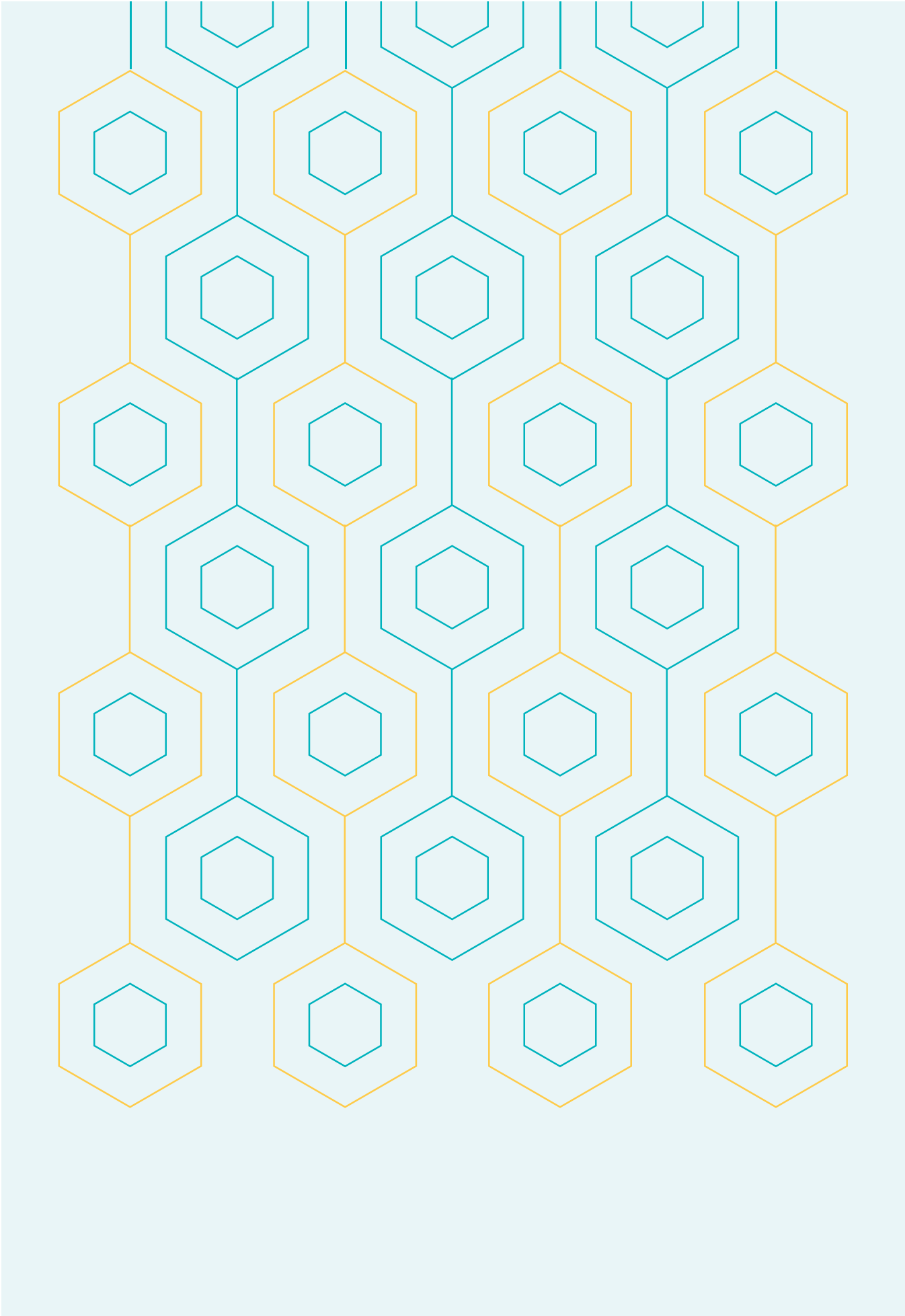


Activity Report **2020**



Scientific
Information
Service



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WELCOME

Dear Reader,

Welcome to the 2020 edition of the Activity Report of CERN's Scientific Information Service (SIS).

This publication covers what was a truly extraordinary year. The Coronavirus pandemic had a dramatic impact on the work of organizations around the world, and CERN was no exception. From March 13th of 2020, SIS had to transition almost completely to working from home, and these conditions remained in place for most of the remainder of the year.

This new working paradigm was not without its unique challenges, but as you will see in this report, this exceptional situation did not prevent us from delivering on our ambitious agenda.



“CREDIT FOR THIS YEAR’S ACHIEVEMENTS GOES TO THE STAFF OF THE SIS, WHO WERE ABLE TO QUICKLY ADAPT AND RETAIN OUR TEAM’S INTEGRITY THROUGHOUT THE EXTENDED TELEWORKING PERIOD.”

We managed to stay in contact through the various established communication channels and were able to provide professional as well as personal support to team members who struggled through this difficult period. I'm proud to report that our team has emerged stronger, evident through the many achievements described in this report. Teleworking has proven itself to be a viable working model for SIS, with the entire team working together in a disciplined, collaborative and constructive manner. Surely, some regular teleworking will become a standard also after the pandemic.

As we look to the future with hope for the end of the pandemic and the return to normal working conditions, I want to thank the SIS team for a remarkable year full of highlights and important milestones being achieved. Their collective optimism and positivity helped to carry us through an extraordinarily challenging year, and to remember 2020 not merely with a sense of solemnity for the devastating global impact of the pandemic, but also as a year of inspiration, achievement and gratitude.

I hope you enjoy reading this report,

Alexander Kohls



2020 HIGHLIGHTS

NEW SIS WEBSITE

The reorganization of our group in 2019, as well as the migration of CERN's standard platform from Drupal 7 to Drupal 8, provided an opportunity for us to redesign our website.

A Working Group was set up with representatives from all SIS sections. Our approach was to focus on the services we provide to our community. Going live in August 2020, the SIS website was completely overhauled and the website's content was fully reorganized, updated and enhanced, to fit the specific information needs of the CERN community and guided by typical user inquiries received by SIS. The main objectives of the redesign were:

- better presentation of the diversity of activities and projects carried out within the Group;
- to create a structure based on activities and services (rather than on the organogram);
- renaming of the website (reflecting the diversity of services offered by SIS beyond just the CERN library); and
- to draw increased attention to the topics related to Open Access publishing (where to publish, how and where to submit documents and data, etc.).

Our users have played a central role in the redesign. We would like to thank the several patient users who supported the design of the website through various usability tests: you really helped in developing a website that better meets the needs of the CERN community.

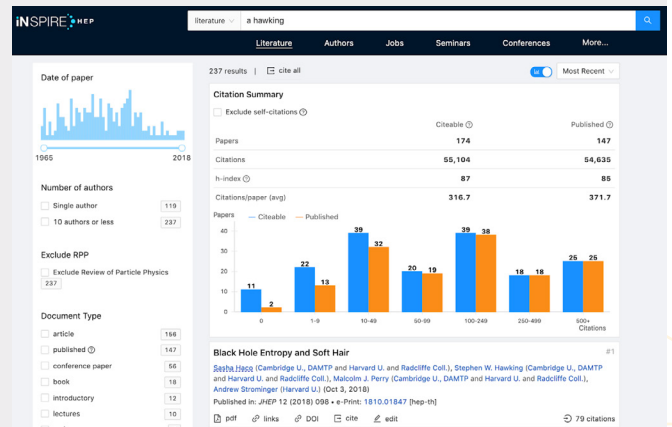
From now on you can find us at <https://scientific-info.cern>.

NEW SIS ARCHITECTURE TEAM

The mission of the Architecture Team is to unify technologies and services across the different sections within the SIS group and to optimize resources by ensuring that features and solutions within the group are reused. By using the same technologies across projects, developers can work across the sections and provide their expertise and support when needed. In addition, the Architecture Team is responsible for creating and maintaining an engineering etiquette with best practice guidelines and robust knowledge transfer processes, to ensure the health of our technology projects as well as supporting the recruitment of technical personnel into the group.

NEW INSPIRE

The INSPIRE team at CERN, together with our collaboration partners, worked for years towards the vision of a new and modern INSPIRE using state-of-the-art technologies to allow more interactive user features and overall increased operational efficiency and maintenance. On the 30th of March, 2020, all of this work culminated with the launch of the new INSPIRE platform for thousands of users worldwide. The transition occurred smoothly and without any major interruption of services. Almost one year later, most of the world's particle physicists hardly remember the old interface, and using the new platform feels natural and intuitive. However, the work in the background still continues as several back-office tools remain to be migrated.



The Architecture Team had a significant impact since it was formed, and has meticulously analyzed and identified critical technological improvements, provided sustainable solutions and strategic suggestions for technological projects, reduced costs, and optimized resource management within the group. Most notably, this includes: the migration of HEPData to a new operational environment with significantly improved reliability and reduced deployment time; the creation of an automated backup system for all databases; an integrated password management system for the SIS team; and a systematic migration of SIS services to Kubernetes.



View of the CERN Archive.

ARCHIVE

<http://scientific-info.cern/archives>

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.

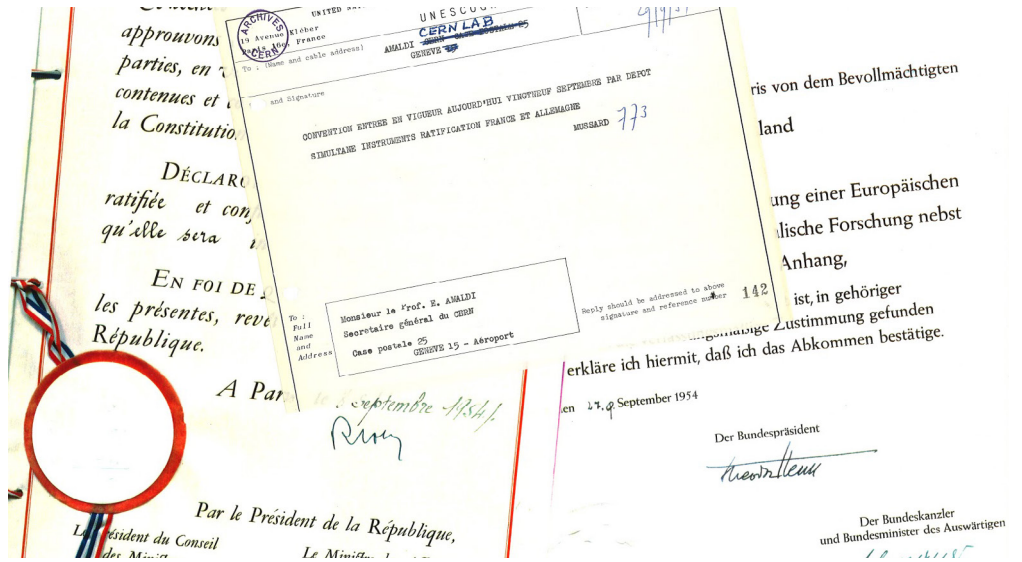
RESEARCH AND INQUIRIES

With most visits from researchers canceled due to the pandemic, and CERN's historic documents inaccessible for many months even to Archive staff, we focused on answering historical and other inquiries using online or general resources. 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.

Two artists-in-residence explored the Archive during the early part of 2020, but all other Arts@CERN visits were postponed. Where possible, links to online material useful for their work were provided in the meantime. The CERN Archive also collaborates with Geneva's Embassy of Foreign Artists, which facilitates the work of artists, cultural actors, active citizens

and researchers. Two artists participating in this scheme will carry out research in the Archive, in conjunction with Arts@CERN, during 2021.

To support the development of CERN's new scientific education and outreach center, we provided examples of archival material that could be used for the new Science Gateway exhibitions. These range from official documents, such as instruments of ratification of the CERN Convention, through milestones in the Organization's history, such as the telegram announcing its creation, to informal glimpses behind the scenes found in draft planning documents or memoranda revealing practical details of life onsite. Early publications and outreach brochures show how CERN perceived itself during these formative years.



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 are being developed to provide more user-friendly access to online material, including an update of the online Grey Book, detailing 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, and good cataloging contributes to this by providing sufficient contextual information. Cataloging 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). In 2020, a collaboration with the HR department provided information that will enable us to add more detail to this chart in the future, particularly about the group-level structure and mandate of the many departments that have existed at CERN since 1954.

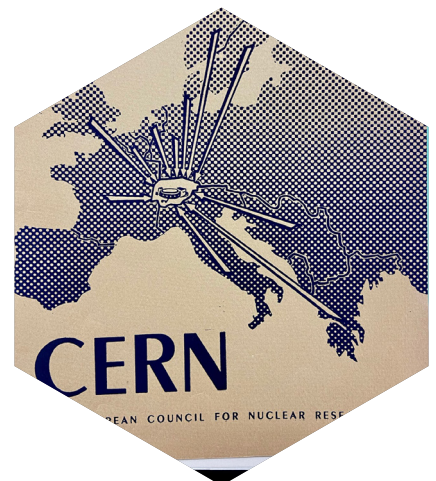
AUDIO-VISUAL ARCHIVES

The Archive supports and collaborates with other CERN initiatives, including the Digital Memory Project. In 2020, 7,000 videotapes sent for offsite digitization were returned to CERN, and the SIS Archive section assisted with sorting this material and setting up a new multimedia storage room. We also participated in the curation of digitized photographs in the CERN Document Server.

WEB ARCHIVING

Collaboration with the Internet Archive continued successfully during 2020. 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



INSPIRE

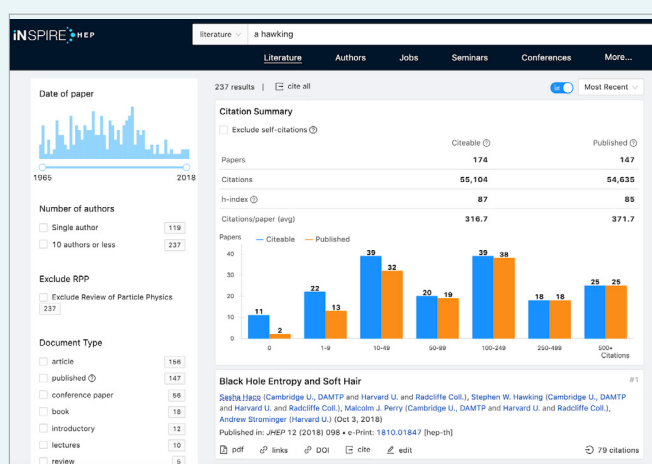
<https://inspirehep.net>

INSPIRE is a trusted community hub that helps researchers to share and find accurate scholarly information in high-energy physics (HEP).

LAUNCH OF NEW INSPIRE

It serves as a one-stop information platform for the HEP community, comprising 8 interlinked databases on literature, conferences, institutions, journals, researchers, experiments, jobs and data. Run in collaboration by CERN, DESY, Fermilab, IHEP, IN2P3, and SLAC, it has served the scientific community for almost 50 years. Previously known as SPIRES, it was the first website outside Europe and the first database on the web. Close interaction with the user community and with other services such as arXiv, ADS, ORCID, as well as with publishers is the backbone of INSPIRE's evolution.

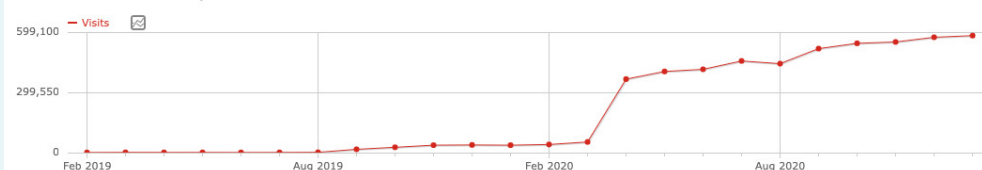
A year after releasing the beta version of the new INSPIRE platform, the INSPIRE team officially released the new INSPIRE on 30th March 2020. Built on top of modern and reliable software architecture, the new INSPIRE aims at optimizing existing features while introducing new user-centric functionality to the platform. Its modern, scalable and robust framework provides a solid foundation for fast services, intuitive search and comprehensive author profiles.



Following the release, the feedback from the HEP community has been very positive. Although the old platform has remained available online, the vast majority of users started using the new INSPIRE platform immediately after its release.



Evolution over the period



New INSPIRE - Monthly visits. Usage increased significantly after the release in March 2020

The CHEP'19 paper published in 2020 describes all the steps the team took to prepare for this release.

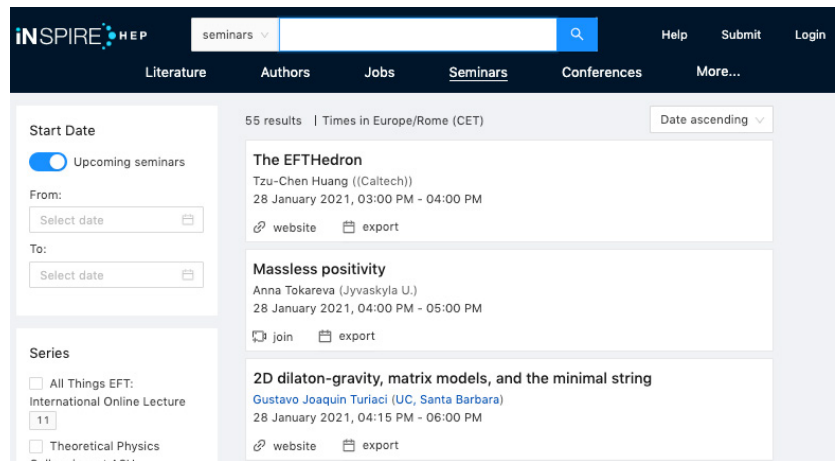
<https://doi.org/10.1051/epjconf/202024508012>

LAUNCH OF NEW INSPIRE SEMINARS

Soon after the start of the pandemic, we observed a surge of online HEP seminars created on various platforms. There was no central place for these seminars and as a consequence, researchers spent lots of time looking for new seminars on different websites.

In response, we decided to create the new collection 'INSPIRE Seminars' to host online seminars in the discipline. Users can submit new HEP seminars that are made immediately available for anyone to view. If INSPIRE has more information about the speaker or the institution hosting the seminar, then this information is linked and the user can view the INSPIRE author profile of the speaker and the INSPIRE Institution page.

INSPIRE seminars were released in May 2020 and there have been more than 1000 seminars submitted since.



The screenshot shows the INSPIRE HEP website interface. At the top, there is a navigation bar with 'seminars' selected in the dropdown menu. Below the navigation bar, there are filters for 'Start Date' (Upcoming seminars selected), 'From' and 'To' date pickers, and 'Series' (All Things EFT, International Online Lecture, Theoretical Physics). The main content area displays 55 results, with three seminars listed: 'The EFTHedron' by Tzu-Chen Huang, 'Massless positivity' by Anna Tokareva, and '2D dilaton-gravity, matrix models, and the minimal string' by Gustavo Joaquin Turiaci. Each seminar entry includes the title, speaker name, date, and time, along with links for 'website' and 'export'.

COLLABORATION AGREEMENT WITH HEPDATA

In March 2020, CERN and IPPP Durham signed a collaboration agreement for the organization and exchange of scientific information in the INSPIRE and HEPData services for the benefit of the global high-energy physics community. CERN, and in particular the INSPIRE section, is responsible for the technical support of the operation of the HEPData service and for investigating the needs of the HEP community around data. In 2020, the INSPIRE section, in collaboration with the software team in IPPP Durham, completed the migration of the HEPData infrastructure. In addition, INSPIRE conducted 6 user interviews to understand how to improve the integration between HEPData and INSPIRE. Based on these findings the new INSPIRE platform was further improved to display datasets to users.

CERN representatives are also part of the HEPData Advisory Board and participated in the first HEPData Advisory Board meeting in January 2020.

COLLABORATION AGREEMENT
KN 4716/RCS

between

The Institute for Particle Physics Phenomenology
at the University of Durham (IPPP)

and

The European Organization for Nuclear Research (CERN)

for

The organisation and exchange of scientific information
in the INSPIRE and HEPData services for the benefit
of the global High-Energy Physics community

(the "Agreement")

2020

Thus drawn up in two copies in the English language and signed by the authorised representatives
of the Parties.

For the University of Durham
(on behalf of the Institute for Particle
Physics Phenomenology (IPPP))



Mr Stephen Willis
Chief Financial Officer

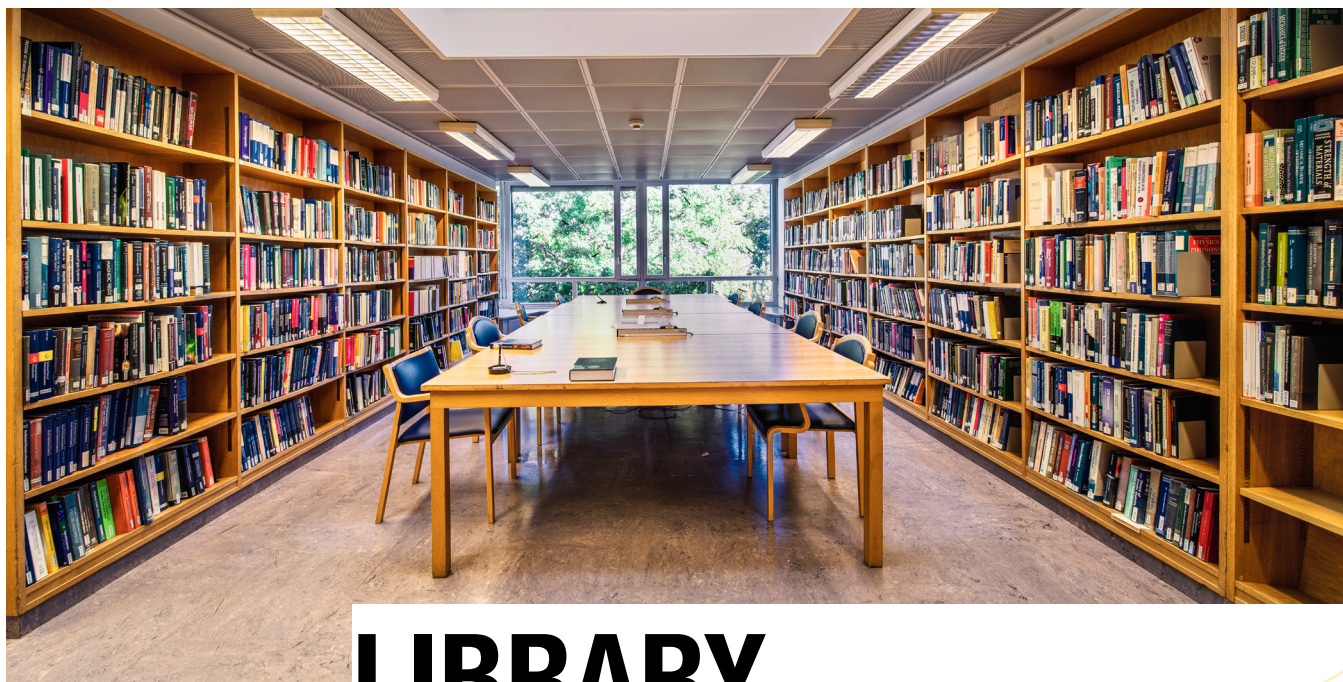
Signed on: 5.3.2020

For the European Organization
for Nuclear Research (CERN)



Dr. Eckhard Eisen
Director for Research and Computing

Signed on: 27.2.2020



CERN Library Reading Room.

LIBRARY

<http://library.cern>

During 2020, the Library organized eleven events: four Library Science Talks and seven book presentations. The restrictions deriving from the lockdown offered the opportunity to develop a program of online events that were well-attended thanks to their high visibility. The physical constraints paradoxically removed barriers to participation in events that previously were only accessible to members of the CERN community.

LIBRARY SCIENCE TALKS

The talk “Libraries’ adventures in data wonderland: from curation to analytics,” given by Luis Martinez Uribe (Fundación Juan March, Barcelona) provided insights into an interesting project aiming at keyword extraction from multimedia content produced by a cultural institution. Other talks included:

“Research data management at EPFL” - Eliane Blumer, EPFL

EPFL started recruiting personnel for research data management in 2012. The talk presented a typical day of the RDM team who answer a wide range of questions from authors and guide them through the data management process.

“The shift toward a library of data” - Esther Chen and Florian Kräutli, Max Planck Institute for the History of Science

Scholarly output is no longer available in form of documents, but increasingly in a variety of formats, transforming libraries more and more into libraries of data. Librarians are therefore

expected to take on new responsibilities and broaden their expertise. The research library of the Max Planck Institute for the History of Science described their experience in this new, fast-evolving context.

“Generating metadata with AI: experience of the Royal Library of the Netherlands” - Sara Veldhoen, Royal Library of the Netherlands

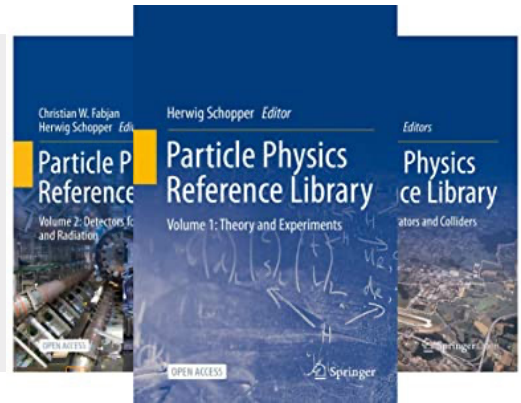
The Royal Library of the Netherlands is experimenting with tools to automate the extraction of metadata from full text in order to minimize manual intervention. They focused mainly on the matching of subject headings against a controlled thesaurus and of author entries with an authority file. They are developing a web application presenting entries to be selected from.

“Never say never. About the restoration of Henry van de Velde’s book tower” - Sylvia van Peteghem, Ghent University

The story of the Book tower of the University Library Ghent starts in the 1930s when Henry van de Velde was asked to build a University Library and offices for the department of art history. The construction was completed in the imminence of the 2nd World War and the design was partly inspired by the Swiss National Library building.

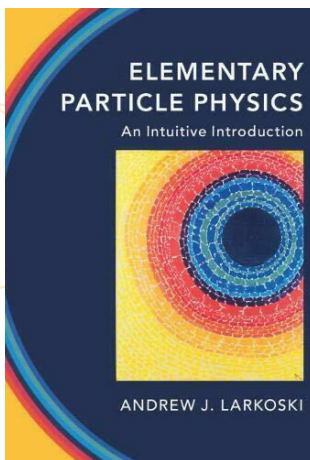
BOOK PRESENTATIONS

The three-volume Particle Physics Reference Library, published by Springer was presented by the editors Herwig Schopper, Chris Fabjan and Steven Myers. The presentation marked the conclusion of a multi-year project, aiming at opening access to content previously released behind the paywall in the Landolt-Börnstein book series.

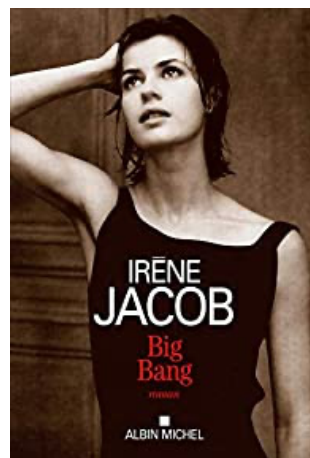


Other presentations included:

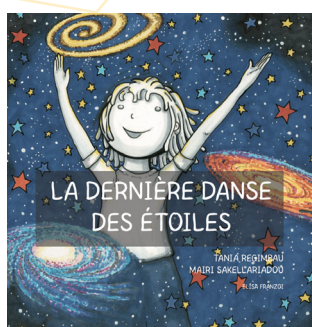
Elementary Particle Physics: An Intuitive Introduction, by Andrew Larkoski



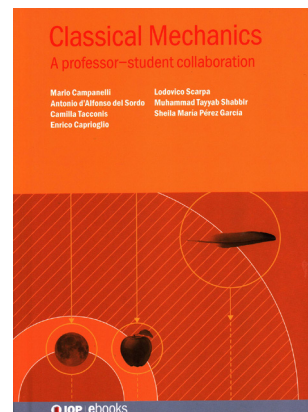
Mare Plasticum: the Plastic Sea edited by Marilena Streit-Bianchi, Margarita Cimadevila and Wolfgang Trettnak - a book written by a multidisciplinary team of authors comprising scientists, artists and communicators, exploring one of the most pressing issues of our time—the menace plastics pose to marine environments and organisms.



Big Bang: Roman, by Irène Jacob - a memoir of the daughter of theorist Maurice Jacob, actress, who reflects upon the reminiscences of her youth and of her father, when she was often in touch with CERN personalities.



La Dernière Danse des Étoiles, by Tania Regimbau and Mairi Sakellariadou - a children's book where the discovery of gravitational waves is presented in a poetic and artistic frame.

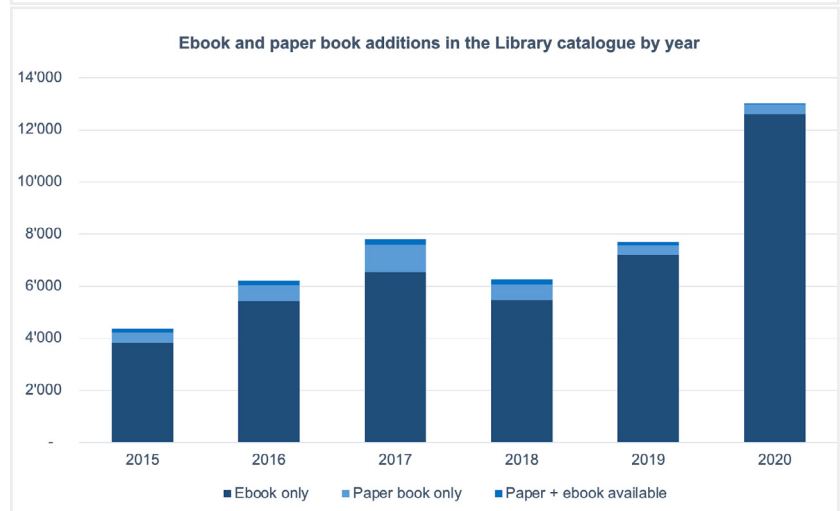
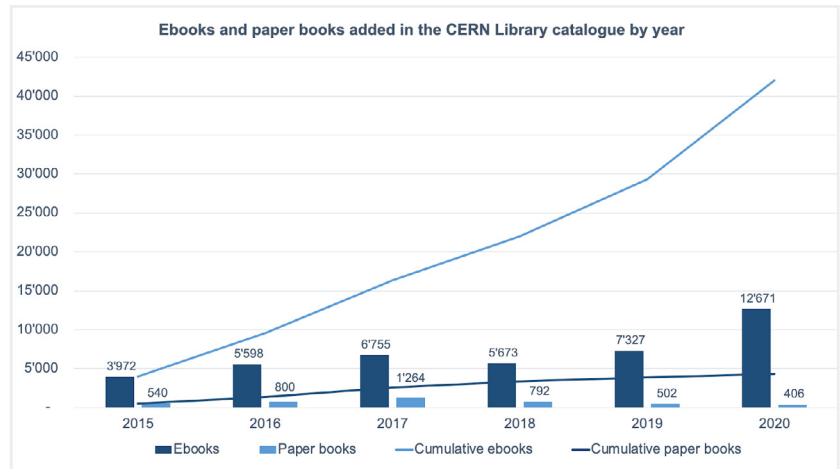


Classical Mechanics: A professor-student collaboration, edited by Mario Campanelli - an interesting experiment, whereby a student cohort, coordinated by their professor, wrote the different chapters of this textbook.

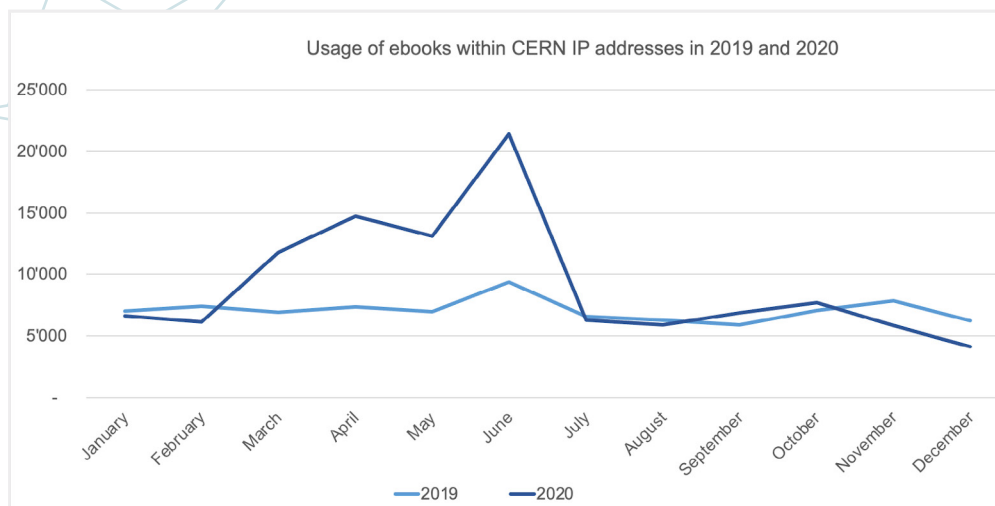
E-BOOKS VS PRINT BOOKS: CHARTING THE (R)EVOLUTION

The evolution toward the digital library continues: the number of e-books in our collections has more than doubled in the years 2015-2020:

In 2020 the acquisitions of e-books experienced a drastic increase (about 80%) in comparison with 2019, also to meet an increasing need for online access to support remote work during the pandemic:

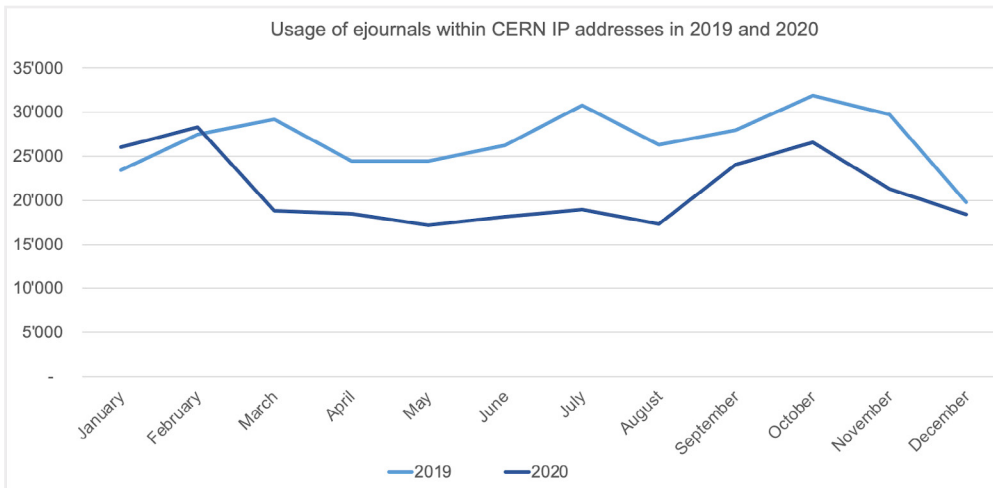


HOW DID THE COVID-19 PANDEMIC IMPACT USAGE OF ONLINE CONTENT?

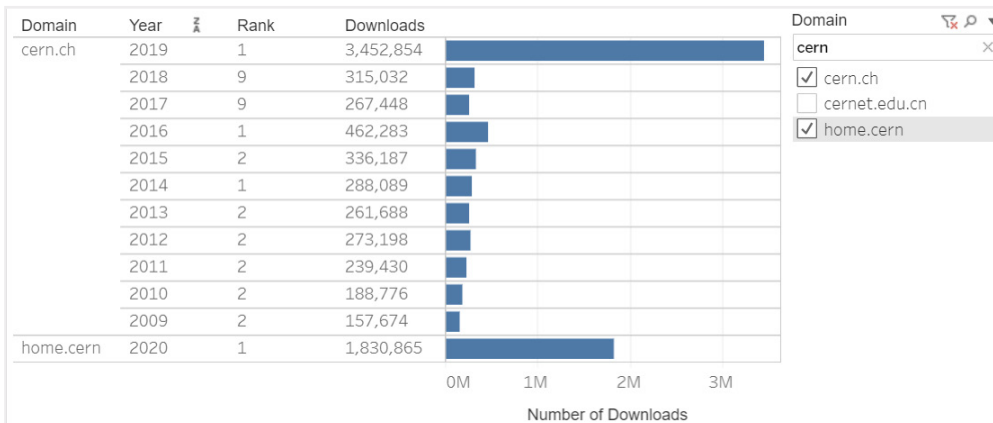


This graph clearly shows an increase in the usage of ebooks* between March and June 2020.

* Please note that usage data for Springer Nature, Elsevier, Oxford University Press, Cambridge University Press and Proquest EBL is taken into account. Usage of ebooks made freely available by some publishers in the early phase of the pandemic is not considered here.



The usage of e-journals is surprisingly lower compared with that of 2019. On the other hand, if we consider CERN downloads from ArXiv between 2009 and 2020, we observe an apparent decrease, if we compare the 2020 figure with that of 2019.



However, “for institutional downloads, we include only downloads that appear to be from an institution based on the DNS name of the client for patterns that we recognize. Clients with hostnames that don’t resolve or have off-campus access will not be recognized and lead to undercounts. Downloads from commercial ISPs are not included in the above.” (“ArXiv in numbers” caveat). We can conclude that CERN downloads in 2020 are most likely higher than displayed in the graph. A more thorough analysis of the impact of the COVID-19 pandemic on the research activity and on the usage of information resources is needed.

READ AND PUBLISH NEGOTIATIONS WITH PUBLISHERS

In 2020 four Read and Publish agreements were successfully negotiated with key publishers: Elsevier, Institute of Physics (IOP), Institute of Electrical and Electronics Engineers (IEEE), and Springer Nature (benefiting from the Swiss National Consortium). R&P agreements aim at transforming the landscape of scholarly publishing, moving away from the traditional paradigm of subscription-based access to knowledge to a new model, where costs for reading and for Open Access publishing are globally negotiated with the publishers who are remunerated for the service they provide.

While the negotiations protracted throughout the entire year, the results were worth it. The CERN community has now tremendously increased access to journals, well beyond particle physics. CERN authors can publish their results open access in all relevant journals almost automatically, or at least with a significantly reduced administrative effort. And in addition, SIS achieved considerable budget savings compared to the previous arrangements. This innovative model will be the basis for new relationships between RCS-SIS and the scientific publishers, and two additional agreements are underway while this report is being written.

LIBRARY RENOVATION PROJECT

The budget for the Library renovation was finally secured and the Library team hired an external consultant to help design the Library of the future. The works will commence in 2021.

OPEN SCIENCE

CERN LHC OPEN DATA POLICY

In December 2020 the CERN Council approved the new Open Data Policy for scientific experiments at the Large Hadron Collider (LHC), which was unanimously endorsed by the four main LHC collaborations (ALICE, ATLAS, CMS and LHCb). The policy commits to publicly releasing so-called level 3 scientific data, the type required to make scientific studies, collected by the LHC experiments. Data will start to be released approximately five years after collection, and the aim is for the full dataset to be publicly available by the close of the experiment concerned. The policy addresses the growing movement of open science, which aims to make scientific research more reproducible, accessible, and collaborative.

The level 3 data released can contribute to scientific research in particle physics, as well as research in the field of scientific computing, for example, to improve reconstruction or analysis methods based on machine learning techniques, an approach that requires rich data sets for training and validation.

Scientific data are considered to have different levels of complexity. Level 3 data are of the type used as input to most physics studies and will be released alongside the software and documentation needed to use the data. Its release will allow high-quality analysis by diverse groups: non-CERN scientists, scientists in other fields, educational and outreach initiatives, and the general public. The policy also covers the release of level 1 and level 2 datasets, of which samples are already available. Level 1 corresponds to the supporting information of results published in scientific articles, and level 2 corresponds to dedicated scientific datasets designed for educational and outreach purposes. In practice, scientific datasets will be released through the CERN Open Data Portal, which already hosts a comprehensive set of data related to the LHC and other experiments. Data will be available using FAIR standards, a set of data guidelines that ensure the data are findable, accessible, interoperable, and re-usable.

This strategy complements CERN's existing Open Access policy, which mandates that all CERN research results are published in open access. It is also aligned with the recent European Strategy for Particle Physics Update announced in June 2020. The new policy could be used as a blueprint for other experiments at CERN and in other scientific organizations.

CAP BECAME STANDARD IN PARTS OF CMS

The main focus for CERN Analysis Preservation (CAP) in 2020 was to bring the service to a production-ready phase (used daily) and to improve the usability for end-users. In parallel, the service was further developed to be more customizable and ready to easily accommodate new use cases for the future. The platform evolved to provide more features to the users, both from a UI/frontend scope, but also in the backend and API level.

Content-wise, there were developments in the CMS collaboration space. With an updated model for CMS Analysis "collection", CAP re-populated existing entries with information from additional legacy databases (e.g analysis keywords, information for related notes, etc.) and added more value to the data. The CMS Statistics Questionnaire "collection" was introduced, migrating the legacy/existing questionnaires and making CAP the main place that CMS users go and submit information to pre-approve their analysis (mandatory step), also enabling search and statistics capabilities together with other

information from CMS in the platform. Collectively these services enabled a framework to find, read, learn, compare and reuse content that was once challenging to find.

CAP's collaboration with CMS has led the service to become increasingly essential to the research infrastructure in CMS, and to incorporate analysis presentation into the daily lives of the research community at CERN. The CAP service received a further strong endorsement from the LHC experiments at CERN, identified as a key resource to implement the LHC Open Data Policy. A paper presented at CHEP'19 describes the conceptual and technical features of the CAP service:

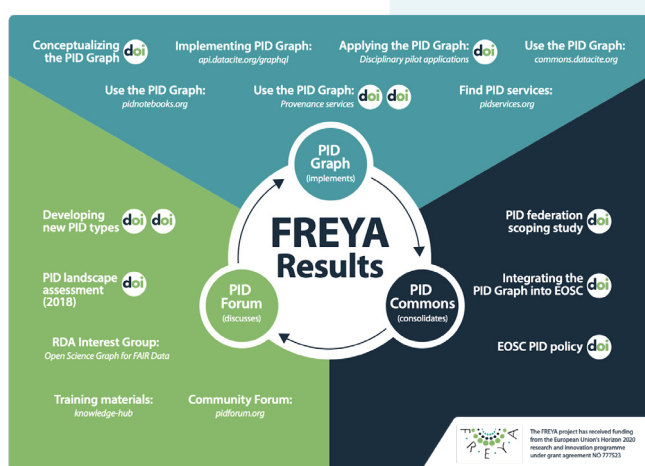
https://www.epj-conferences.org/articles/epjconf/pdf/2020/21/epjconf_chep2020_06011.pdf

DOCTORAL RESEARCH

In 2020, Sebastian Feger, a Ph.D. student from Ludwig-Maximilian University working in the Open Science Section at CERN successfully completed his Ph.D. in Human-Computer Interaction (HCI). Sebastian's research focused on the intersection between Data Science and Open Science, supporting and motivating reproducible science practices through the design of suitable interactive tools. His work achieved a wider understanding of researchers' interactions with tools that support research documentation, preservation, and sharing. The research reported in his thesis represented the first systematic application of HCI methods in the study and design of interactive tools for reproducible science. His work highlighted the unique role of HCI in supporting, motivating, and transforming reproducible research practices through the design of tools that enable effective research data management (RDM). His thesis paved new ways for interaction with RDM tools that support and motivate reproducible science.

FREYA PROJECT CONCLUDED

The FREYA project "Connected Open Identifiers for Discovery, Access and Use of Research Resources" was an EC-funded project which concluded in December 2020 after three years. The project's public deliverables, publications and exploitable results are available on FREYA's Zenodo Community page and on the website. CERN has contributed to the majority of the project's deliverables over the years and led one of the project's Work Packages, WP4, tasked with "integrating the PID Graph". The PID Graph refers to a network of interconnected persistent identifier (PID) systems that links PIDs together via relations in their metadata to enable the discovery of connections in a way that both humans and machines can follow. WP4 produced seven deliverables and coordinated the work of the project's disciplinary partners on building pilot applications to demonstrate how the concept of the PID Graph and the work developed by core PID service providers on specific PID infrastructure services/tools can be implemented in practice in community services.



CERN enhanced a variety of its services with more PID-related features and Open Science best practices through participating in FREYA. These services primarily include CERN Open Data, CERN Analysis Preservation and INSPIRE.

<http://project-freya.eu>

Achievements

FREYA has delivered results on three fronts: the PID Graph, the PID Forum and the PID Commons. Results related to the PID Graph refer to its technical bases, such as the GraphQL API, its applications and demonstrations (e.g., Jupyter notebooks, the disciplinary integrations) and ancillary services such as the Common DOI search. The PID Forum is represented primarily by the discussion forum and through supporting FREYA's research on the PID landscape and applications for new PIDs, but also through activities and outputs that enabled the active participation of the wider stakeholder community in the development and establishment of the PID Commons. The PID Commons pillar steers future development of the PID services. Results related to that include FREYA's work towards establishing a PID Alliance or Federation and contributions to EOSC pertaining to the sustainability of the PID infrastructure.

Conclusion

FREYA had its final event online together with EOSC-Hub and SSHOC in November 2020. Attendees were able to learn about the work FREYA has done in the past three years to build the infrastructure for persistent identifiers in the context of the EOSC.

The final review of the project was carried out in January 2021 by the European Commission. The overall assessment was

that FREYA has achieved most of its objectives and milestones with relatively minor deviations which is considered a very good outcome. The project was especially praised for the development of the various PID services, the discipline-specific uptake of PIDs, the work on disciplinary applications/integrations, the community engagement activities, and its dissemination and exploitation strategy.

UKRI & UNESCO OPEN SCIENCE CONSULTATION

The Open Science Section continued its engagement with the global scientific community in 2020, contributing to major international policy consultations. These included the UK Research and Innovation (UKRI) Open Access Review Consultation, which aimed to inform open access policies for peer-reviewed research articles and academic books (monographs, book chapters, edited collections) that result from research supported by UKRI. In addition, CERN contributed to the UNESCO global consultation to develop a draft Recommendation on Open Science, an international standard-setting instrument that will be presented at the 41st session of the UNESCO General Conference at the end of 2021. CERN will continue to engage with international organizations through the coming year to advocate for broader uptake of Open Science policies.

SCOAP3 EXTENDED UNTIL 2024

The Governing Council (GC) of the SCOAP3 Collaboration—the world’s largest disciplinary open access initiative—held its 10th annual meeting on October 20th–21st, during Open Access week 2020. Organized virtually due to the ongoing COVID-19 pandemic, a total of 47 participants (representing 25 countries and 2 international organizations) from across the SCOAP3 collaboration met to discuss major strategic issues for the program towards advancing its mission to provide open access to the research literature in particle physics at no financial burden to authors.

The meeting of the 2020 GC was focused on two major strategic initiatives. The first was to vote on the recommendation of the SCOAP3 Tender Working Group (STWG) to maintain the current scope of the SCOAP3 initiative, in terms of publishing services and procurement conditions, by arranging a two-year extension of Phase 3 (currently 2020–2022) under existing terms. This recommendation was developed specifically to provide members of the SCOAP3 partnership (partner institutions and participating publishers) with stability during the financial uncertainty resulting from the COVID19 pandemic. The proposal by the STWG was subject to deliberation and members discussed the effects of the pandemic on institutional and local finances. There was broad agreement

<http://scoap3.org>

that SCOAP3 provides excellent value for money when benchmarked against other initiatives, and members agreed that it should be prioritized for support. As a result, the GC voted unanimously to support this proposal.

The second major strategic initiative under discussion was the SCOAP3 for Books program, an effort to transition a list of important books in high-energy physics and related disciplines to open access. Members of the Governing Council received an update from CERN on the ongoing procurement process and were informed of the discussions to transition the identified texts to open.

SCOAP³ Remote Governing Council Meeting October 2020



SCOAP3 Governing Council 2020 meeting took place remotely

NEW SCOAP3 PARTNER: IRELAND

With the participation of IReL, Ireland now becomes the 44th country in the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP3), the world’s largest disciplinary open access (OA) initiative. Membership of the nationally funded e-resource licensing consortium in Ireland in SCOAP3 is welcome news for all high-energy physics researchers in Ireland, as it allows them to continue to publish OA in the sponsored journals, regardless of their institutional affiliation.

PUBLISHING

<http://e-publishing.cern.ch>

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.

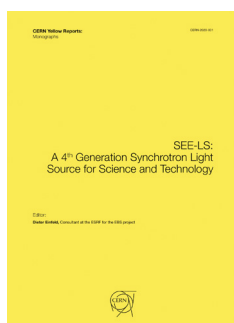
CERN has always had a strong commitment to science education. As an open institution, making scientific results publicly available is an integral part of CERN's mandate. By collaborating with PriSE, CERN aims to help strengthen open access to science education. In a sector where many scientists and users 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 first public environment report in 2020. The report was presented to the CERN Council at its June meeting, the report covers the years 2017 and 2018 and has been prepared according to the Global Reporting Initiative Sustainability Reporting Standards. It details the current status of CERN's environmental footprint, along with objectives for the coming years.

CERN REPORTS PUBLISHED IN 2020



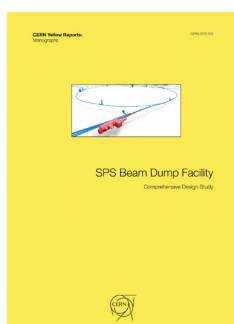
EE-LS: A 4th Generation Synchrotron Light Source for Science and Technology

Einfeld, Dieter

CERN-2020-001

Geneva, Switzerland: CERN, 2020.

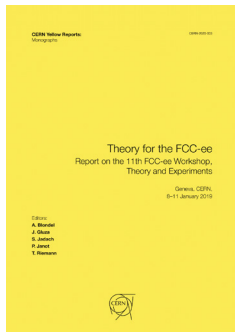
198 p. (CERN Yellow Reports: Monographs; 1/2020)



SPS Beam Dump Facility - Comprehensive Design Study

Ahdida, C.C.; Calviani, M. (ed.); Goddard, B. (ed.); Jacobsson, R. (ed.); Lamont, M. (ed.)
arXiv:1912.06356 ; CERN-PBC-REPORT-2019-005 ; CERN-2020-002 - 2020.

596 p. (CERN Yellow Reports: Monographs ; 2/2020)



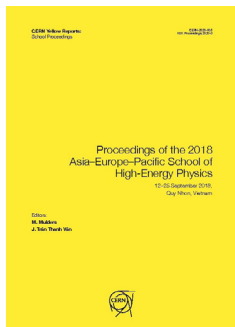
Theory for the FCC-ee: Report on the 11th FCC-ee Workshop Theory and Experiments

Blondel, A. (ed.) (Geneva U.) et al.
Geneva : CERN, 2020
08 - 11 Jan 2019
CERN-2020-003
Geneva, Switzerland
286 p. arXiv:1905.05078



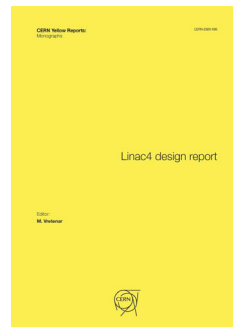
LHC fixed target experiments: Report from the LHC Fixed Target Working Group of the CERN Physics Beyond Colliders Forum

Barschel, Colin
CERN-PBC-REPORT-2019-001
CERN-2020-004. - 2019.
47 p. (CERN Yellow Reports: Monographs; 4/2020)



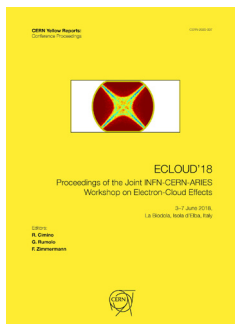
Proceedings of the 2018 Asia-Europe-Pacific School of High-Energy Physics - 4th Asia-Europe-Pacific School of High-Energy Physics (AEPSHEP2018)

Quy Nhon, Vietnam / Mulders, M. (ed.); Trần Thanh Vân, J. (ed.)
12 - 25 Sep 2018
Geneva: CERN, 2020
219 p. CERN-2020-005



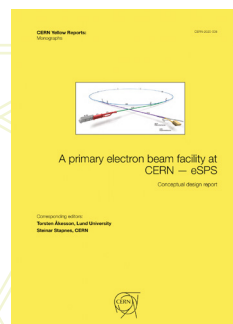
Linac4 design report

Vretenar, Maurizio (ed.)
CERN-2020-006.
Geneva: CERN, 2020.
137 p. (CERN Yellow Reports: Monographs; 6/2020)



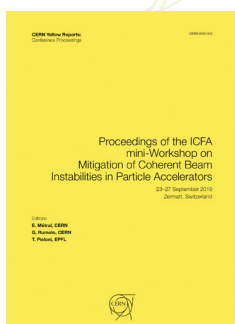
ECLLOUD'18: Proceedings of the Joint INFN-CERN-ARIES Workshop on Electron-Cloud Effects 6th Workshop on Electron-Cloud Effects ECLLOUD2018

La Biodola, Isola d'Elba, Italy / Cimino, R. (ed.); Rumolo, G. (ed.); Zimmermann, F. (ed.)
3 - 7 Jun 2018
Geneva: CERN, 2020
254 p. CERN-2020-007



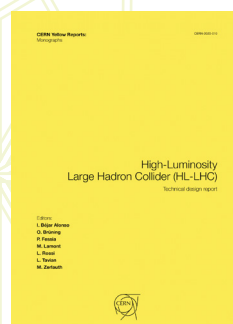
A primary electron beam facility at CERN —eSPS: Conceptual design report

Aicheler, M.; Akesson, T. (ed.); Stapnes, S. (ed.)
arXiv:2009.06938 ; FERMILAB-PUB-20-491-CMS-SCD-T CERN-2020-008. - 2020-12
175 p. (CERN Yellow Reports: Monographs ; 8/2020)



Proceedings of the ICFA mini-Workshop on Mitigation of Coherent Beam Instabilities in Particle Accelerators

Métral, E. (ed.) (CERN); Rumolo, G. (ed.) (CERN); Pieloni, T. (ed.) (EPFL)
23 - 27 Sep 2019
Zermatt, Switzerland / Geneva: CERN, 2020 - 406. CERN-2020-009

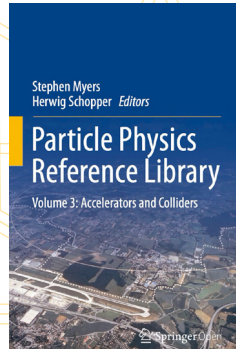
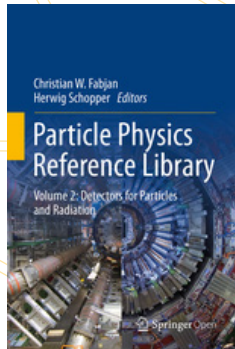
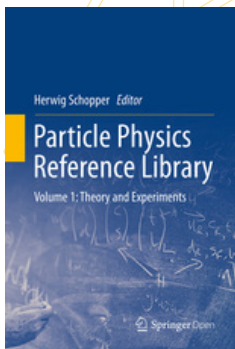


High-Luminosity Large Hadron Collider (HL-LHC): Technical design report

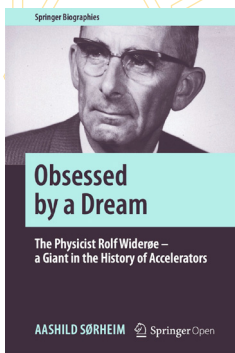
Béjar Alonso, I; Brüning, O (ed.); Fessia, P (ed.); Rossi, L (ed.); Taviani, L (ed.); Zerlauth, M (ed.)
CERN-2020-010.
Geneva: CERN, 2020.
390 p.(CERN Yellow Reports: Monographs; 10/2020)

2020 OPEN ACCESS BOOKS

Manuscripts intended for a broader audience than the CERN Reports are produced in collaboration with publishers. During 2020 two major OA book projects were completed—this time together with Springer Nature. CERN has also published open monographs working with World Scientific, most recently for *ATLAS: a 25-year insider story of the LHC experiment (2019)*.



Particle Physics
Reference Library



“Obsessed by a dream: the physicist Rolf Widerøe: a giant in the history of accelerators”

OA SWITCHBOARD INITIATIVE

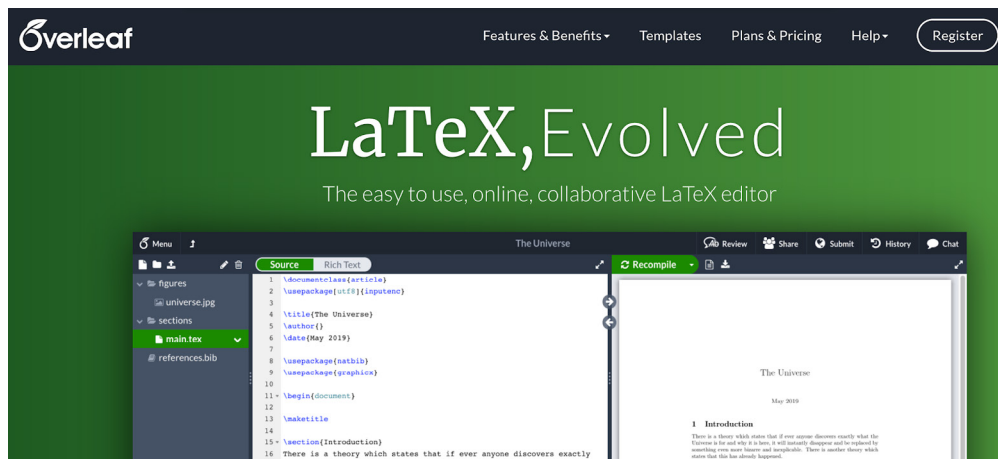
After an initial meeting of key stakeholders in 2018 and subsequent feedback following presentations on the OA Switchboard concept, CERN, represented by the Scientific Information Service, has in 2020 been giving input and tested pilot implementations of the infrastructure being put in place to standardize handling of author processing fees across different publisher platforms. OASPA prepared practicalities for the project to run throughout the year preparing for the OA Switchboard to go live as an operational solution. The 2020 project was funded via sponsors, including CERN, who generally supported the initiative.



For 2021 and beyond, the OA Switchboard is building everything in accordance with agreed principles among the partners and operating with a governance structure and funding model that will ensure sustainability and preserve the goals of the OA Switchboard into the future. On 16 October 2020, OASPA founded the independent Stichting OA Switchboard.

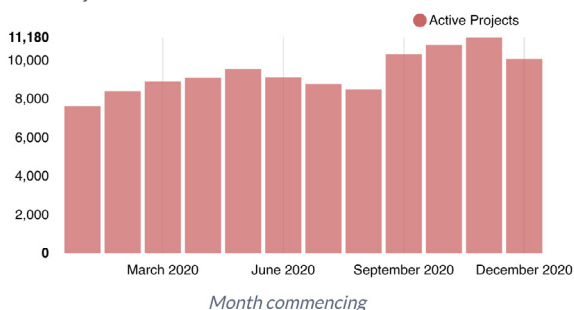
OVERLEAF - THE COLLABORATIVE PUBLISHING TOOL

[Overleaf](#) has over the last years established itself as the main platform for the preparation of large documents with collaborative authorship at CERN. The platform facilitates the preparation of CERN Reports, a potential that can be explored further by offering full-fledged report templates. This work is in preparation and should be released in 2021.

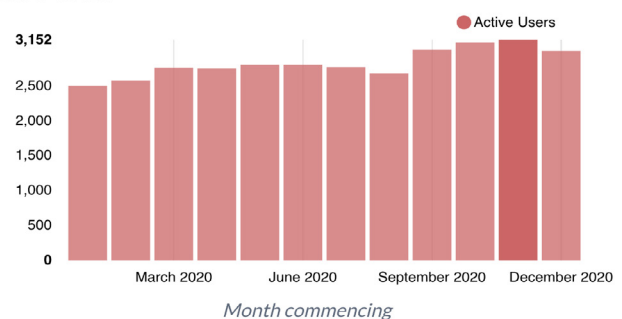


European Organization for Nuclear Research (CERN) Metrics for 2020

Active Projects ^(?)



Active Users ^(?)



In 2020 the platform CERN Publishing was upgraded to run on OJS3. OJS 3.x has dramatically enhanced the user experience with even better clarity while continuing to provide a solid foundation of core functionality enabling the publishing service to meet its diverse requirements and practices. OpenJournalSystems.com has been closely following the development of OJS 3.x since 2013, starting from the OJS 3.x alpha version and evaluation by CDL (California Digital library), to the beta version, and all the way through to the current production release.

The publishing service has assisted CERN authors to publish articles falling outside of the scope of the SCOAP3 journals open access in a variety of journals. Details about the result can be found in the Section "facts & figures".

FACTS & FIGURES

LIBRARY STATISTICS

The statistics show a decrease in the number of interlibrary loans and document delivery requests, which was particularly marked in 2019-2020. This is most likely due to the increased availability of Open Access content, as the following graph shows for the years 2000-2018.

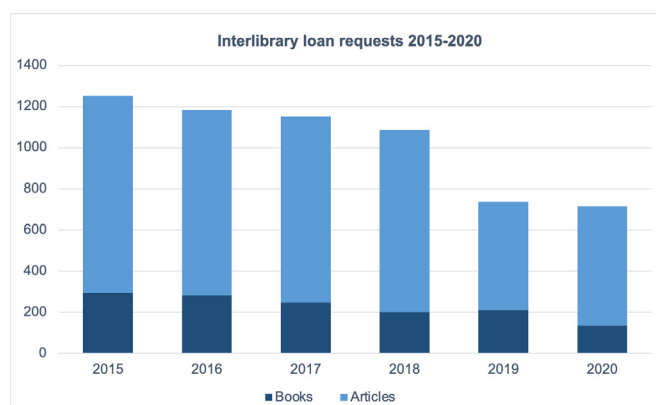
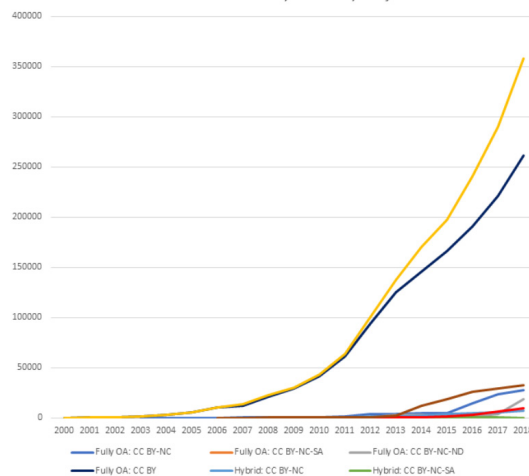


Chart 1: Open Access Articles Published by OASPA Members: Different CC licenses in fully OA and hybrid journals



Data were taken from <https://oaspa.org/growth-continues-for-oaspa-member-oa-content/>

SERVICE-NOW TICKETS

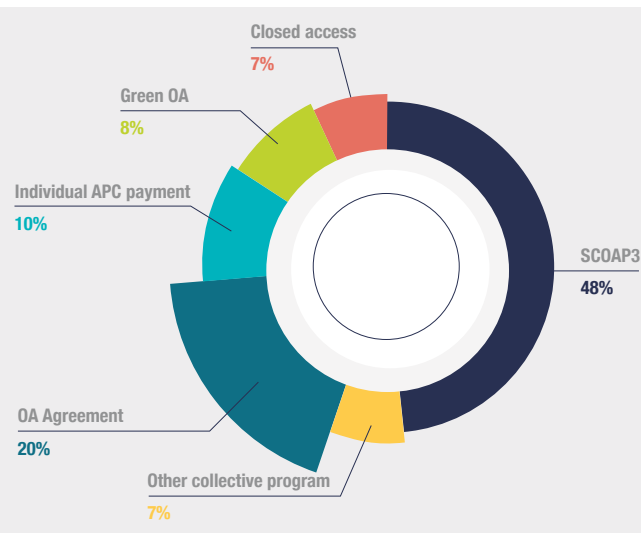
RCS-SIS: Resolved		
Functional Element	Request Fulfillment Count	Percentage of Request Fulfillments
Library processing, bibliographic data	458	33.26%
Library Loan	376	27.31%
Library Acquisition And Collection Management	227	16.49%
Library-assisted literature and citations search	216	15.69%
Open Access Publishing Support	73	5.3%
Library Distribution	13	0.94%
Library Events and Sales	10	0.73%
Digital Object Identifier Registration support	2	0.15%
CERN - Archive	1	0.07%
Data Analysis Preservation Repository	1	0.07%
total	1,377	100%

INSPIRE STATISTICS 2020

- 1.4 million bibliographic records - 27 million citations captured
- 129k author profiles
- 50k active users (researchers) - 5M million individual page views - 11k visitors per day
- 50k new records ingested per year

CERN PUBLICATIONS 2020

CERN publishes ca. 1000 articles every years and aims to have all its results available open access. SIS establishes several routes to achieve this and we are proud to say that we manage to reduce more and more the fraction of articles that are not freely accessible.



OUTLOOK



SIS starts the new year 2021 predominantly in telework mode. The COVID-19 pandemic will continue to create significant challenges for the team dynamics and will limit the use of on-site services, in particular the CERN Library. However, the significant achievements of 2020 have demonstrated that we are well prepared to operate in a remote-working environment.

LIBRARY RENOVATION



With the first preparation (mainly on budgetary and project organization aspects), the library renovation project will go full steam ahead in 2021. Right at the beginning of the year, we will obtain input from specialized architects and consultants on the planning of the space, furniture and signage, etc. Then the colleagues of the CERN Space and Civil Engineering department will work with us to kick off the actual work.

MORE READ & PUBLISH AGREEMENTS



After the successful negotiation of four key agreements in 2020, we will focus on the remaining major publishers for the CERN community with the aim to have all key journals covered in Read & Publish agreements. We also aim to accompany the new agreements with further clarifications in the CERN Open Access policy and an outreach and education campaign to ensure broad awareness amongst the CERN community.

CERN OPEN SCIENCE STRATEGY



The release of the LHC Open Data Policy in December 2020 marked the first milestone towards a discipline-wide open science policy for particle physics as envisioned in the last update of the European Strategy for Particle Physics. As a next important step, we will work with all stakeholders at CERN to develop an institutional Open Science Policy.

EXPAND THE INSPIRE SERVICES



In the first months of 2021, INSPIRE will complete its transition to the new technology. As soon as the team has completed this major milestone, we will focus on delivering new services. The ideas range from more customization and self-service for users, over expanding the scientific scope to adding additional research artifacts such as slides or notes from conferences.



CREDITS

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

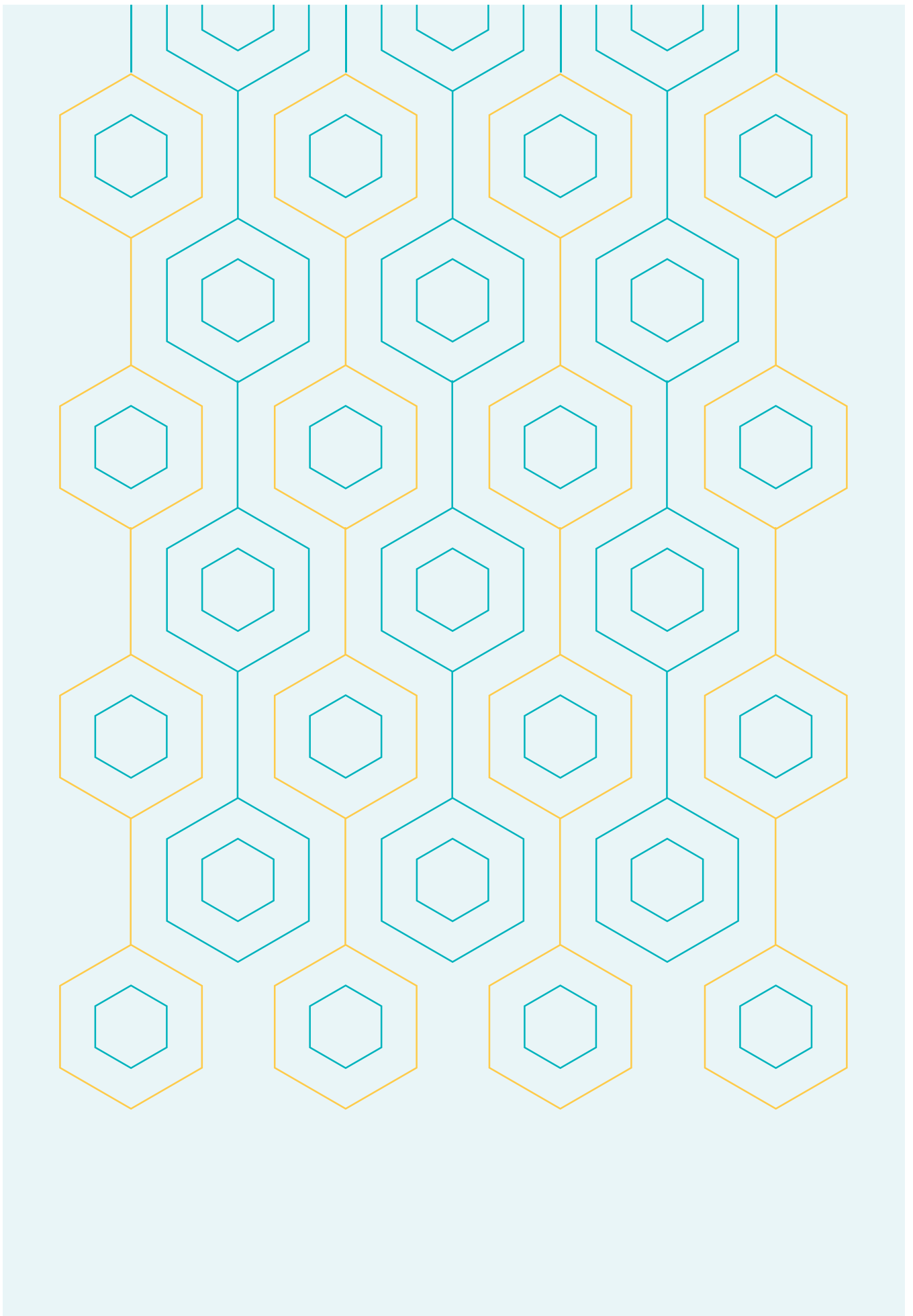
This document should be cited as:
CERN Scientific Information Service:
Activity Report 2020.

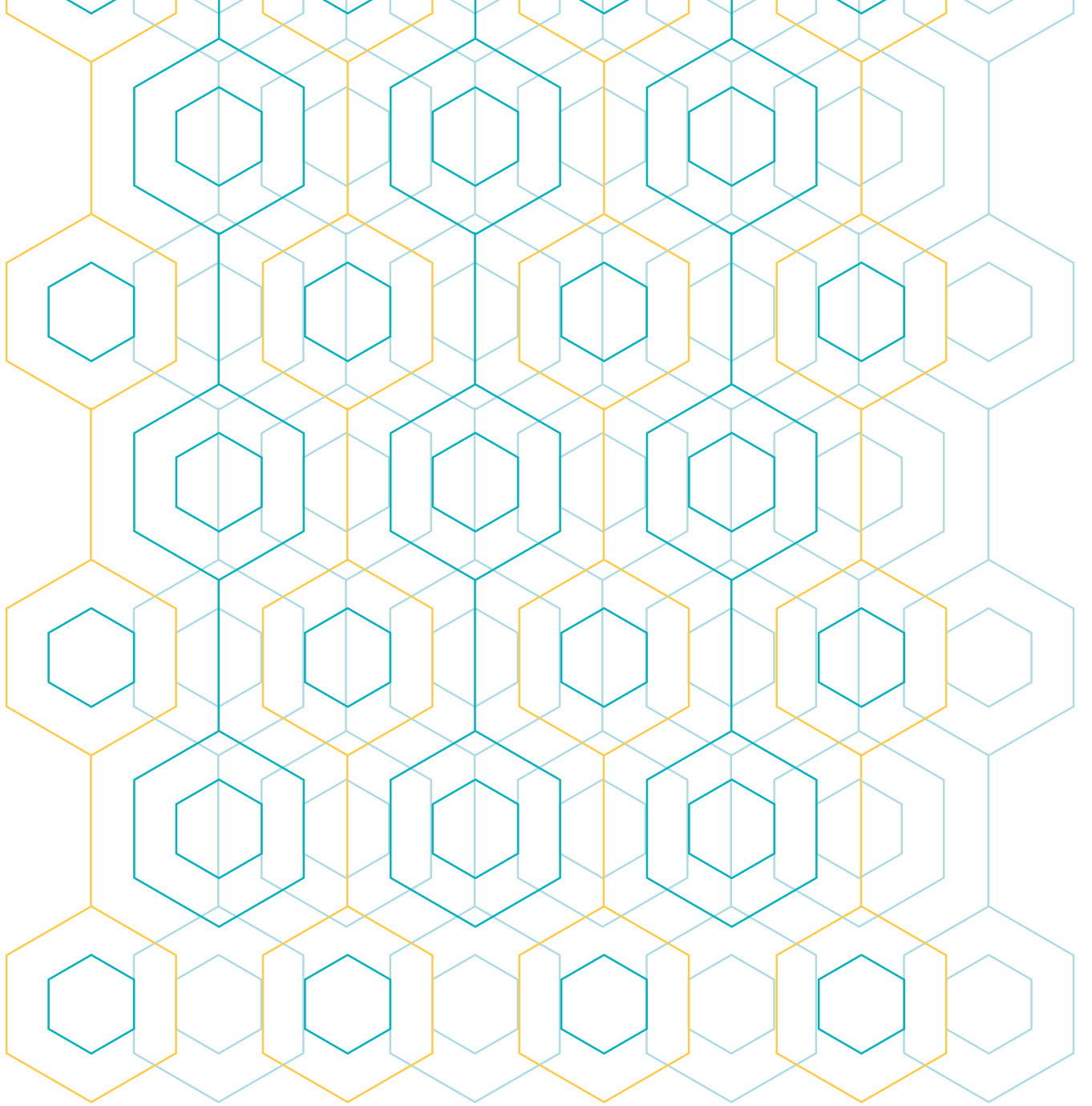
ISBN: 978-92-9083-597-4
DOI: 10.17181/CERN.8O5B.GCZ1

Images:

S. Wolf p. 4, A. Hollier p. 7, Project FREYA p. 15, A. Kohls p. 16
CERN: all other images

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Scientific
Information
Service