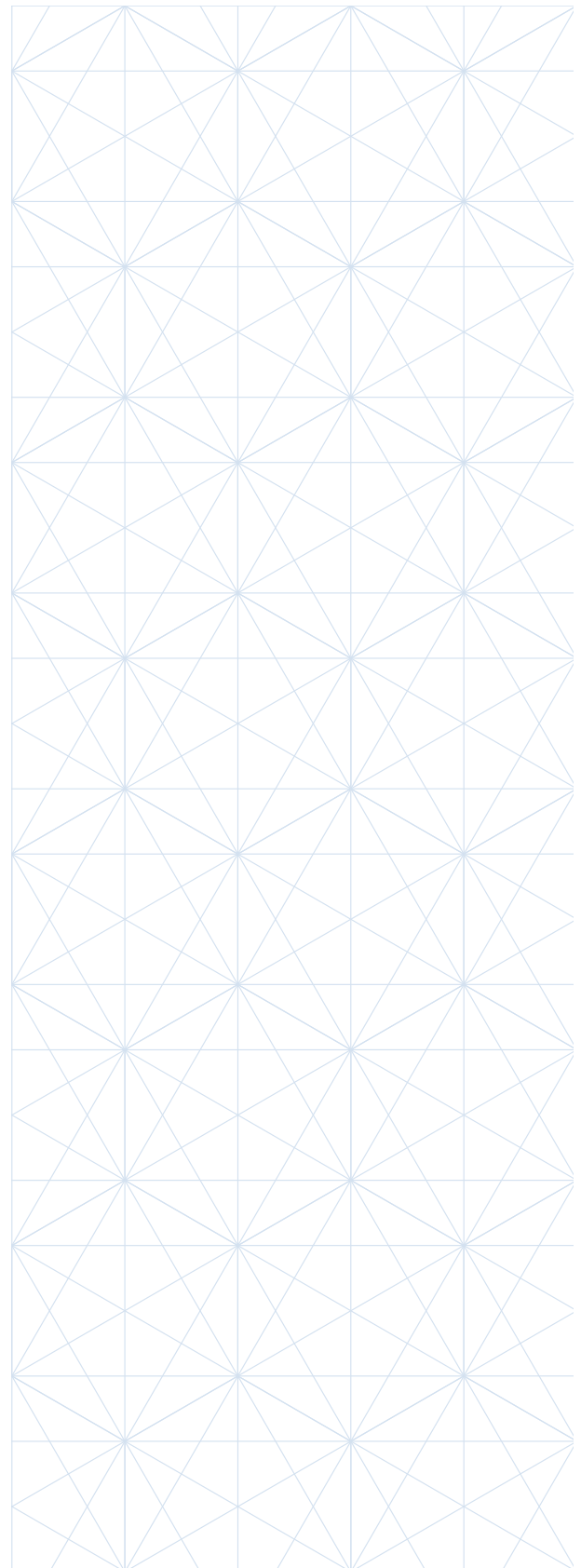
CERN ANALYSIS PRESERVATION

In 2022, CERN Analysis Preservation was primarily focused on technical consolidation and furthering adoption across the community. The User Interface of the platform was changed to a new front-end technology, Ant. Alongside this, several improvements to the interfaces were done. Furthermore, several user tests were conducted to improve the navigation and documentation of the site.

Following the consolidation, the team held conversations with smaller experiments at CERN to showcase the potential of the tool to manage and preserve the experimental analyses. The on-boarding process of FASER advanced during the year, and is awaiting approval to start using it. Similarly, on-boarding steps for the ALICE and SND experiments are underway.

To ease adoption in the experiments, the “admin panel” has been developed to allow editors or managers within the experiment to revise protocols for processes or analysis elements more broadly. The admin panel has been updated to Ant in 2022 and will continue to be revised in 2023.

<http://analysispreservation.cern.ch/>



INSPIRE

After a transformative year 2021 characterized by saying goodbye to the old INSPIRE platform and fully transitioning to our new website, in 2022 the focus was mostly on consolidation. A series of changes were made to reinstate important functionality that existed on the old platform, but were not ready in time for the initial launch of the new service, as well as some smaller changes to improve usability.

AUTHOR CLAIMING AND RE-DISAMBIGUATION

Author profiles are one of the cornerstones of INSPIRE. For them to be most useful, they should accurately list the publications of a given author. Processes automatically assign papers to author profiles based on ID and name-matching algorithms (also termed “author disambiguation”). Unfortunately, no system of name matching is perfect, and sometimes papers do not end up in the correct author profiles. To solve this problem, a new tool was introduced allowing users to claim or remove papers from their author profiles.

Additionally, a large number of authors on papers had been processed by the old (and quite rudimentary) disambiguation system and were no longer assigned to any author profile. These were all re-processed with the new and improved disambiguation system. This improves the quality of the author profiles, and allows them to be manually claimed in case the automated processing falls short.

237 results | cite all claim Most Recent ▾

Black Hole Entropy and Soft Hair #1
[Sasha Haco](#) (Cambridge U., DAMTP and Harvard U. and Radcliffe Coll.), [Stephen W. Hawking](#) (Cambridge U., DAMTP and Harvard U. and Radcliffe Coll.), [Malcolm J. Perry](#) (Cambridge U., DAMTP and Harvard U. and Radcliffe Coll.), [Andrew Strominger](#) (Harvard U.) (Oct 3, 2018)
Published in: *JHEP* 12 (2018) 098 • e-Print: [1810.01847](#) [hep-th]
 pdf links DOI cite claim 103 citations

Should China build the Great Collider? #2
[Stephen Hawking](#) (Cambridge U., DAMTP), [Gordon Kane](#) (Michigan U., MCTP) (Apr 2, 2018)
Published in: *ICCM Not.* 06 (2018) 1, 31-34 • e-Print: [1804.00682](#) [physics.soc-ph]
 pdf DOI cite claim 0 citations

Move to my profile

Screenshot of an author profile showcasing the new claiming functionality

FULL-TEXT SEARCH

The default search in INSPIRE operates on the metadata only (e.g. title, abstract, authors, subject, etc.), not the complete full-text of a paper. While this is usually sufficient—as the metadata captures the most important characteristics to describe a paper—for some more advanced uses the metadata is insufficient and it is necessary to have search capabilities that encompass the full-text. This feature was added to INSPIRE, allowing users to search within more than 700k PDFs available on INSPIRE (arXiv e-prints, theses, Open Access publications).

The screenshot shows the INSPIRE search interface. The search bar contains the query "fulltext 'machine learning' and primarch hep-th". The search results are displayed in a list format. The first result is "CYJAX: A package for Calabi-Yau metrics with JAX" by Mathis Gerdes, Sven Krippendorf, and others, dated Nov 22, 2022. The second result is "Machine Learned Calabi-Yau Metrics and Curvature" by Per Berglund, Giorgi Butbaia, Tristan Hübsch, Vishnu Jejjala, and Damián Mayorga Peña et al., dated Nov 17, 2022. The interface includes a navigation menu with options like Literature, Authors, Jobs, Seminars, Conferences, and More... There are also filters for the number of authors and options to exclude RPP. A feedback button is visible on the right side.

Screenshot of a fulltext search combined with a regular keyword search

VARIOUS IMPROVEMENTS

In addition to these large new features, we have continuously been releasing smaller improvements to fix bugs and improve the quality of service. A couple of highlights include:

- A simple way to search in references of a paper thanks to the “reference search” button
- Better integration with PDG by displaying PDG keywords and linking back to PDGLive

On the content side, we have ingested 66,000 new papers, bringing the total to more than 1.5 million, and we are tracking 30 million citations between them.

BETTER CORE GUESSER

These improvements to the INSPIRE collections were facilitated by behind-the-scenes enhancements of the record selection process. INSPIRE receives daily a large number of articles from arXiv and various publishers, of which only a fraction is relevant for HEP. A new machine learning classifier has been now added to predict whether a given paper is interesting for INSPIRE (“core” HEP) in order to make the selection more accurate and efficient.

LIBRARY

LIBRARY RENOVATION

The Library renovation work commenced on October 4th, 2022. Prior to that, a massive amount of work was completed to reorganize the underground storage areas to carefully preserve the Library collections during the renovation. This includes the storage of preprints, formerly housed in the well-known red filing cabinets that used to line the hallway along the entrance to the Library. This precious collection is now arranged in 1,884 archival boxes and is kept in the Library depots.



Red cabinets - Preprint collection



Archived preprints

Moreover, bound periodicals and books stored in the underground areas were rearranged to make space for those moved from the 1st floor of building 52. In total, more than 50,000 books were relocated.



Depot



Library under renovation

Although the closing of the Library premises is temporary, a solution had to be found to ensure some essential services continued to be delivered to the CERN community. In order to guarantee some uninterrupted services until the end of work (foreseen for autumn 2023), several measures were put into place.

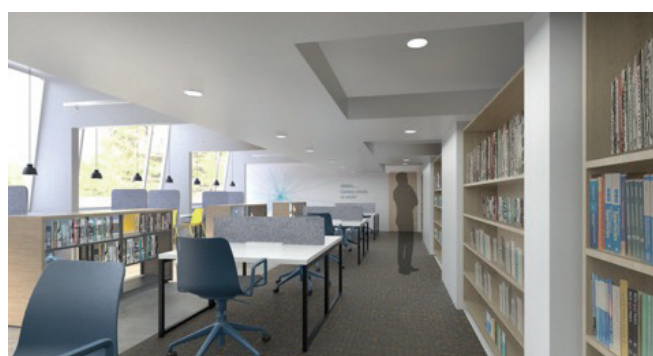
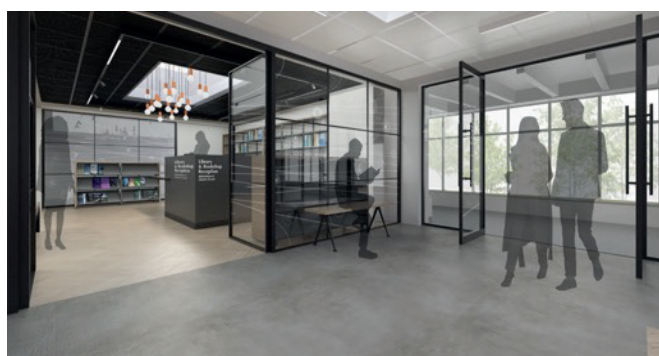
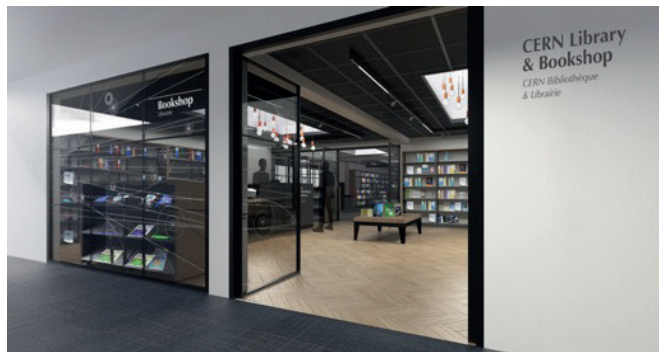
A small temporary library with a selection of the most used and essential books has been set up in room 3/1-015. It offers around 1,500 books and is available 24/7.

Other books are available upon request from the welcome desk or online through the [CERN Library Catalogue](#). The opening hours of the welcome desk are the same as before the closure (Monday to Friday 9am to 5pm). The Bookshop has moved to room 3/1-011 and has the same opening hours.

In parallel with the move of the Library collections, detailed preparations were made regarding specifications for the procurement of furniture for the new Library and Bookshop,

paying specific attention to aspects such as ergonomics, usability, modularity, durability, and modernity. The discussions about the signage for the new Library are still ongoing in cooperation with the Design and Visual Identity Service. Our goal is to offer our users an enjoyable experience and a modern, functional workspace in the renovated Library.

Designed by the architecture firm Bisset Adams, which worked closely with the CERN Site and Civil Engineering (SCE) department and in accordance with the requirements of the Scientific Information service, the visuals below display the look and feel of the future CERN Library.



LIBRARY EVENTS IN 2022

Beside the traditional book fairs, the Library also organized several book presentations:

- “A modern primer in particle and nuclear physics” by Francesco Terranova
- “Your adventures at CERN” by Letizia Diamante, illustrated by Claudia Flandoli
- “Schöne Ungeheuer”, von Wilfried Steiner

Three presentations of book titles on sale at the Bookshop took place in the framework of the Italian Teachers’ Week.

Four Library Science Talks, co-organized by CERN, The Zentralbibliothek Zürich and AILIS (Association of International Librarians and Information Specialists) took place in 2022:

- “Library UX: Transitioning from physical to online” from Aimee Andersen and Sinead Beverland (Westminster Universities Libraries).
- “Do we still need public libraries?” from Knut Skansen (Library Director, Deichman Library)
- “Leveraging data communities to advance Open Science” from Danielle Cooper (Ithaka S+R, New York)
- “The WHO COVID-19 Research Database: behind the scenes of a super powerful tool!” from José Luis Garnica Carreño (World Health Organization)

Two Colloquia were arranged in cooperation with the Colloquium Panel:

- Prof. Daniel Kahneman (Princeton University) talked on topics around the book “Noise: a flaw in human judgment”
- David Quammen talked about “From spillover to pandemic”

SOME FACTS & FIGURES ABOUT THE LIBRARY IN 2022

4,711 RECORDS CURATED IN [INSPIRE](#) BY SIS CATALOGERS

7,559 RECORDS CURATED IN THE [CERN DOCUMENT SERVER](#) BY SIS CATALOGERS

1,207 INSPIRE TICKETS RESOLVED BY SIS CATALOGERS

1,057 SERVICE-NOW TICKETS RESOLVED BY THE LIBRARY TEAM

2,016 PDG BOOKLETS AND REVIEWS SENT

16,816 DOCUMENTS ADDED IN THE [CERN LIBRARY CATALOGUE](#)

1,007 LITERATURE REQUESTS PROCESSED

OPEN ACCESS

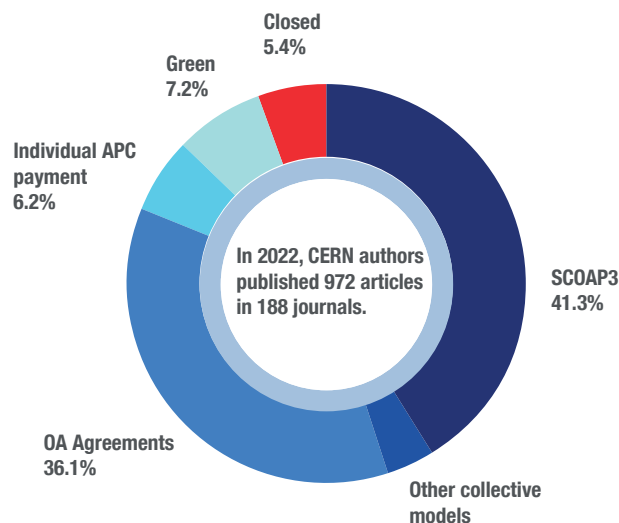
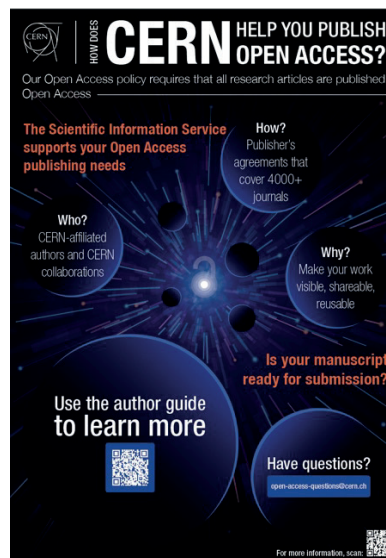
Since it was first formulated in 2014, the CERN Open Access policy has been implemented by SIS, which has put a number of measures in place to assist CERN authors to meet the requirement to publish their research papers open access (OA). This is now a standard practice at CERN, and through the range of enabling mechanisms, in 2022, 95% of the articles published by CERN authors or collaborations are published fully Open Access.

The mechanisms instituted by SIS are designed to make it as easy as possible for CERN authors to comply with the OA policy. The well-established Sponsoring Consortium for Open Access Publishing in Particle Physics remains the easiest way for authors to publish OA in the field of High Energy Physics. CERN is also a strong supporter of other collective models, where OA is made possible by a sponsorship model, such as SciPost or the journal Physical review Accelerators and Beams published by APS. Since 2020, CERN SIS has also entered into several so-called 'Read & Publish' (R&P) agreements with publishers, where the agreements are negotiated to allow OA publishing rights for CERN authors alongside access rights to read paywalled content. In 2022, thanks to the Swiss Consortium of Academic Libraries—of which CERN is a member—SIS entered into 2 more R&P deals with the Association for Computing Machinery (ACM) and the American Chemical Society (ACS). CERN SIS has now 9 similar agreements, which cover more than 4,000 journals. The IOP agreement, initiated in 2020 and closing at the end of 2022, could be successfully renegotiated for 2023. Thanks to all those mechanisms, CERN authors have a wide range of possibilities to publish their articles OA. The CERN author guide, an online tool maintained by SIS to help CERN authors find information about the Open Access mechanisms available to them, had around 40 user visits per month on average.

In order to progress towards the ultimate goal of all CERN research articles being published OA, in 2022 a number of concerted communication efforts were undertaken to try to reduce the number of articles published in subscription-based journals. In the context of a group-wide project on Communication & Outreach, interviews were conducted with authors to understand how awareness about the OA publishing options and range of mechanisms at CERN could be improved and made more efficient.

As part of these efforts, SIS decided to organize an online event dedicated for the CERN community during International Open Access Week 2022 (24 to 28 October 2022). The event featured talks on a range of diverse topics, from the historical perspective of OA at CERN, to practical sessions to support CERN authors in publishing their work OA. The event also featured talks from representatives from 10 publishers of journals relevant for the CERN community, who showcased their latest initiatives for HEP-relevant disciplines and their agreements with SIS to support Open Access for the CERN community. This event was recorded and the related material is available online:

<https://indico.cern.ch/event/1179488/>



OA share of CERN publications

OPEN SCIENCE

On October 1st, 2022, CERN approved its inaugural policy for open science, that aims to make all CERN research fully accessible, inclusive, democratic and transparent, for both other researchers and wider society. The policy development process—coordinated by SIS—was entrusted to the Open Science Strategy Working Group (OSWG), a multi-stakeholder group consisting of representatives across CERN departments and the experiments. Drawing on existing initiatives, the working group designed comprehensive guidelines for the CERN community on sharing its research within a new framework for open science. Published alongside the policy document is a dedicated website explaining all the open science initiatives at CERN.

The completed policy follows the 2020 update of the European Strategy for Particle Physics, which highlighted the importance of open science, and UNESCO's Recommendation on Open Science, published in 2021. Open science has always been one of CERN's key values, dating back to the signing of the CERN Convention at UNESCO in 1952. Because of this, initiatives at CERN have continually strived for research transparency and accessibility for the benefit of science and society.

The new policy encompasses the existing policies for open access, open data and open source software and hardware, which make all research papers, experimental data and research software and hardware publicly available. It also brings together other existing elements of open science – research integrity, open infrastructure and research assessment, which make research reliable and reproducible – and training, outreach and citizen science, which aim to educate and create dialogue with the next generation of researchers and the public.

CERN's new Open Science Policy heralds a new era in knowledge sharing. The OSWG will continue to assess the practice of open science at CERN, and will revisit the policy frequently to ensure it remains at the forefront of the dynamic open science landscape. Alongside this, a new open science report will be published every two years, to demonstrate CERN's continued commitment to the initiative. Furthermore, as directed by the European Strategy for Particle Physics, SIS will initiate engagement with other particle physics labs across Europe (and beyond) to advance the adoption of open science policies and practices.

Following the development and approval of the Open Science Policy, the Open Science Working Group discussed how to implement the objectives set out in the policy. During several meetings of the OSWG, measures for each of the chapters of the OS policy were discussed and revised. The revision of the implementation details for each chapter was

led by 1-3 designated contributors based on their relevant expertise, while everyone in the working group participated in the process. A first consolidated version was submitted for review to the Directorate of Research and Computing mid November, following the feedback a revised version was submitted before the end-of-year break. Following approval of the new version in 2023, the implementation plan will also be made publicly available. The OSWG will continuously work on its refinement over the course of the coming years.

As part of the Open Science Policy implementation efforts, CERN signed the [Agreement on Reforming Research Assessment](#), as one of the early signatories in September 2022 and subsequently joined the Coalition for Advancing Research Assessment ([CoARA](#)) by participating in its constituting assembly on 1st of December 2022. SIS is coordinating the implementation efforts in order to implement the CoARA recommendations for a fair and transparent assessment of research projects and scientists. As a next step, a CERN-internal working group will be established to bring together researchers of all career levels with the CERN management, alongside recruitment and assessment experts of the Organization.

<https://openscience.cern/>



PROJECTS

During 2022, SIS engaged in three major group-wide projects where members from across all teams participated. All three projects are longer-term, i.e. will deliver results only in the following years, but all delivered already on important milestones.

SCIENTIFIC INFORMATION LANDSCAPE PROJECT

The CERN Scientific Information Service launched an extensive study of the as-is situation of CERN's information management. This was prompted by the complexity of the scientific information landscape at CERN: Several platforms (CDS, INSPIRE, Zenodo, Indico, EDMS, arXiv etc.) with overlapping functionalities have grown organically over time onto a patchwork that can be confusing for users within the CERN community and difficult to manage by CERN SIS.

The main goal of the initiative was to assess the current situation through stakeholder engagement to propose a holistic vision of a future scientific information landscape. The scope of the project was limited to mainly focus on scientific information in all its forms (preprints, published articles, conference papers, theses, public reports, public notes, code and datasets, etc.) to the exclusion of technical documentation necessary for the operation of CERN facilities like hardware baseline documents, engineering drawings, specifications, installation procedures, configuration items, etc., as well as administrative documents such as operational circulars or policies.

In a first phase, the SIS team summarised the key outcomes and recommendations of the stakeholder interactions in an interim [report](#), which will serve as a basis for developing a concrete architecture proposal and technical implementation plan in collaboration with the CERN IT department. This proposal will be once again shared with the stakeholders, to then create a unified proposal that could be submitted to the CERN management for consideration.

HOLISTIC SIS MONITORING FRAMEWORK

The SIS Monitoring Project aims to identify specific metrics and indicators to monitor SIS projects and services, establish mechanisms for their regular data collection, and report to relevant stakeholders.

The project followed a structured approach with six steps, which included defining the SIS projects and parameters, representing Key Performance Indicators (KPIs) and stakeholders, selecting KPIs for the group, defining technical solutions, and implementing the solution.

As a result of the project, the team developed two fully functional systems using open-source tools and integrated the KPIs for the INSPIREHep project as a test case. In 2023, the team will assess the systems and choose the most efficient monitoring of SIS projects and services to provide the necessary information to stakeholders promptly.

This project is an important step forward for our group to have a common place to measure different activities, leading to greater efficiency and accuracy in SIS projects and services.

SIS COMMUNICATION, EDUCATION AND OUTREACH STRATEGY

The Scientific Information Service started a reflection on its communication, education and outreach strategy to promote our services and how we can help our community.

As a first step, a series of interviews with various members of the CERN research community were conducted in order to understand the needs and gaps in terms of communicating about SIS services. These interviews evaluated two aspects: the awareness of Library and Open Access services, and the communication channels used by potential users. The conclusion was a general lack of awareness of available SIS services and how they could support researchers. At the same time, potential users of the services are already overwhelmed with information and hence need to receive relevant information at the right time and directly at their workplace.

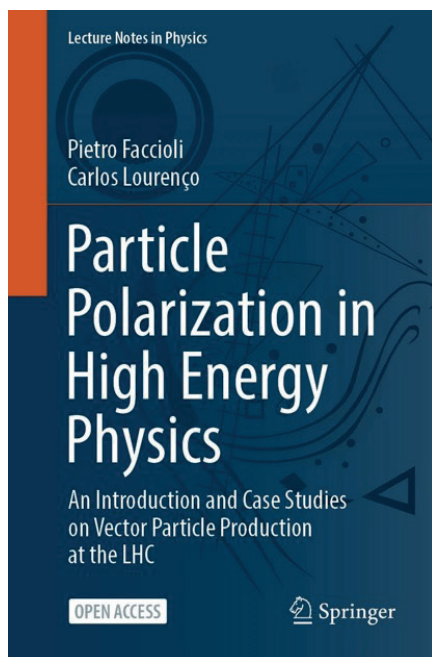
Based on these findings, the SIS project team is developing a communication strategy for the group and for each service which includes the goals, target audience, narratives, challenges, as well as concrete communication activities and related KPIs to evaluate their impact.

As a first concrete result, SIS reinforced some targeted communication in parallel to the strategy development efforts. For the first time, CERN participated in the global celebration of Open Access Week by running a series of webinars in October 2022. SIS also increased its presence during the onboarding sessions for new staff members of CERN.

PUBLISHING

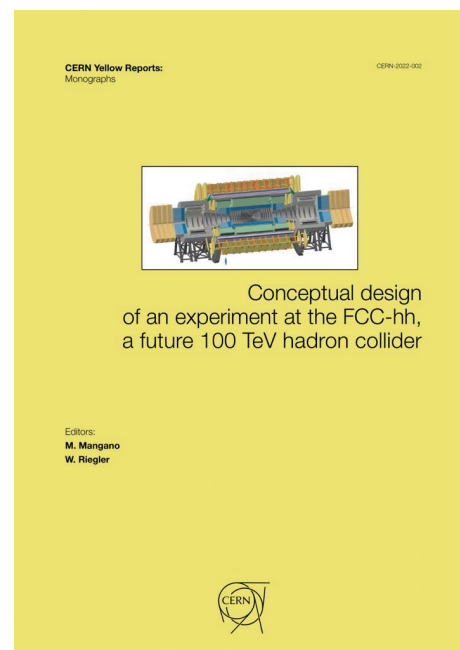
In addition to cover the publication fees for the publication of the many regular open access articles, financial and administrative support was provided for two special journal issues and one monograph during 2022. The collections “[Top quark at the new physics frontier](#)” (Universe) and “[Focus Point on High-Energy Accelerators: Advances, Challenges, and Applications](#)” (European Physical Journal Plus) are both expected to contribute to a better literature coverage in their respective fields. E. Yazgan and P. Ferreira da Silva are editors of the special Universe issue, aiming to provide a comprehensive review of the current status and prospects of top quark physics at the LHC and possible future colliders. The EPJ Plus issue—attempting to cover a broad domain of topics in beam physics, with a loose classification into three categories of advances, challenges, and applications—is edited by R. B. Appleby, A. Bazzani, M. Giovannozzi and E. Levichev.

The monograph “[Particle polarization in high energy physics](#)” (Lecture Notes in Physics) is authored by P. Faccioli and C. Lourenço. The authors target an audience of graduate students, post-docs, and other researchers involved in analyses of LHC data. The book is meant to help establish a solid bridge between high precision data and accurate measurements, including high-sensitivity tests of the Standard Model. The take-up has been remarkable, only a few months after publication close to 9000 chapter downloads have been recorded on the publisher’s platform.



The CERN Physics Schools were not organized during the pandemic. Hence, in 2022 no issues in the series “CERN Yellow Reports: School Proceedings” have been published. In the series “CERN Yellow Reports: Monographs” the following two issues were published: “[European Strategy for Particle Physics - Accelerator R&D Roadmap](#)” (Ed. N. Mounet) and “[Conceptual design of an experiment at the FCC-hh, a future 100 TeV hadron collider](#)” (Eds. M. Mangano and W. Riegler).

Both these reports are important strategic inputs to shape the future of particle physics.



SCOAP3

During the course of 2022, the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP3)—the world’s largest disciplinary open access initiative—reached the milestone of over 50’000 research articles published. Through partnerships with 11 leading journals, SCOAP3 has effectively transitioned the vast majority of research articles in the discipline to perpetual OA since 2014. These research papers include vital contributions from research organizations and institutions across the world: including the last paper published by Stephen Hawking and colleagues on Black Hole Entropy, and a seminal paper from the CMS and ATLAS collaborations on the measurements of the Higgs boson production and decay rates, among the many thousands of others.

Established in 2014, SCOAP3 is a partnership of over 3,000 libraries, funding agencies, and research organizations from 45 countries and 3 intergovernmental organizations, hosted at the European Organization for Nuclear Research (CERN). The model allows everybody in the world to access high-quality scientific knowledge and for researchers worldwide working in the discipline of high energy physics to publish new discoveries in the leading peer-reviewed particle physics journals at no cost. Working with publishers of leading journals in the discipline, SCOAP3 has collectively supported open access publishing of research articles, enabling free global readership and re-use for high energy physics research, as well as barrier-free and equal publishing (i.e. without Article Processing Charges, APCs) for authors from 120 countries across the world.

During the course of 2022, the SCOAP3 Collaboration made significant progress on two major strategic initiatives led by dedicated Working Groups from across the collaboration: the SCOAP3 for Books pilot program led by the Open Books Working Group (OBWG), and the SCOAP3 Phase 4 strategy development led by the Second Tender Strategy Working Group (2STWG).

The SCOAP3 for Books pilot program, initially conceived in 2019, was designed to expand the content formats made OA through the Consortium to include research monographs and textbooks. Now in the full implementation stage, SCOAP3 is in the process of converting 113 books (monographs and textbooks) in HEP to OA, supported by voluntary contributions from SCOAP3 members. Books are systematically made available through both the publisher platforms, as well as through a dedicated collection on the OAPEN library. This collection currently houses 60 books from 5 different academic publishers, including many important monographs and highly sought-after textbooks. The success of the pilot was demonstrated by a preliminary usage analysis (of 28 Books) indicating an increase of book downloads by a factor of 13, while the geographical usage also increased dramatically, with readers accessing content

in 48 countries (compared to in 26 prior to conversion). Building on this, the OBWG recommended that SCOAP3 for Books be established as a recurring annual activity of the SCOAP3 collaboration. Moving forward, this program will prioritize supporting the OA publishing of new titles, selected through a rigorous quality assurance process.

Throughout the year 2022, the SCOAP3 2STWG worked to develop a strategy for a future 4th phase of SCOAP³. A particular focus of this group has been to bring about improvements in the services delivered by publishers to the High Energy Particle Physics research community, as well as supporting innovation in scholarly communication in the discipline.

The SCOAP3 Collaboration continued to grow from strength to strength in 2022, with the inclusion of two new partners: Bulgaria (represented by Sofia University St. Kliment Ohridski) and the National Research Council (CNR) of Italy.

<https://scoap3.org>

OUTLOOK



Continuing to work towards the completion of all projects kicked off during 2022 will keep the entire SIS team busy for the year ahead. From the rather large portfolio, two projects will be particularly important in the coming months:

The continuing Library renovation project will surely have the highest visibility for the CERN community. During the first quarter 2023, all demolition work will have been completed and the actual construction of the new library will commence. Towards the end of the 2nd quarter, installation of the new furniture will begin and the works should be completed by autumn 2023 when CERN will celebrate the reopening of its library. The new premises will allow the SIS Library team to serve all CERN staff, users and visitors in a brand-new space (including a well-visible bookshop), and will provide plenty of comfortable and ergonomic seating options in the reading room.

The main work towards CERN's holistic open science approach lies ahead of SIS and the entire CERN community. After the official adoption of the CERN Open Science Policy in October 2022, the organization will now need to establish concrete implementation measures, a dedicated open science governance framework, ways to measure success towards open and reusable science and a communication and outreach strategy. SIS will continue to play a key role in coordinating the efforts in close collaboration with all CERN departments.

But what comes next? This question will be answered in an SIS innovation workshop to be held during the SIS retreat in October 2023. The librarians, archivists, policy experts, research data managers, software and operations engineers of SIS will continue to work towards their joint mission: *to efficiently manage, preserve, and disseminate scientific information to make it openly accessible and reusable to CERN and the worldwide High-Energy Physics community.*



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