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ESO Conference Proceedings 2.0 at Zenodo

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As of the past few years, ESO no longer publishes conference proceedings, mainly because of the large effort involved in their production and the relatively small impact of proceedings papers. In order to continue to preserve a record of ESO-hosted conferences, the ESO Library has implemented a system called "Conference Proceedings 2.0". Presentation slides and posters are made available through Zenodo, a CERN-developed platform for the permanent storage of digital research output, ensuring that content is citable, discoverable, and archived.

For many decades, conference proceedings formed a vital part of the astronomy literature. Astronomers typically present their latest findings at scientific meetings, and the resulting conference papers provided valuable information about ongoing research to those colleagues who could not attend the conference, and preserved the results for posterity. For the researchers, writing up their presentations often formed the basis for a more detailed, refereed article.

ESO has a long history of publishing proceedings volumes of the workshops and conferences it hosted. From 1969 to 2002 ESO issued the ESO Conference and Workshop Proceedings which were produced and published in-house. In a joint project involving the ESO Library and the NASA Astrophysics Data System Abstract Service (ADS), many of these volumes have been scanned and made available in electronic format to the entire astronomy community. The PDF files can be accessed via the Library catalogue[1] or directly at the ADS[2]. In the following years, the ESO Astrophysics Symposia series was published by Springer[3].

However, 10 years ago the impact of conference proceedings in the natural sciences was already known to be declining, with proceedings papers becoming obsolete faster than scientific literature in general (Lisée, Larivière & Archambault, 2008). In light of the reduced impact of conference proceedings, and because of the large effort (on the part of authors and editors) as well as the costs involved in the production of conference proceedings, it was decided to discontinue the symposia series. The last volume was published in 2009. In the mid-2000s, some organisers started posting presentation slides of conferences on the web; however, this approach was inconsistent, and the content prone to deletion after the meetings.

Next-generation conference proceedings

Despite the cessation of ESO's conference proceedings series, the Library still considered it important to preserve the legacy of content presented at ESO-hosted meetings. Obviously, the problems encountered with the series volumes needed to be avoided, and establishing records of conference material had to be as straightforward and cost-effective as possible. An idea was developed to take presentation slides and poster PDFs (which are prepared for the conference anyway), add descriptions (metadata) to the individual records, and archive them in a central place. In this way, the Library sought to establish "ESO Conference Proceedings 2.0", adapted to the digital age.

In their search for a suitable platform, the librarians encountered Zenodo[4]. Developed by the European Organization for Nuclear Research (known as CERN) in the context of the European Commission's OpenAIRE project[5], Zenodo is a repository for all kinds of research artefacts that form part of the scholarly process, and which are not published elsewhere. Such individual research output is often referred to as "the long tail of science". Zenodo's lead software developer describes the content as follows: "Data, software and other artefacts in support of publications may be the core, but equally welcome are the materials associated with the conferences, projects or the institutions themselves" (Nielsen, 2017).

Zenodo applies the FAIR guiding principles for scientific data management and stewardship[6] by assuring that deposited content is "Findable, Accessible, Interoperable, and Reusable". The ESO Conference Proceedings 2.0 project provides compelling advantages as content submitted to Zenodo is:

- **Citable** — Zenodo will assign DOIs (Digital Object Identifiers[7]) to all submissions.
- **Discoverable** — content will be directly retrievable at Zenodo; more importantly, the ESO Library will notify ADS about the conference collection so that they can harvest the metadata and make them retrievable through the NASA ADS Abstract Service.
- **Archived** — Zenodo will permanently preserve the material.

In addition, the librarians create links between the ESO conference programme on the web and the Zenodo records. This enables easy retrieval of the presentation slides from the programme web page, and at the same time relieves ESO of the task of storing the final versions of presentation slides and posters on the ESO server.

In 2015, the ESO Library started to explain the benefits of Zenodo conference proceedings to organisers in order to find out whether there was any interest in the idea. The ESO/ESA workshop on Science Operations (SciOps) 2015 was the first trial, and a success. As a result, the presentation slides and posters are now easily retrievable and accessible (a) at Zenodo[8] (see Figure 1), (b) via the NASA ADS[9], and (c) through the ESO programme website (see the various links below[10, 11]), and the content is permanently preserved.

As of mid-2018, the librarians have loaded 16 ESO-hosted conferences into Zenodo, providing lasting records of conferences held at ESO Garching and Chile.

Workflow at ESO

In order to establish a default procedure for ESO-hosted meetings, the Library has developed Conference Proceedings 2.0 at Zenodo. This is a workflow that is presented to the Chair of the Science

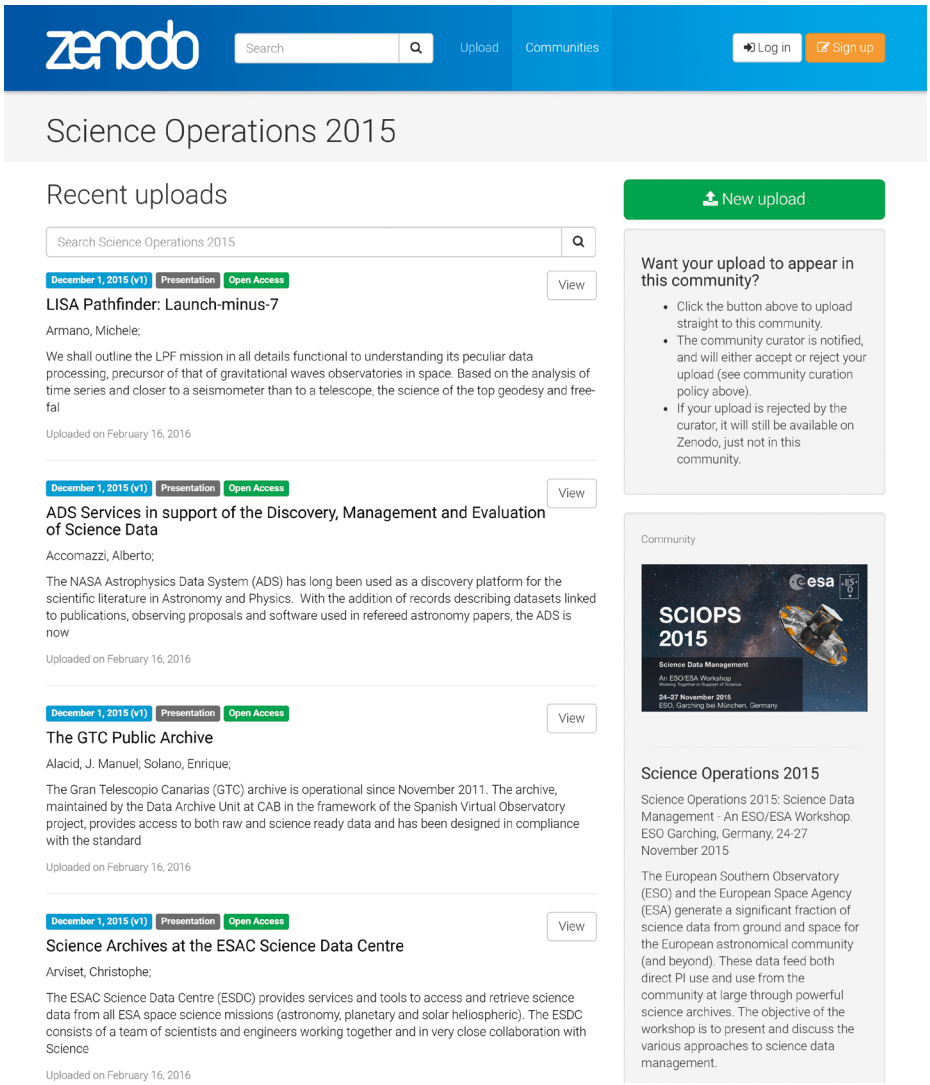

Figure 1. Screenshot of the Science Operations (SciOps) 2015 community at Zenodo, the first ESO Conference Proceedings 2.0 community that was curated by the ESO Library.

Organising Committee (SOC) as soon as an event is announced.

Well in advance of the conference, the organisers receive a Microsoft Excel template from the Library, prefilled with sample entries of the descriptive information (authors, affiliations, title, abstract, etc.) that is requested for each contribution. The Library also provides a sample email to the organisers that can be used to inform conference participants about the Zenodo proceedings. Either during or after the conference, the organisers fill out the Excel spreadsheet with metadata of all the records that will be submitted to Zenodo. Once complete, they return the file to the librarians, along with the PDFs of presentations and posters. Zenodo records can also be complemented with additional files, such as write-ups of discussion sessions or videos.

The ESO librarians add further metadata, for example, the conference name, location, and dates. In parallel, they prepare the respective conference area (called a community) at Zenodo where general information about the meeting can be displayed, along with a logo and a link to the conference website. Initially, the ESO librarians had to add each talk or poster manually to the newly created community space. In the meantime, Zenodo has made an application programming interface (API) available that can be used for bulk import. The Excel file along with the zipped PDFs are uploaded via a tool developed by the ESO librarians so that all Zenodo records pertaining to a given conference are created at once. During the upload a check for duplicates and missing information takes place. Once the quality check is successfully completed, all talks and posters are published at Zenodo by using an ESO-internal Zenodo interface created by the Library.

Zenodo encourages users to share their research as openly as possible to maximise use and reuse of research results. Therefore, the default license under which content is published is CC BY (current version: Creative Commons Attribution 4.0 International)[12]. CC BY 4.0 allows redistribution and reuse of a licensed work under the condition that the original creator is appropriately credited.

If a conference presenter is not comfortable with the CC BY approach, the uploaded content does not necessarily have to be open. Files can be embargoed or even defined to be private. In order to correct typos and other mistakes in the metadata, the librarians can modify the descriptions of records at any time. However, once a record has been published, the associated file cannot be deleted. If absolutely necessary, a revised version of the PDF can be uploaded; this will result in a new DOI for the record.

Should conference participants choose not to make their contributions available through Zenodo, they can opt out simply by informing the organisers.

If you are planning to organise a conference at ESO and would like to get further information about the Conference Proceedings at Zenodo, please do not hesitate to contact the librarians.

Conclusion

Organisers of ESO-hosted conferences increasingly use the library-developed Conference Proceedings 2.0 at Zenodo to establish citeable, retrievable, and permanently archived records of the meeting content. The effort required to gather the material and the respective metadata is reasonable, since authors do not need to

spend additional time on writing a separate conference paper. With this Zenodo solution, presentation slides and posters presented at conferences are preserved and made available to the community promptly, in a professional way, and are available for reuse and redistribution by other researchers.

References

Lisée, C., Larivière, V. & Archambault, E. 2008, Journal of the Association for Information Science and Technology, 59, 1776, DOI 10.1002/asi.20888
Nielsen, L. H. 2017, DOI 10.5281/zenodo.802100

Links

1 Scanned versions of selected volumes of ESO Conference and Workshop Proceedings are accessible through the ESO Library catalogue: https://eso.koha-ptfs.eu/cgi-bin/koha/opac-search.pl?q=ccl=se%2Cphr%3A%22ESO%20Conference%20and%20Workshop%20Proceedings%22&offset=0&sort_by=pubdate_dsc
2 Papers published in ESO Conference and Workshop Proceedings are available at the NASA ADS: http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?sort=BIBCODE&bibstem=ESOC
3 ESO Astrophysics Symposia: https://link.springer.com/bookseries/3291
4 Zenodo: https://zenodo.org
5 OpenAIRE: https://www.openaire.eu/
6 FAIR Principles: https://www.go-fair.org/fair-principles/
7 DOI (Digital Object Identifiers): www.doi.org
8 SciOps 2015 conference proceedings accessible at Zenodo: https://zenodo.org/communities/sciops2015/
9 SciOps 2015 conference proceedings at ADS: http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?bibcode=2015scop.confE
10 SciOps 2015 conference ESO programme page presentations – click expand all to see DOIs linked to Zenodo: https://www.eso.org/sci/meetings/2015/SciOps2015/program.html
11 SciOps 2015 conference posters: https://www.eso.org/sci/meetings/2015/SciOps2015/posters.html
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Report on the ESO Workshop

A Revolution in Stellar Physics with Gaia and Large Surveys

held at the Warsaw University Library, Warsaw, Poland, 3–7 September 2018

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The exquisite astrometry and photometry of ESA's Gaia satellite combined with data from other large photometric, spectroscopic, and asteroseismic stellar surveys are enabling a revolution in our understanding of stellar physics. The goal of this workshop was to bring together a diverse community working on or making use of various aspects of stellar physics. The discussions covered both recent advances in the field and expectations for when new data and surveys become available.

Taking place a few months after the second data release (DR2) of Gaia, the workshop was ideally timed to allow the presentation of the first results to come out from those data. The topics covered included both theory and observations of: low- and high-mass stars; evolutionary stages ranging from the pre-main sequence to white dwarfs and black holes; stellar ages; stellar clusters; and stellar populations.

This workshop was co-organised by ESO and the Nicolaus Copernicus Astronomical Center, a research institute of the Polish Academy of Sciences. Poland became the 15th ESO member state in mid-2015. Hosting the workshop in Warsaw facilitated and encouraged the participation of the local community, helping to strengthen the links between Polish astronomers and the wider ESO community — of the 117 participants, 21 had Polish affiliation. The programme comprised 16 invited talks, 43 contributed talks and 40 posters. Details of the programme can be found via the workshop webpage[1]. Each talk was followed by a five-minute session dedicated to questions and discussions. It was very pleasing to note that the level of participation during these sessions was very high and that the number of questions was certainly above average. Poster viewing took place during all coffee breaks and was particularly encouraged during one dedicated long break of 50 minutes.

Setting the stage for the rest of the week, the first talk of the workshop was a review of Gaia DR2 by Elena Pancino. The talk highlighted the impressive numbers associated with Gaia, which includes positions and *G* magnitudes for more than 1.6×10^9 stars, astrometry and colours for more than 1.3×10^9 stars, radial velocities for more than 7×10^6 stars, and effective temperatures for more than 160×10^6 stars. At the faint end ($G > 14$ magnitudes), the astrometry of Gaia DR2 already reached the expected performance for the end of mission. The uncertainties and caveats associated with the released data were also discussed, stressing the need for users of Gaia data to familiarise themselves with the DR2 publications and documentation.

Stellar physics and models

Three invited talks reviewed the state-of-the-art stellar models, one focussing on low-mass stars, another on high-mass