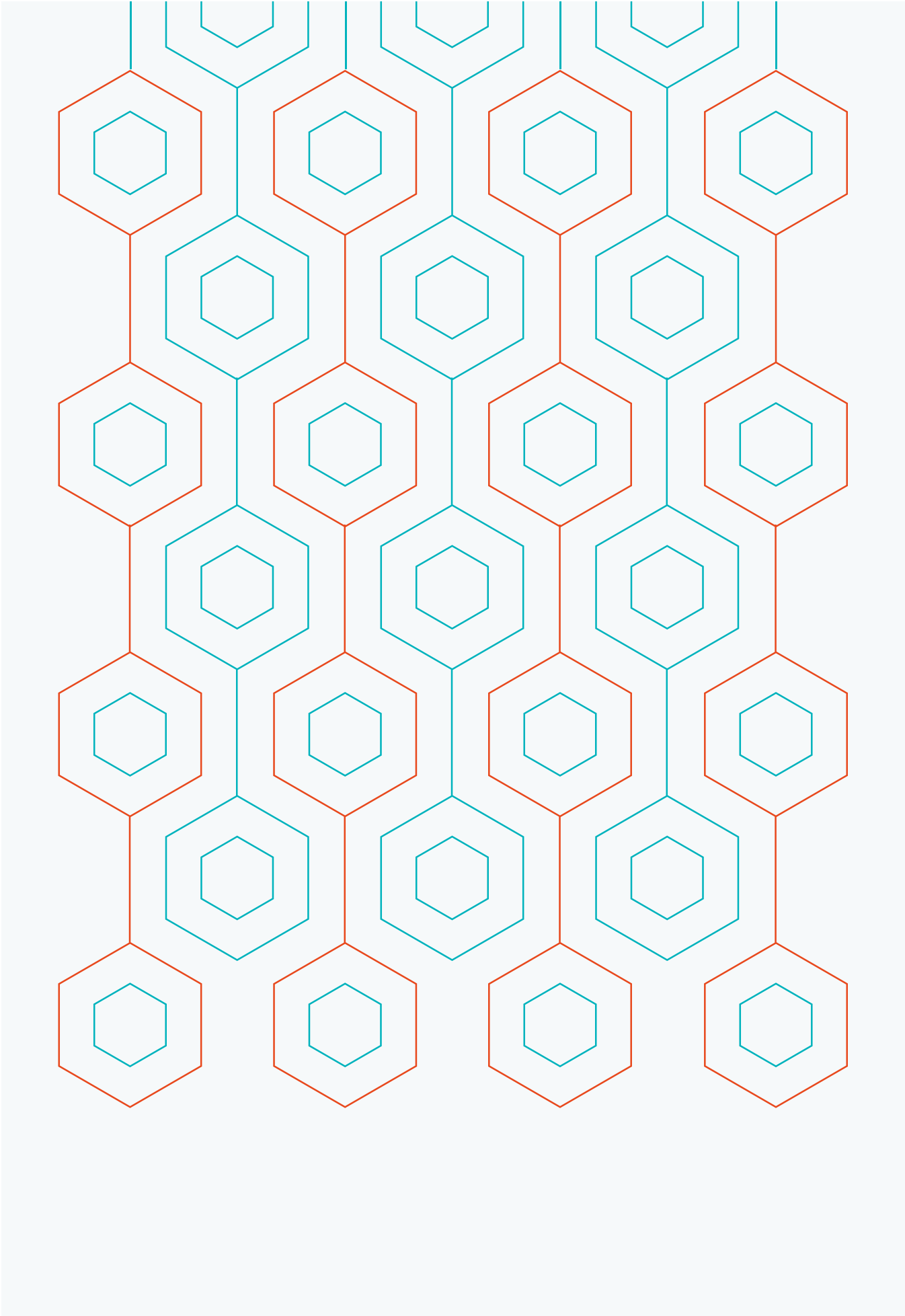


Activity Report **2021**



Scientific
Information
Service



CONTENT



P4
Welcome

—

P5
2021 Highlights

—

P6
Archive

—

P8
CERN Analysis Preservation

—

P9
INSPIRE

—

P10
Library

—

P14
Open Science

—

P16
Publishing

—

P19
SCOAP3

—

P21
Facts & Figures

—

P22
Outlook

—

WELCOME

Dear Reader,

Welcome to the 2021 edition of the Activity Report of CERN's Scientific Information Service (SIS).

This report celebrates the remarkable accomplishments of yet another year that was heavily affected by the work constraints of the COVID-19 pandemic. Even though the team returned to work regularly from the CERN offices for a couple of months after the summer, for the majority of the year the SIS colleagues were teleworking. But this doesn't mean that the team could not deliver; rather the opposite, we reached some landmark achievements. The Library renovation project was kicked off and formally approved in December 2021.

The CERN Open Science Policy working group was launched as a truly inter-departmental exercise. The legacy INSPIRE system was finally switched off and the first books became available open access thanks to the SCOAP3 for Books initiative. While teleworking brings very strong disadvantages from the lack of personal interactions, the growing experience in video conferencing and collaborative online tools also supports international collaboration.



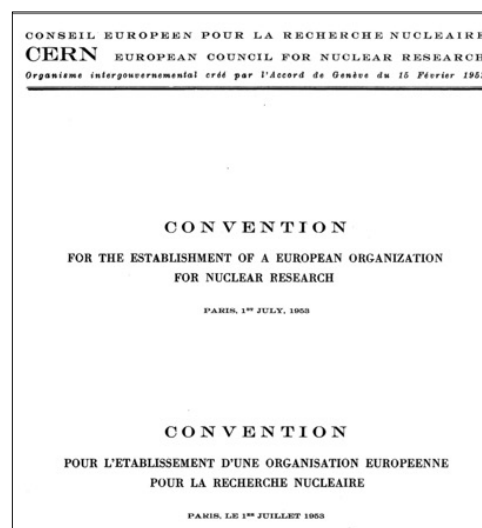
“ THE CERN SCIENTIFIC INFORMATION SERVICE AND OTHER TEAMS ACROSS THE WORLD SUCCESSFULLY WORK ON FRUITFUL AND EXCITING COLLABORATIONS.”

One concrete outcome of such a global collaboration is the adoption of the UNESCO recommendations on open science during the 41st session of its General Conference in November 2021.

In this publication, we will share with you again exciting developments and successful projects under the participation of CERN's Scientific Information Service. You will see that we have started structuring the report rather by project or service instead of the CERN organisational structure. This way, it should be easier for you to find the most relevant topics quickly.

I hope you enjoy reading this report,

Alexander Kohls

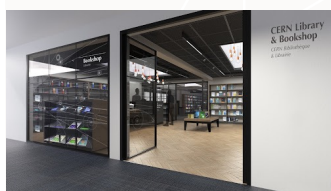


“The Organization shall have no concern with work for military requirements and the results of its experimental and theoretical work shall be published or otherwise made generally available. The Organization shall... confine its activities to the following... the promotion of contacts between, and the interchange of, scientists; the dissemination of information...”

2021 HIGHLIGHTS

KICKING OFF THE LIBRARY RENOVATION

After many years of preparation and careful planning based on the needs of CERN staff and users, the Library Renovation project was finally launched. In spring 2021, the SIS team met with the experts of Bisset Adams, a UK-based architecture firm specialized in library spaces. The results were exciting. Apart from all the technical aspects of the renovation (such as new air conditioning and heating, electricity, etc.) the redesigned space will be inviting for visitors and inspiring for our researchers. The new space design incorporates user feedback, and will provide a space with plenty of natural light, equipped with an increased number of individual work and study places with ergonomic



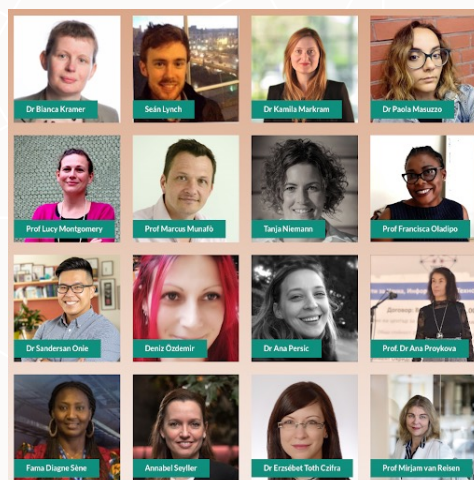
furniture and task-lighting. After serving our community for over 60 years, the CERN Library will receive a well-deserved makeover. Read more on page 10.

SCOAP3 FOR BOOKS PILOT SHOWS FIRST RESULTS

The SCOAP3 Collaboration (Sponsoring Consortium for Open Access Publishing in Particle Physics) has successfully converted the journal literature in high-energy physics to Open Access. Since its start in 2014, the initiative has supported the OA publication of almost 50,000 research articles! To further leverage this powerful collaboration of 3,000 universities, research institutions and funding agencies, the SCOAP3 governance had decided some years ago to develop a pilot programme to fund Open Access books. Although not without its share of challenges—particularly given the distinctions in market dynamics between scholarly journals and books—the pilot was finally successful and contracts have been signed with publishers to transition more than 100 books to Open Access. Moreover, the funding efforts amongst SCOAP3 partners were so successful that a second round of transition of important monographs and textbooks in the discipline is underway! Read more on page 19.

OAI12 – THE GENEVA WORKSHOP ON INNOVATIONS IN SCHOLARLY COMMUNICATION

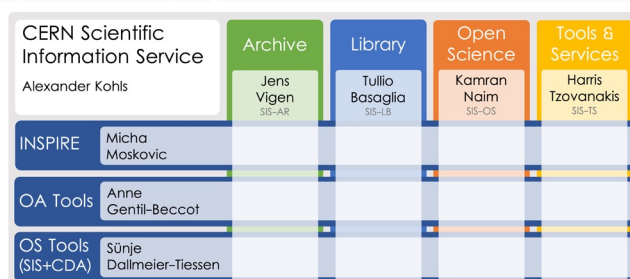
The 12 edition of the bi-annual OAI workshop was organized in collaboration with the University of Geneva, under the supervision of an international scientific programme committee, from 6–10 September. Due to the pandemic, the workshop was run virtually, which turned out to be a tremendous success. While former editions—all in-person events, typically attracted 200 to 250 participants, this year’s workshop had sessions with more than 1400 participants from across the globe. During the week the participants discussed themes like scholarly publishing, digital research data and the future of open science—taking into account how changes in research practice re-shape our thinking about research integrity and the important aspects of diversity, inclusivity and collaboration.



Portraits of some of the speakers who gave presentations during the Workshop.

NEW STRUCTURE FROM 2022

The CERN Scientific Information Service was historically organized by services such as the library or INSPIRE. While the advantage was clear that all the required competencies required to run a service were grouped together, this structure came with two major disadvantages. The grouping of experts around one service encouraged silo-thinking and led to duplication of functions. Just to give one concrete example: the team had front-end developers in the INSPIRE team to work on the INSPIREhep.net service as well as in the CAP team working on the CERN Analysis Preservation service. Through an extensive brainstorming exercise amongst the SIS team leaders, a new structure emerged



that groups teams rather by competencies than services. To ensure efficient collaboration and coordination across these groups of experts, product managers for the key services are established. The SIS structure from 2022 is shown below.



ARCHIVE

View of the CERN Archive.

The CERN Archive is a repository for historical records about all aspects of the Organization's activities, from its creation to the present day. It also houses a collection of correspondence, manuscripts, books, reprints and photographs of Wolfgang Pauli (Nobel Laureate, 1945). The Archive is the shared memory of the organization: it is the primary source for information on our history, and supports current knowledge and decision making.

<http://library.cern/archives>

RESEARCH AND INQUIRIES

With most visits from researchers cancelled due to the pandemic in the first part of the year, we focused on answering historical and other inquiries making material available online. During the days working onsite, we were able to consult the original records and provide information for enquirers who were unable to come to CERN in person. Support for existing research projects continued, and several new ones have been planned.

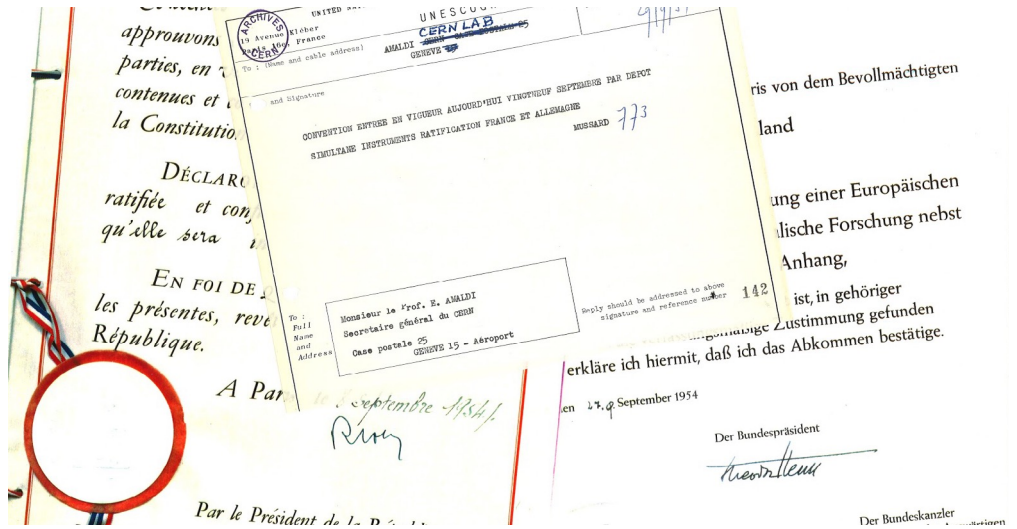
In the last quarter of the year, we were again able to welcome visitors. During this short time, two artists-in-residence explored the Archive, we hosted a Greek researcher for a week who was studying the early days of the LHC, and a US-based researcher spent a couple of days going through the Thirring correspondence to get an understanding of Thirring's (and his group's) transition to mathematical physics and the establishment of new themes and networks of research. Finally, we had two visits from Lugano by a group studying the origin of the World Wide Web. The first visit lasted only a couple of days, while the second time around the group

stayed with us for nearly two full weeks.

A group of students from the University of Geneva working on the personal archives of Lucile Hanouz, co-author of *La Quadrature du CERN*, came to CERN to get a better understanding of radioprotection at work and the socio-economic and technical stakes. The book published in 1984 was very critical of CERN and created quite some debate at the time. To give the students a better understanding of the reality, a seminar was organized, which provided:

- General introduction to CERN: the CERN convention, history and future goals (Stephan Petit)
- Summary of the Lévy-Mandel paper (Jens Vigen)
- Technology spin-off from CERN (Manuela Cirilli)
- Short overview of recent literature on the socioeconomic impact of public investment in large scientific projects (Hans Peter Beck)

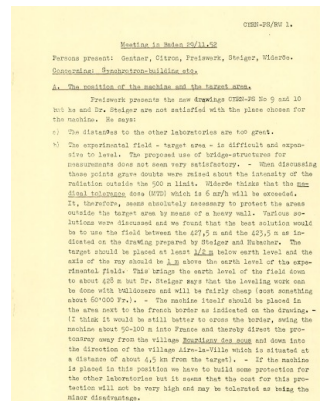




ONLINE RESOURCES

Where possible within the constraints of access and resources, we digitized records to help users work remotely and planned for future digitization projects to continue. New web pages have been developed to provide more user-friendly access to online material, including an update of the online Grey Book, which details CERN's past and present experimental program.

Archives are the documentary by-product of human activity, selected and retained for their long-term interest. To be valuable to society they must be a trustworthy and usable resource. Good cataloguing contributes to this by providing sufficient contextual information. Cataloguing continued through 2021, adapted to the constraints of teleworking. Information on the provenance of records is vital, and the Archive's online resources include a historical chart of CERN's many reorganizations since its creation (<https://scientific-info.cern/archives/history> CERN/internal organisation).



The PS digitization project is well underway. This effort aims to digitize over 20,000 documents relating to the Proton Synchrotron from the period 1952–2000, and subsequently make them available online to users during the course of 2022. Over the summer, with help of a student enrolled in the CERN Summer Student Programme, we continued the effort to expand the coverage of [CERN related topics in Wikipedia](#). Thanks to the student's skills and outstanding motivation the results were really exciting as the below example of the new Wikipedia page about the FASER experiment shows.

AUDIO-VISUAL ARCHIVES

The Archive supports and collaborates with other CERN initiatives, including the Digital Memory Project. In 2021 a large number of digitized photographs, held in the [CERN Document Server](#), were curated. In collaboration with CERN Alumni, four sessions were organized in the series "Rencontre Mémoire".

WEB ARCHIVING

The collaboration with the Internet Archive continued successfully during 2021. Three in-depth crawls of CERN's public web pages were performed, each typically adding around 500 GB of new data (deduplicated for more efficient storage to c.150 GB). The pages are publicly available on the Internet Archive's Wayback Machine, linked from the CERN Archive's web pages. http://web.archive.org/web/*/http://www.cern.ch

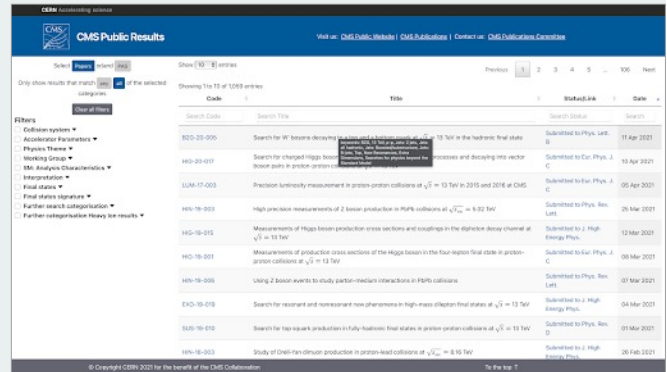
CERN ANALYSIS PRESERVATION

CAP AT CMS: FIRST MILESTONES ACHIEVED

CERN Analysis Preservation (CAP) reached several significant milestones in 2021. Most notably, CAP is now being used as a live and production service within the CMS collaboration.

With CAP's deployment at CMS as the only service to be used for the CMS Statistics Questionnaire—a mandatory step for each analysis within the collaboration—the service required more testing and quality assurance measures for smooth operation. The team added end-to-end testing to make sure not only all individual components (such as the user interface) are tested, but user workflows could also be tested end-to-end. The positive feedback after months of operation underlines that the approach proved successful and it is expected that with increased usage and expansion to other experiments/collaborations, more measures need to be taken to ensure appropriate service delivery.

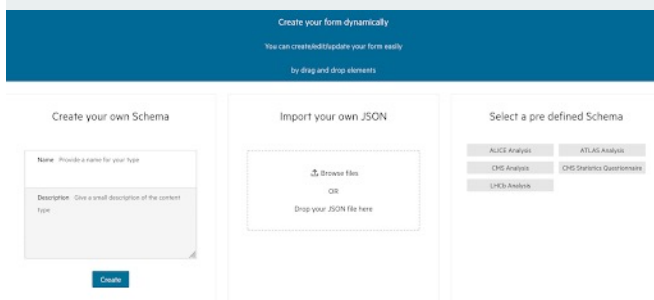
As a result of its effective operation and provision of rich metadata around CMS analyses, the collaboration decided to use CAP as the core database to populate the public CMS public results page.



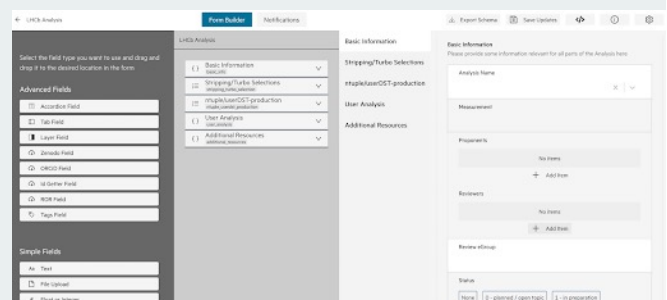
CAP AT CMS: PAVING THE WAY FOR MORE TO COME

With the implementation of the CMS questionnaire many features were added or used at scale for the first time, primarily on a daily basis. This includes, for example, approval workflows for submissions and email notifications following specific actions (review, publication etc). Those notifications can be customized to the needs of a specific group or analysis/approval step and could also trigger additional notifications in specific tools (in this case internal CMS ones). Specific e-groups or single users can now—with specific permissions—review, resolve and approve review comments within the CAP entry. This makes the approval procedure transparent to all parties. All content submitted as part of this process is searchable on CAP, profiting from the service retaining all the information about a specific analysis, which provides an excellent opportunity for it to be used for preserving full-scale physics analysis in the future.

Alongside the CMS questionnaire, improved and more transparent rights management was also put into place. While this might sound trivial, it is of utmost importance for sustainable preservation processes, in which the rights for individuals to access or edit analyses must be appropriately assigned. This becomes even trickier when using CAP while an analysis is still ongoing. To accommodate such needs, permissions to individuals and groups can now be granted to access or edit. Furthermore, preservation managers within the collaboration are being offered a dedicated “admin space” to manage the details of the experiments’ preservation practices. CAP now enables preservation managers to build their own flexible but standardized forms using the CAP analysis schema components. Since 2021, the admin space also includes a dynamically-generated collaboration page within CAP which displays the current preservation processes within the collaboration and submitted analyses in CAP, as well as further notifications as required. With this admin space, experiments and their preservation managers are in the driver’s seat to manage the adoption of preservation practices and internal sharing of analyses through CAP.



The interface to generate your own schema and submission form in CAP, part 1



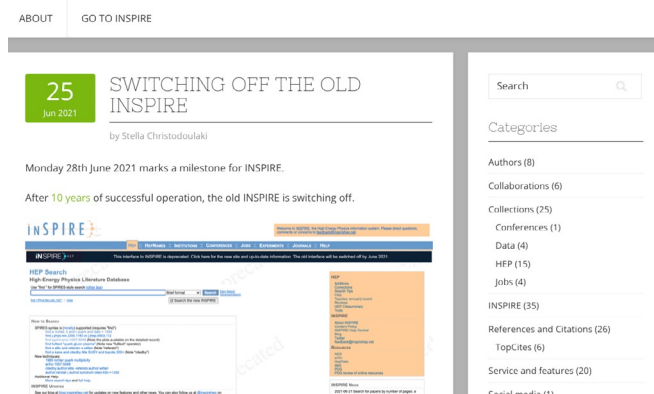
The interface to generate your own schema and form, part 2

INSPIRE



END OF AN ERA

Over the past few years, INSPIRE has undergone a complete makeover. Through a step-by-step approach, the “old” INSPIRE legacy system has been replaced by a modern, scalable system that continues to evolve based on user feedback and community needs. With the successful implementation of this new INSPIRE platform in 2021, the legacy system was finally rendered obsolete and eventually switched off.



Screenshot of the blog post announcing the switch off of the old INSPIRE.

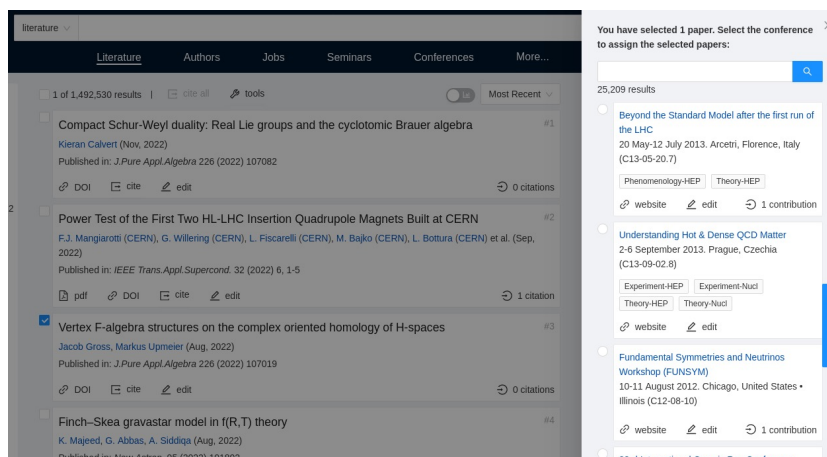
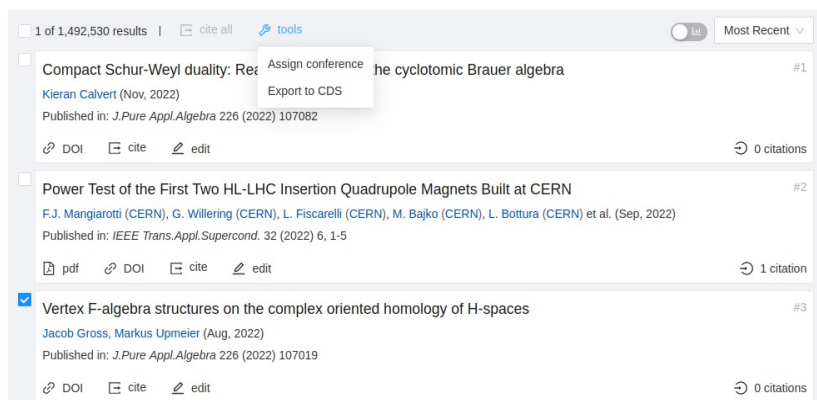
MOVING ON TO PREPARE FOR BIGGER THINGS TO COME

Having completed the transition to the new system, the INSPIRE team has been able to focus more on further improving the new service, including adding more content. In 2021 the Advisory Board of INSPIRE decided to add quantum information science (QIS) to its core content.

Significant progress was also made during the course of the last year to ease the work of the international curators at INSPIRE. The community heavily relies on high quality and well-selected content on the platform. To achieve this level of curation, the INSPIRE team relies on a mix of automated tools and workflows, for example to detect core content or extract references, together with checks and enhancements by the INSPIRE experts in the different labs. Improving curation was a focus for much of 2021, specifically the development of better tools to curate and manage authors, improved author disambiguation, leading to improved author profiles and tools to merge authors' profiles.

New workflows were also put in place to ingest papers from publishers into the new INSPIRE service. This helps improve content quality in INSPIRE while achieving greater operational efficiency for curators. Content curation was further enhanced by:

- Enabling curators to assign papers to other authors, or un-assign them as appropriate;
- Developing an interface for bulk actions, which includes assigning conferences to literature records and exporting records to CDS. This enables a link between literature records and conference records (see screenshots below) and marks the records that have to be exported to CDS;
- Improving the merging of INSPIRE records and the record editor for curators, including better validation and display of errors, displaying information about parallel record edits to prevent the loss of changes; and
- Updates and enhancements to the metadata exchanges with partnering labs.





LIBRARY

CERN Library Reading Room.

<http://library.cern>

WE ARE GIVING THE LIBRARY A MAKEOVER!

The Library is a key service of CERN and is essential in supporting research. It is fully aligned with the four pillars of CERN's mission: research, education & training, collaboration, and innovation. A modern library is needed to fully accomplish the Scientific Information Service's mission by providing a space where sharing knowledge and facilitating access to information are the primary goals.

The CERN Library premises are situated in building 52, on the ground and first floor, and on the first floor of building 3, on the CERN Meyrin site in Switzerland. The CERN Library was inaugurated in the present premises in 1957.

The technical installations of the current library do not comply with the requirements of a modern research library. In particular, the heating, ventilation and air conditioning are energy-inefficient and noisy, and the windows are not insulated. Moreover, the electrical installations are inadequate for current users, as they were designed during a time when no electronic devices were in use. The library's lighting relies on neon tubes that are perpetually on (as the Library is open 24 hours a day, 365 days of the year), and are neither adequate nor cost-efficient. After more than 60 years of daily use, the floor covering shows evident signs of wear, and painting of the walls is much overdue. Finally, a new and wider entrance, located on the main route leading to the Main Building, is an essential element to make the Library and Bookshop more visible and attractive to CERN staff and visitors. A necessary complement to such renovation work is a general reorganization of the space within the Library premises, accompanied by the replacement of desks, chairs and bookshelves. For this part, a specialist architecture firm was engaged to ensure the new CERN Library meets all modern needs and standards.

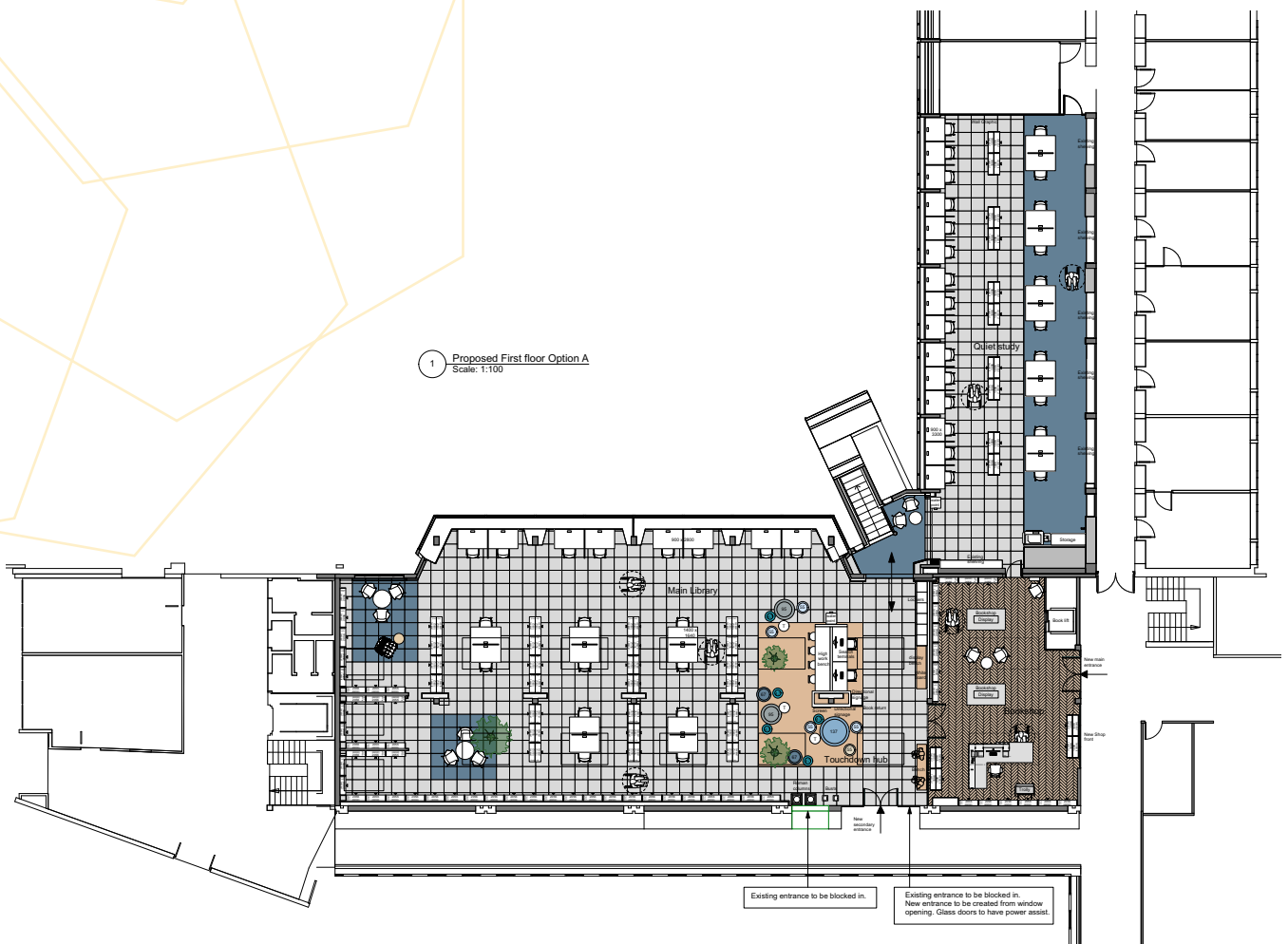
The start of the renovation work of the first floor (main reading room) is scheduled for September 2022 and should take one year. A subsequent project for the ground floor of building 52 is planned but needs to be coordinated with other occupants of this area.

Continuity of services and access to a core part of the Library collection and to the Bookshop will be ensured during the closure.



THE PAST LIBRARY AND BOOKSHOP ON THE FIRST FLOOR

THE FUTURE LIBRARY AND BOOKSHOP ON THE FIRST FLOOR



Visualization of the future main reading room



Visualization of the future main reading room

A SUCCESSFUL SERIES OF EVENTS

Two book presentations and an event commemorating an author who wrote about CERN took place in 2021, all of them online:

- “Safety for Particle Accelerators” by Thomas Otto (25 February). The book provides an overview of the safety-related aspects of the specific technologies employed in particle accelerators, such as superconductivity, cryogenics and radiofrequency. It highlights the potential hazards these technologies pose and current prevention and protection measures. It is available as an Open Access ebook, funded by CERN.
- Memories of Daniele Del Giudice (1949-2021) at CERN. The author of “Lines of Light” (“Atlante Occidentale”) in the words of those who met him. The event took place in Italian. The book was inspired by a few weeks’ stay at CERN in 1984, where the author had the opportunity to visit the laboratory and participate in the daily life of a group of physicists. The event was particularly successful, thanks to the participation of some members of the group who met the author while at CERN. This warm get-together offered the opportunity to explore some aspects of Del Giudice’s subtle narration concerning different aspects of perception of reality both in fiction and in science, in the form of a dialogue between a particle physicist and a novelist.
- “Particles in the Dark Universe” by Yann Mambrini (16 November). The book covers particle physics in the early universe. It starts from the thermal history of the universe by dealing with Big Bang nucleosynthesis, the cosmic microwave background (CMB) and the inflation, before treating in detail the direct and indirect detection of dark matter and then some aspects of the physics of the neutrino.

Six Library Science Talks, organized in collaboration with the Zentralbibliothek Zurich and ALLIS (Association of International Librarians and Information Specialists, Geneva):

- “The perfect storm: Challenges for research libraries in the coming decade” from Torsten Reimer (British Library) - 9 February.
- “Brightening an archive: Streamlining access to OA datasets” from Brady Lopatin, Terrence Eric (University of California) - 12 April.
- “Open science is built on trust...How about our library organization?” from Matthijs van Otegem (Rotterdam University) - 18 May
- “The social construction of risk in trustworthy digital repository certification “ from Rebecca Frank (Humboldt-Universität Berlin) - 14 September
- “Reinventing the Library” from Marie-Pierre Pausch (University of Luxembourg) - 11 October
- “The architect in the library lab” from Ina Blümel (TIB Hannover) - 15 November

All of them were greeted with great success and saw large participation (up to 120 people connected, also outside the Swiss librarians’ community).



A BRAND NEW SYSTEM TO MANAGE AND ACCESS LIBRARY COLLECTIONS

The new Integrated Library System (ILS) entered the production phase in April 2021. It was the culmination of a long-term and intensive collaboration with the CDS team at CERN IT and considered a large amount of user feedback, both from regular CERN Library users as well as the Librarians serving the community. Until 2021, the Library collections were integrated within the [CERN Document Server](#). In order to offer better visibility to the collections, and to focus the role of CDS as CERN's Institutional repository, a new instance has been developed: the [CERN Library Catalogue](#).

This new system, developed based on the Invenio framework, includes documents that are made physically or electronically available to the CERN community by the CERN Library: e-books, books, proceedings, standards and journals. CERN scientific publications such as preprints, published articles or theses written by CERN authors or collaborations stay in CDS in its role as CERN's institutional repository. However, links between the two systems have been enabled to allow for smooth navigation between documents.

The migration to the new platform implied a transition of metadata structure of the Library records, which now use JSON. In total, more than 220,000 records were migrated. After the migration in April, the work continued to fine-tune the system and to develop new features, such as an Importer used to automatically harvest records from other sources in the catalogue. This feature is crucial since the Library is importing more than 1000 records from other sources per month.

CERN Library Catalogue
Books, e-books, journals, standards at CERN.

Search for books, ebooks, series, journals and standards.

Recent books Recent e-books Most loaned books

Most recent books

VIEW ALL

- Spintronics handbook**
Tsybmal, Evgeny Y.; Zut..., 2019 - Edition 2nd
CRC Press
- A guide to the Project Management...**
2004 - Edition 3rd
Project Management Institu
- Kurt Gödels Notizen zur...**
Lethen, Tim; Passon,...
2021
Springer
- Cryogenic heat management**
Derrick, Jonathan,...
2022
CRC Press
- General relativity**
Susskind, Leonard,...
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Search guide
Request new document (loan or purchase)

CERN Library
Opening hours
Scientific Information Service

CDS - CERN Document Server
This website is part of the CDS service
What's up on CDS - Blog

CERN

CERN Library Catalogue
Powered by INVENIO

OPEN SCIENCE

ESTABLISHMENT OF CERN'S OPEN SCIENCE STRATEGY WORKING GROUP

Open Science is increasingly recognized as a key component of science policy. The latest update to the European Strategy for Particle Physics (approved by the CERN Council in June 2020)— the key strategic document outlining Europe's ambitions for the field—specifically highlighted Open Science as a key organizational issue. According to the update: “European science policy is quickly moving towards Open Science, which promotes and accelerates the sharing of scientific knowledge with the community at large. Particle physics has been a pioneer in several aspects of Open Science. The particle physics community should work with the relevant authorities to help shape the emerging consensus on Open Science to be adopted for publicly funded research, and should then implement a policy of Open Science for the field” (European Strategy Group, 2020).

With the recognition that much of the pioneering work in Open Science has been led by CERN, the Organization considered it incumbent upon us to lead the engagement with relevant authorities to devise and implement an Open Science Policy for the field.

Prior to initiating this broader engagement, the Director of Research and Computing established the Open Science Strategy Working Group (OSWG), to ensure the coordination and synchronization of existing Open Science activities at CERN towards a unified organizational policy. The Open Science Strategy Working Group has two principal objectives:

1. to create a framework for a regular and proactive platform for all active stakeholders in Open Science at CERN; and
2. to develop an organizational Open Science Policy for CERN by the end of 2021 period

The Working Group was established to include Open Science stakeholders from across the organization, and consists of 19 representatives from: the LHC experiments; non-LHC experiments, Information Technology, Theoretical Physics, Experimental Physics, Education, Communications & Outreach; the Beams Department; and CERN Knowledge Transfer, with the meetings organized and coordinated by SIS.

In the two meetings of the OSWG held during 2021, representatives presented on their various Open Science activities, highlighting how their work contributes to CERN's scientific mission as well as wider organizational goals relating to societal impact. Simultaneously, conveners from CERN SIS worked collaboratively with members of the working group to develop a draft Open Science Policy Document. The goal is to develop a policy that will deliver a unified statement on behalf of the organization relating to open science: highlighting our belief in Open Science for delivering the maximum societal impact of our research, an overview of the current initiatives underway at CERN relating to the major Open Science activities (i.e. Open Access, Open Data, Open Hardware/Tools, Open Source Software, etc.), and presenting a progressive, aspirational vision for the future of Open Science at CERN. The goal for the Working Group is to achieve consensus around an organizational Open Science Policy in early 2022, after which it will be presented to the CERN Council for approval.

OPEN ACCESS AT CERN IN 2021

In 2021, the CERN Scientific Information Service continued its efforts to support CERN authors and help them to publish their output in Open Access.

Revision of the CERN Open Access policy

A revised version of the CERN Open Access Policy was approved by Director-General Fabiola Gianotti on 25 May 2021. The revised policy both reinforces CERN's position on open access and clarifies it, in particular with regard to the default licence applied to each article, i.e. Creative Commons attribution licence (CC-BY-4.0), which enables maximum reuse of the research results while requiring that authors receive appropriate credit. Furthermore, the policy highlights the importance of the identification of CERN-affiliated corresponding authors for research articles to ensure their systematic open access publishing under Read and Publish agreements. Finally, the policy confirms that all CERN-affiliated authors are eligible to benefit from central funding to cover open access publishing fees.

New Read and Publish Agreements in 2021

In order to make it as easy as possible for CERN authors to comply with the policy, the CERN Scientific Information Service has established a number of enabling mechanisms to support authors in publishing Open Access. While the well-established [Sponsoring Consortium for Open Access Publishing in Particle Physics \(SCOAP3\)](#) remains the easiest way for authors to publish Open Access, CERN has negotiated dedicated agreements with publishers to ensure a wide range of Open Access options for CERN authors. After two Read and Publish agreements were negotiated in 2020, five additional contracts were established in 2021. New agreements with Elsevier, the Institute of Electrical and Electronics Engineers (IEEE), the American Physical Society (APS), the American Institute of Physics (AIP) and Wiley, now allow CERN authors to publish open access in more than 3500 journals.

New tool for CERN authors

In order to help authors to find their way within all the Open Access options available at CERN, a tool has been developed: the [CERN author guide](#). This tool, developed in 2021 and maintained by CERN SIS, allows CERN authors to find precise information on their open access options at the journal-title level.

PUBLISHING

CERN PUBLICATIONS



Progress in Science Education (PriSE)

Science education is a highly dynamic field of applied and basic research, and of research-based development. Its ideas and problems arise at the intersection of theoretical and empirical research, educational practice in science classrooms, informal learning and teacher education, the important and manifold relations of modern societies with science and education, and of a scientific, evidence-based approach to science teaching, learning and science literacy.

In this framework, the open access journal **Progress in Science Education (PriSE)** aims at stimulating exchange between researchers, teachers, and other stakeholders in the field, trying to investigate their ideas and visions and to suggest approaches for effective and sustainable development of science education in and out of school.

In 2021 the journal published two regular issues and the special issue “Bildung für nachhaltige Entwicklung lehren: von der Argumentation zur Umsetzung”.

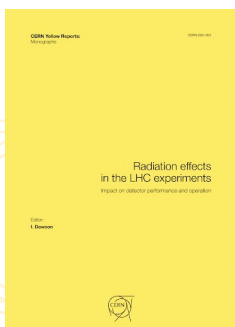
CERN has always had a strong commitment to science education. As an open institution, making scientific results publicly available is an integral part of CERN’s mandate. By collaborating with PriSE, CERN aims to help strengthen open access to science education. In a sector where many scientists, users, teachers and school students are not connected to universities and libraries and need access to this information, this collaboration will help to make science education more reachable for everyone.



CERN Environment Report

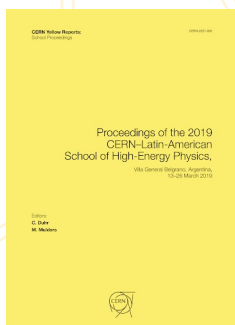
CERN released its second public environment report in 2021. The report covers the years 2019 and 2020 when the accelerator complex was in its second long shutdown, an opportunity for CERN to improve its environmental footprint on several levels. Similar to the first report, which covered the years 2017 and 2018, the second environment report has been prepared following the sustainability reporting standards laid out by the Global Reporting Initiative (GRI).

CERN REPORTS PUBLISHED IN 2021



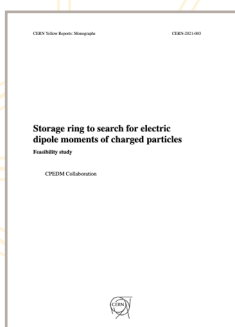
Radiation effects in the LHC experiments: Impact on detector performance and operation

Ian Dawson (ed.),
Geneva: CERN, 2021
154 p. CERN Yellow Reports: Monographs; 1/2021



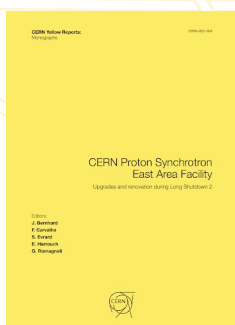
2019 CERN-Latin-American School of High-Energy Physics, 13–26 March, 2019, Villa General Belgrano, Argentina

Claude Duhr (ed.) and Martijn Mulders (ed.),
Geneva: CERN, 2021
154 p. CERN Yellow Reports: School Proceedings; 2/2021



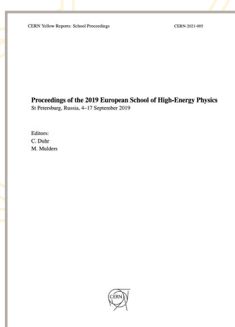
Storage ring to search for electric dipole moments of charged particles: Feasibility study

CPEDM Collaboration,
Geneva: CERN, 2021
arXiv:1905.05078, CERN-PBC-REPORT-2019-002
257 p. CERN Yellow Reports: Monographs; 3/2021



CERN Proton Synchrotron East Area Facility: Upgrades and renovation during Long Shutdown 2

Johannes Bernhard, Filipa Carvalho, Sébastien Evrard, Erwan Harrouch and Giulia Romagnoli,
Geneva: CERN, 2021
123 p. CERN Yellow Reports: Monographs; 4/2021



Proceedings of the 2019 European School of High-Energy Physics, St Petersburg, Russia, 4–17 September 2019

Claude Duhr (ed.) and Martijn Mulders (ed.),
Geneva: CERN, 2021
261 p. CERN Yellow Reports: School Proceedings ; 5/2021

2021 BOOKS AND SPECIAL JOURNAL ISSUES

Manuscripts intended for a broader audience than the CERN Reports are produced in collaboration with publishers. In 2021 two major OA book projects were completed—this time together with Springer-Nature and Elsevier.



Von einem Traum getrieben: Wie der Physiker Rolf Widerøe den Teilchenbeschleuniger erfand

Aashild Sørheim,
Berlin, Springer, 2022
570 p.

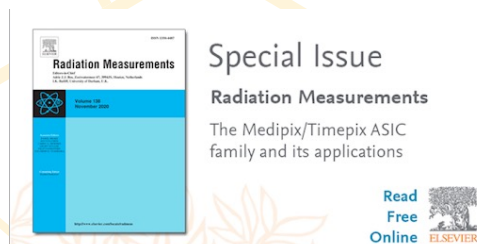
This open access monograph is the German translation of the book “Obsessed by a dream”. It was launched at the end of the year and got 2022 as its official publication year.

The translations from Norwegian, have been made possible by economic support from some of the leading accelerator centres in the world: European Organization for Nuclear Research (CERN), European Spallation Source (ESS), Forschungszentrum Jülich, German Electron Synchrotron (DESY), GSI Helmholtz Centre for Heavy Ion Research (GSI), Helmholtz Centre for Materials and Energy (HZB), Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Paul Scherrer Institut (PSI) and SLAC National Accelerator Laboratory (SLAC).

The Medipix/Timepix ASIC family and its applications

Edited by Marco Silari, Michael Campbell and Anatoly Rosenfeld,
Radiation Measurements, volume 139, December 2020.

A special open access issue of the journal Radiation Measurements was dedicated to Medipix and Timepix semiconductor radiation detectors whose origins lie in the R&D for the semiconductor tracking detectors of the LHC. The completed issue was announced in early 2021.



EPJ Web of Conferences

25th International Conference on Computing in High Energy and Nuclear Physics (CHEP 2021), Virtual Event hosted by CERN, May 17-21, 2021

Edited by C. Biscarat, S. Campana, B. Hegner, S. Roiser, C.I. Rovelli and G.A. Stewart,
EPJ Web of Conferences Volume 251 (2021).

SCOAP3

SCOAP3 FOR BOOKS PILOT

The [SCOAP3 for Books](#) initiative is a pilot program—first established by the SCOAP3 Governing Council in May 2019—to leverage its success in transitioning and sustaining Open Access for journals in the discipline through its collaborative network and publisher relationships, by further expanding to include key monographs and textbooks in particle physics and neighbouring fields.

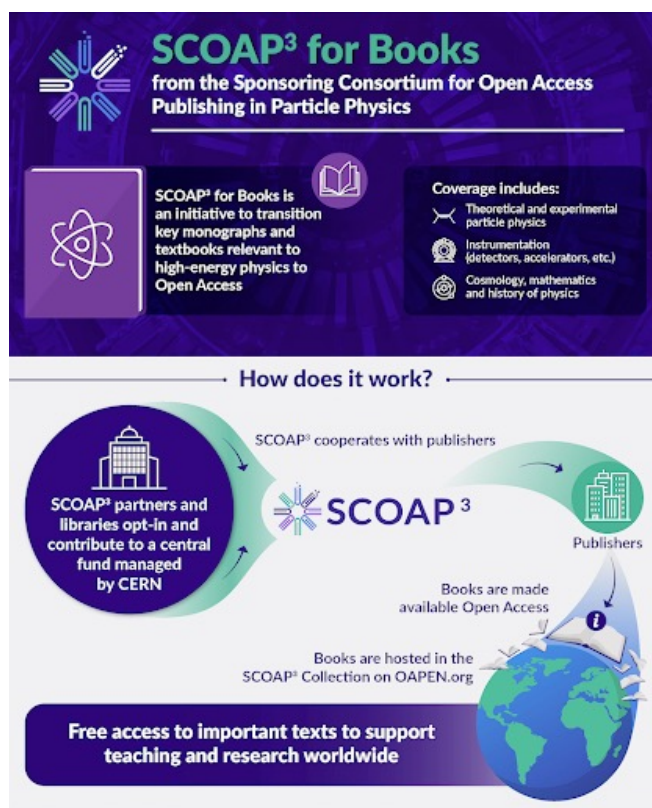
The project was designed by a strategic Working Group composed of volunteers from among the SCOAP3 partner institutions. A first purchasing recommendation of 102 existing books (backlist) was approved by the GC in May 2021—including titles from Cambridge University Press, Elsevier, Oxford University Press, Springer Nature, Taylor & Francis and World Scientific—and the books are in the process of being transitioned. As of December 31st, 2021, a total of 22 books had already been converted to Open Access. Through a partnership with the OAPEN Foundation, all of the funded titles will be made available under a dedicated SCOAP3 Collection on the OAPEN Library. This partnership further facilitates the discovery of content of the books through major library systems and search engines, and provides additional features such as metadata harvesting and usage statistics.

The SCOAP3 for Books Working Group is now preparing a second set of books that will consist of some more backlist titles to be transitioned to OA as well as new books (i.e. frontlist) directly made available Open Access. Based on the experience of these two pilot sets, the SCOAP3 Governing Council will make a decision about establishing a regular SCOAP3 for Books programme later in 2022.

PLANNING AHEAD

In its meeting in November 2020, the Governing Council (GC) of SCOAP3 voted unanimously to extend the current Phase 3 of the initiative by an additional 2 years, in order to provide both libraries and publishers in the collaboration with stability during the financial uncertainty perpetuated by the COVID19 crisis. A practical implication of this extension—maintaining the existing contracts and financial conditions until the end of 2024—is that a new procurement process will need to be established for the subsequent Phase of SCOAP3. To implement this key strategic activity, the GC agreed to form a Second SCOAP3 Tender Working Group (2STWG) to work with the CERN Procurement team, and in consultation with the GC, on the preparation of an innovative future procurement process.

Consisting of 13 volunteer experts from across the SCOAP3 community, the Working Group will consider the future of SCOAP3 including budgetary implications; Open Access conditions; publishing services and deliverables to procure; possible pricing models and contractual arrangements; and procurement technicalities. The group will take into consideration the interest of the scientific community as well as scholarly publishers and the rapidly evolving Open Access landscape with various publishing models and transformative arrangements.



A NEW VISUAL IDENTITY FOR SCOAP3

In order to improve public visibility, awareness and outreach of SCOAP3, the Executive Committee approved an effort to revamp the corporate identity of the initiative. Working in collaboration with the CERN design team, this effort sought to holistically streamline all aspects of the visual presence of SCOAP3: from the logo, colour palette, fonts, headers, etc., to provide a consistent, engaging and modern presentation. The new visual identity is presented below:

SCOAP³ CORPORATE IDENTITY

Logo

The official logo SCOAP³ should be used on a clean white background or in some situation on a different light colour (e.g. light grey).

Clear space is the area surrounding the logo that must be kept free of other graphic elements. The minimum required clear space is defined by the measurement "minimum clear space" in the diagram.

This measurement is equal to 1/5 of the length of the logo.

Colours

Primary colours: #4A5568, #4F81BD, #2E86C1, #00A68F

Secondary colours: #9933CC, #CC3399, #3399CC, #33CC99

Objects

Logo on white background, logo on purple background, logo on blue background, logo on teal background, logo on a white t-shirt, logo on a white tote bag, logo on a purple banner, logo on a white banner.

Font

01 Leadfont - logo font

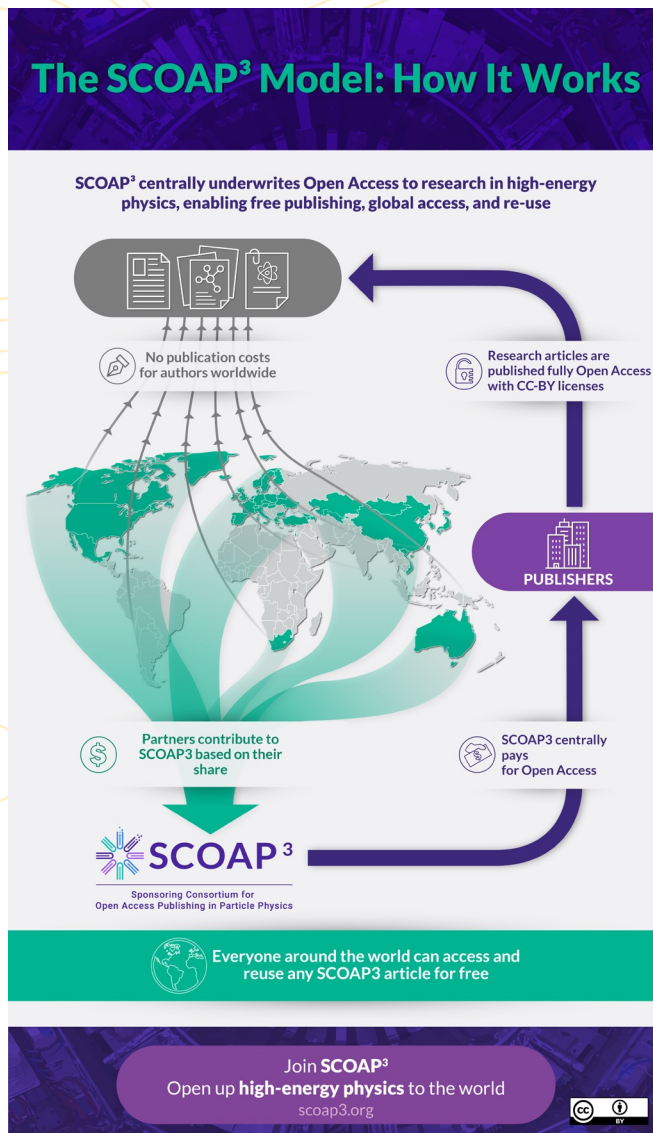
Lato
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890

02 Copyfont - font of entire name (baseline)

Roboto
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890
 ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz1234567890

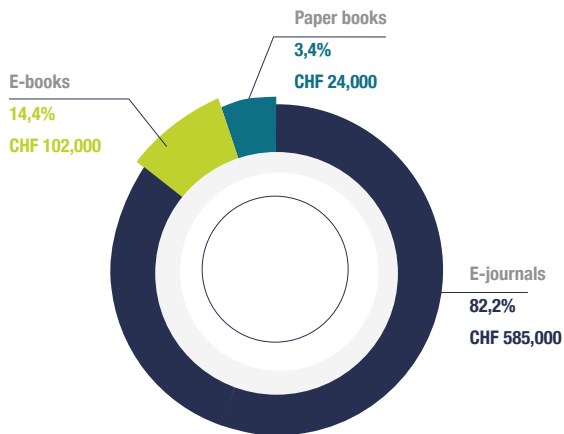
Both fonts are Google fonts.

Next, the SCOAP3 team engaged Cactus Communications to develop a set of comprehensive infographics related to various aspects of the program. Leveraging the new visual identity, infographics were developed to describe SCOAP3, its primary business model, the key benefits to stakeholders, etc. These infographics are being licensed openly to enable reuse and will be made available in formats that enable their modification/customization and translation into different languages by SCOAP3 partners.



FACTS & FIGURES

LIBRARY STATISTICS



2021 library acquisitions books and journals (CHF)

(from April - the start of operations of the new ILS - until December)

- 1997 document circulation transactions: loans, reservations and returns
- 419 book titles on paper were ordered for the Library collection
- 161 documents were borrowed from external libraries
- 415 articles were obtained from external libraries
- The Bookshop sold 637 items, generating CHF 28'500 of revenues.

INSPIRE STATISTICS 2021

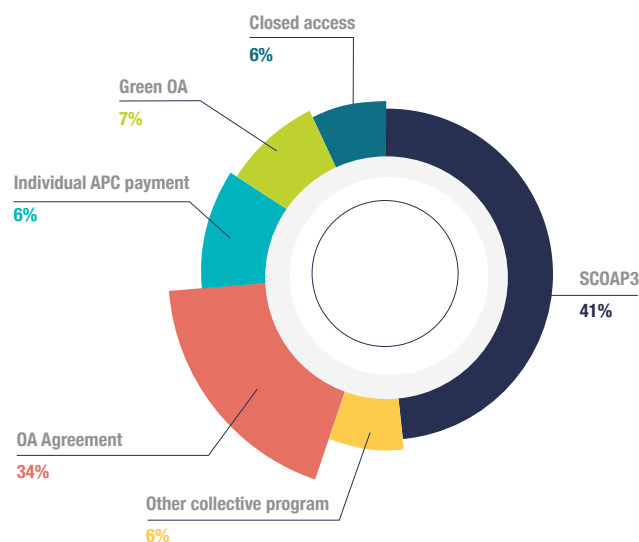
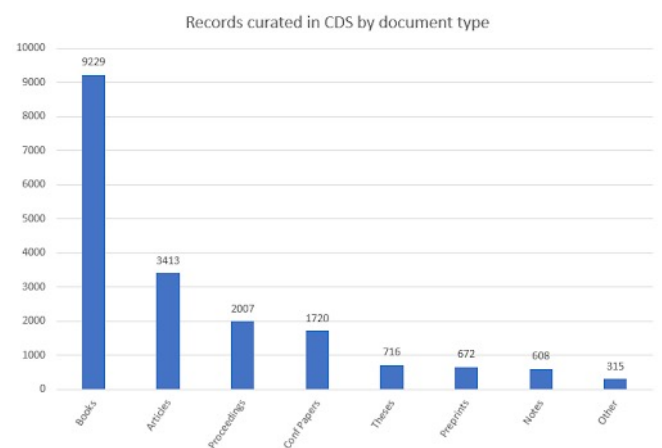
- 1.47 million bibliographic records - 27 million citations captured
- 160k author profiles
- 50k active users (researchers), generating 20k visits per day
- 49k new records ingested

CERN PUBLICATIONS 2021

CERN authors published around 1050 articles in 2021 in more than 170 journals. Thanks to the different mechanisms in place to enable open access publications, 93,7% of the articles have been published Open Access in 2021. The read and publish agreements launched in 2020 and 2021 have helped to streamline the workflows towards open access, reducing the individual processing of article APCs.

SERVICE-NOW TICKETS

RCS-SIS: Resolved		
Functional Element	Request Fulfillment Count	Percentage of Request Fulfillments
Library Loan	598	37.24%
Library processing, bibliographic data	456	28.39%
Library-assisted literature and citations search	256	15.94%
Library Acquisition And Collection Management	180	11.21%
Open Access Publishing Support	89	5.54%
Library Distribution	15	0.93%
Library Events and Sales	10	0.62%
Digital Object Identifier Registration support	2	0.12%
total	1,606	100%



OUTLOOK



JOINT PROJECT WITH ARXIV.ORG

Every researcher in particle physics knows arXiv.org, the pre-print repository hosted by Cornell University. Born out of the culture to share (paper-based) pre-prints across particle physics laboratories, and using the new technology of the WWW, arXiv.org was established in 1991 and today hosts more than 2 million articles across several disciplines. However, the basic technology and—most importantly—the metadata model have never been substantially modernised since its original creation. Funded by a grant by the European Research Council, the CERN Scientific Information Service will collaborate with Cornell to implement a new metadata schema and to backfill existing records utilising available resources such as INSPIRE. New search APIs will allow interoperability and reuse of arXiv preprints in institutional and disciplinary repositories.

LIBRARY RENOVATION AT FULL SPEED

After all the preparatory work in 2021, we will finally see the construction workers coming to the Library in the summer of 2022. Until then, the Library team will establish a small interim library and bookshop so that we can continue serving the CERN community during the construction works which are estimated to last about one year.

REFORM EUROPEAN RESEARCH ASSESSMENT

Following the “Paris Call”, we expressed our interest to join the calling to reform research assessment initiated by the European Commission. We hope to be able to actively contribute to this important effort and we are committed to implementing measures at CERN to make the assessment of researchers and research more fair and transparent. With the dedicated metrics from our INSPIRE tool, we are already well equipped to replace the journal metrics used today with more meaningful and responsible measures. But metrics are obviously only one side of the coin. All institutions have to collaborate to change the culture of research assessment towards more qualitative measures.



CREDITS

CERN Scientific Information Service
Esplanade des Particules 1
P.O. Box
1211 Geneva 23
Switzerland
home.cern

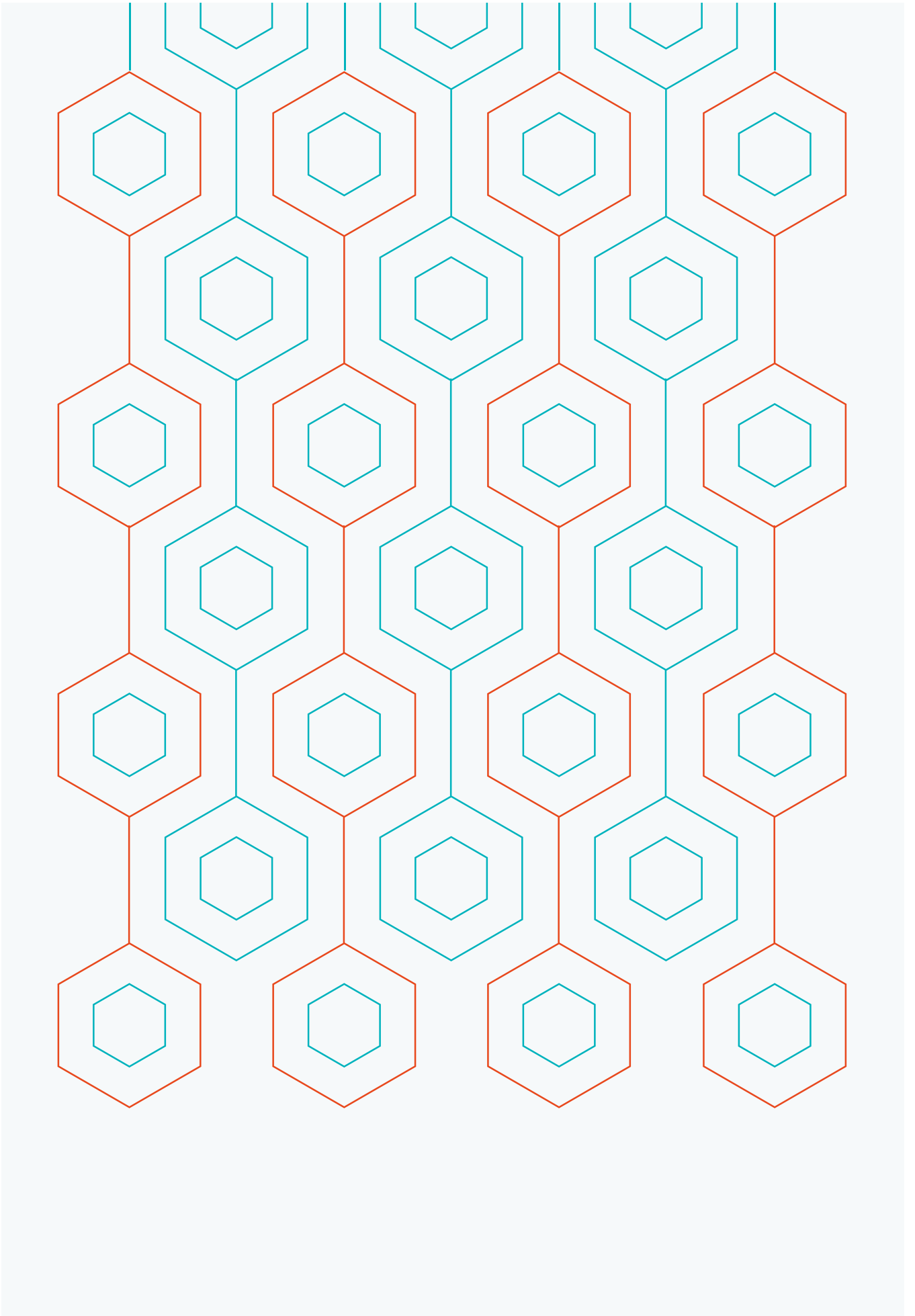
This document should be cited as:
CERN Scientific Information Service:
Activity Report 2021.

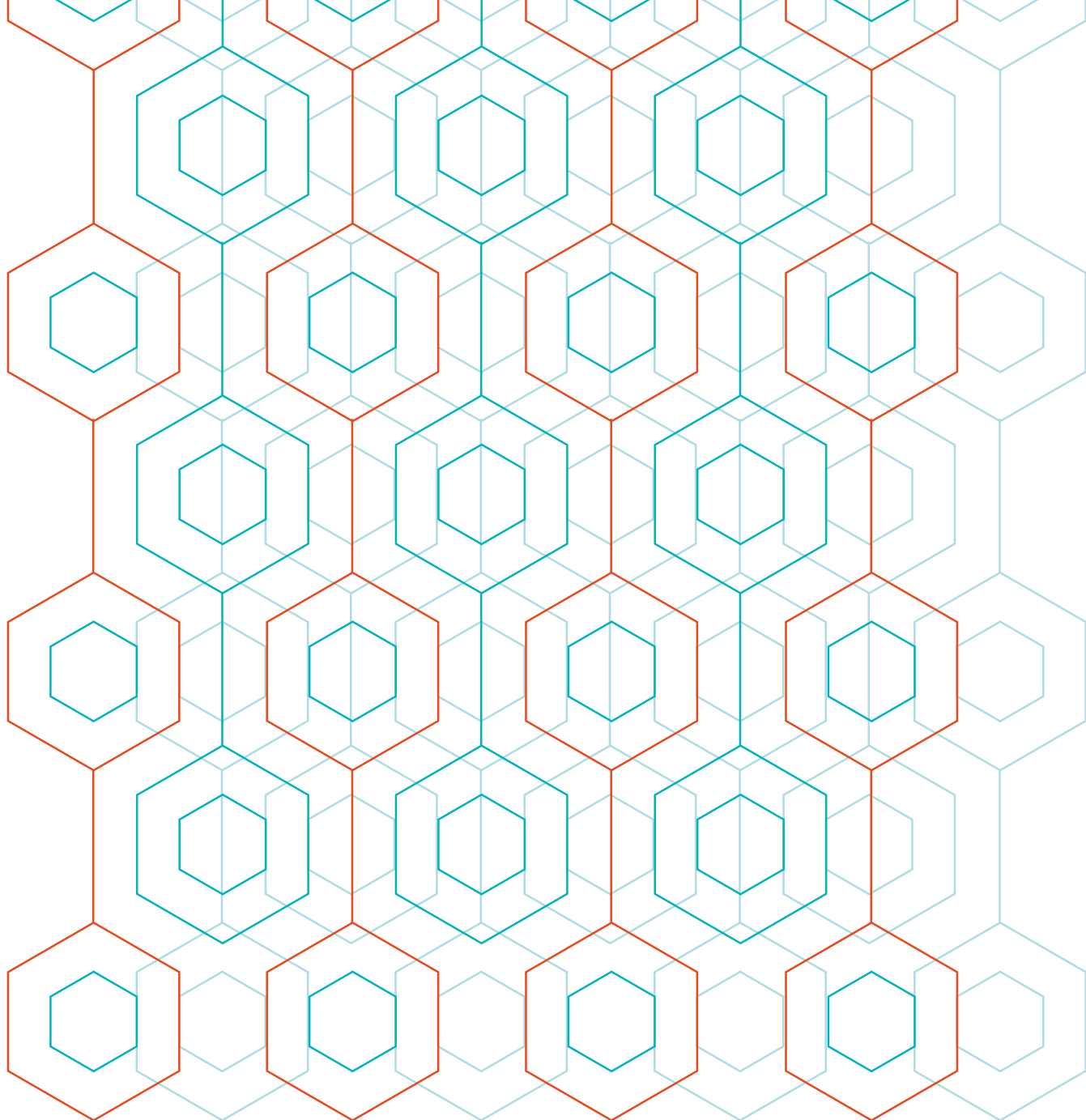
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Images:

S. Wolf p. 4, Bisset Adams p. 5 (top), A. Hollier p. 7, Bisset Adams p. 11 and p. 12
CERN: all other images

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Scientific
Information
Service