

EDITING RECOMMENDATIONS FOR JACoW CONFERENCES

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2022-08-27

Abstract

There are a number of documents on JACoW.org outlining what and how editing has to be done. The following collection of recommendations and rules was put together while editing and producing proceedings during the COVID times and reflects what often is missed when editors are working remotely. In general this set should act as a quick reminder for editors.

PAPER EDITING

- Only official tools are allowed to use: Acrobat Pro (DC, XI, 2020), PitStop ($\geq 13/2017$), MSWord, L^AT_EX, LibreOffice with latest updates included,
- In L^AT_EX jacow.cls v2.14 (2022-08-07) should be used (it fixes some loaded packages modified since last release, should detect whether the latest version of L^AT_EX is used (2022-06-30) concerning \MakeTextUpper which is used for \NoCaseChange{text}, it fixes some BibL^AT_EX short coming of IEEEtran style and the comma problem before a DOI, the DOI is on a line by itself when it otherwise would be hyphenated).

NOT REGISTERED

Do not edit a paper when no author is registered for the paper (check before whether the registration data a fed back to SPMS).

AFFILIATION BLOCK, TITLES, AND SECTION HEADINGS

- Formatting the author-affiliation block:
There are two ways to group authors and institutes, only the first one is documented in the JACoW template (this is due to only one institute per author therefore no mixture between authors and institutes which need cross references):
→ *by institutes*: all authors of the same institute are grouped, the main author starts, further institutes are listed in alphabetical order.
→ *by authors*: the authors are listed in alphabetical order and carry a superscript number to refer to the institute, which is listed below the authors.

Figure 1 shows two screen shots where the different ways of formatting and their (dis)advantages are shown for each version. The left graphic shows the formatting “*by institutes*”, grouped like in the JACoW template, the right one “*by authors*” where the authors are listed with superscripts referencing their institute(s).

In the “*by authors*” version we need 6 lines, in the “*by institutes*” version 8 lines. In addition we lose 4 lines of text on the page. The reason for allowing the “*by authors*” version is that the number of groupings becomes confusing when there are many authors at several institutes. Using superscripts we have to list 5 institutes, in the “*by institutes*” version 8 institutes are listed, of which 3 appear twice.

THE ENUBET MULTI MOMENTUM SECONDARY BEAMLINE DESIGN

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Abstract

The aim of neutrino physics for the next decades is to detect effects due to CP violation, mass hierarchy, and search for effects beyond the Standard Model predictions. Future experiments need precise measurements of the neutrino interaction cross-sections in the GeV/c regime, currently limited by the exact knowledge of the initial neutrino flux on a $\sim 10 - 20\%$ uncertainty level. The ENUBET project is proposing a novel facility, capable of constraining the electron neutrino flux normalization through the precise monitoring of the $K_{\mu 2}$ ($K^+ \rightarrow \mu^+ \nu_{\mu}$) decay products in an instrumented decay tunnel. ENUBET can also monitor muons from the two-body kaon and pion decays (ν_{μ} flux) and measure the neutrino momentum with about 10% precision without relying on the event reconstruction at the detector level. We present here a novel design based on a multi (4–5 GeV/c) momentum range secondary beamline that widens the cross-section energy range that can be explored by ENUBET and, therefore, the physics capabilities of the facility. In this contribution, we discuss target optimization studies and we show preliminary results on the new line's optics and the layout design. We finally provide an outlook on the expected performance of the line.

INTRODUCTION: THE ENUBET PROJECT

Uncertainty on the knowledge of neutrino fluxes currently limits the precision of cross-section measurements to 0.5–10% [1]. Most of the present and proposed future neutrino experiments rely on the appearance of the electron neutrino (ν_e), like T2K [2], NO ν A [3], DUNE [4] and HyperK [5], hence the direct measurement of the ν_e cross-section is attracting great worldwide interest [6], and the problem has not yet been solved despite the efforts on accelerator neutrino beams since the 1970s [7, 8]. The ENUBET project aims to develop an experimental facility that will provide a beam of ν_e originating from the decays of positively charged kaon mesons (K^+) [9]. Such a facility requires the semi-leptonic decay of kaons $K^+ \rightarrow \mu^+ \nu_{\mu}$ ($K_{\mu 2}$) to be the only source of electron neutrinos. The $K_{\mu 2}$ decay is tagged and monitored in a fully instrumented decay tunnel to improve the precision of the existing cross-section measurements [10]

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by an order of magnitude. For this purpose, a challenging optimization of the secondary particles (kaon) beamline, the momentum selection, the collimators, and finally the decay tunnel's length is necessary [11]. More specifically, the future ENUBET neutrino beam will be based on a two-stage approach. At first, the charged kaons will be produced via the interaction of high-energy protons on a target material. After the target, the kaons will be captured, focused, momentum selected, and transported through a short ($\sim 20 - 30$ m length) beamline up to the entrance of a ~ 40 m long, instrumented decay tunnel. At the second stage, inside the decay tunnel, kaons selected in a narrow momentum bite will decay producing a narrow-band ν_e beam. The electron neutrino flux will be therefore monitored by observing the positions produced from decays and emitted at a large-angle with a longitudinally segmented calorimeter instrumenting the decay tunnel. ENUBET is also suitable for monitoring of large angle muons from kaon decays and low angle muons from pion decays, which provide a high-precision monitoring of the ν_{μ} flux.

PROTON EXTRACTION

In order to monitor the kaon decay products on a particle-by-particle basis and at the same time maintain a local rate at the level of ~ 1 MHz/cm² at the target, the ideal operation of ENUBET will be based on a slow-extraction scheme. Hence the full proton intensity is continuously extracted during several seconds. This will also allow for reconstruction on an event-by-event basis at the detector level. Focusing using quadrupoles (as an alternative option to a pulsed horn) would allow a proton extraction up to several seconds, which decreases the instantaneous rate of particles in the decay tunnel by nearly two orders of magnitude and shorten to a burst mode extraction (pile-up mitigation) and respect the beamline, thus reducing kaon decay losses, while keeping a sustainable acceptance. Both options of static and horn focusing are being pursued by ENUBET, and the corresponding proton extraction modes have been developed and tested at the CERN Super Proton Synchrotron - SPSS [12].

PRIMARY BEAM & TARGET

The ENUBET secondary beam will be produced using a high-energy proton beam impinging on a solid target. While

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PRIMARY BEAM & TARGET

The ENUBET secondary beam will be produced using a high-energy proton beam impinging on a solid target. While the engineering details of the target station are underway, we have evaluated the performance of different target materials (in terms of production yields) and the effects of primary proton momenta on these yields. The NP06/ENUBET team

Figure 1: Formatting the author-affiliation block “*by institutes*” or “*by authors*” as explained in the text.

The other advantage of the “*by authors*” version is that you can more easily group a big number of authors alphabetically.

- Please ensure that all units with mixed case (**keV**, **MeV**, **GHz**, **μs**, ...) are written correctly.
- The same is true for acronyms like (**SwissFEL**, **g-2**, **SuperKEKB**, **e-BEAM**, **IsoDAR**, **ThomX**, **LhARA**, **XiPAF**, **IoT**, **FCC-hh**, **HiSOR**, ...). If unsure whether it is a mixed-case acronym, check the paper how it is written when no automatic uppercasing is in effect.
- The plural of proper nouns and acronyms in uppercase has to be a LOWERCASE “s” (LINACs, PLMs, ...).
- Line breaks in author-affiliation block if author list and institute has a linebreak, place the institute on a line by its own (in this case the last author is not separated from the institute by a comma)
- Line breaks in title and section headings:
 - Do not let a single word stand on a line,
 - Try to break lines by meaning or context,
 - Do not hyphenate words.

REFERENCE FORMATTING

- If a DOI for a JACoW conference is present, the entry “paper xyz...” sh/could be removed
- the DOI is typeset as (example with JACoW)
 - `\url{doi:10.18429/JACoW-<conference>-<paper>}`,
 - never** as an URL like
 - `\url{https://doi.org/10.18429/...}`
- If a DOI ends up in a new line because it cannot be hyphenated and the previous line is spread due to justification, introduce a hard linebreak at the end of the text before the DOI. The `jacow.cls` does this automatically starting with version 2.13.
- Font for DOI: the old rule was “Lucida Sans Typewriter” but in some MSWord installations, this font turn out to be “*italic*” or it has no discernible Zero. Therefore the font for MS Word was changed to “Liberation Mono”. The Zero should look like “Ø” [with slash] or “∅” [with centered dot], and not like “O” [like uppercase letter “O”]
- Funny rules about author names in references according to IEEE style:
 - “first name initial” (+ middle initials) “last name” ⇒ only this sequence
 - “one author + *et al.*,” ⇒ **no comma** before “*et al.*”
 - “first author and second author” ⇒ “and”, **no comma** before “and”
 - “first author, second author, and third author,” ⇒ “, and” **with** comma before last author
 - “first author, second author, *et al.*,” ⇒ **comma** before “*et al.*” only if more than one name
- Ideally all references to Journals, Books, Manuals, etc. should have DOIs. Depending on the amount of “paper

wrongness” either dot the paper with **RED** or enter the missing data.

- Formatting a paper presented at the current conference (full form):
 - presented at the 31st International Linear Accelerator Conference (LINAC'22), Liverpool, UK, Aug. 2022, paper WEP16, this conference
- Formatting a paper which is presented at the current conference (abbreviated form):
 - presented at LINAC'22, Liverpool, UK, Aug. 2022, paper WEP16, this conference

Bib \LaTeX

- In addition to the above presented way of typesetting a reference entry for a paper which is presented at the current conference, the following Bib-entries should be used for Bib \LaTeX to achieve the same result (full form):

```
@article{bib-key,
  title = "{Title of the Paper Presented at...}",
  author = {Author, A. N. and Somebody, E.L.S.E.},
  journal = {\normalfont{presented at the 31th
    International Linear Accelerator
    Conference (LINAC'22), Liverpool, UK}},
  year = {Aug. 2022, paper WEP16, this conference},
}
```
- In abbreviated form:

```
@article{bib-key,
  title = "{Title of the Paper Presented at ...}",
  author = {Author, A. N. and Somebody, E.L.S.E.},
  journal = {\normalfont{presented at LINAC'22,
    Liverpool, UK}},
  year = {Aug. 2022, paper WEP16, this conference},
}
```

\LaTeX

- If the author uses Bib \LaTeX , the references look generally OK, fine tweaking is possible using a version >2.7 of “`jacow.cls`”
- If the result after applying the “fine tweaking” (v2.7) is still not OK, then the Bib \TeX record itself is wrongly filled (field/value/type mismatch).
- Bib \LaTeX can be use with Bib \TeX or Biber. As the automatically formatted output of Bib \LaTeX + Biber is superior to all other ways of generating a bibliography, this is recommended. If the requested formatting cannot be achieved, using Bib \TeX and pasting the final outcome into the source is a possibility.
- Always run a check on the log file (texlogsieve, etc.) as you may not see fonts which are missing characters in the log window of \TeX Studio, \TeX nicCenter, \TeX Works, etc.
- The following “magic comments” are understood by most \TeX -editors (e.g. \TeX Studio, \TeX nicCenter, \TeX Works). They are placed before the opening `\documentclass[{}]`

command and overwrite settings in the TeX-editor:

```
% !BIB TS-program = biber/bibtex
% !BIB program = biber/bibtex
% !TeX spellcheck = en_GB/en_US
% !TeX program = pdflatex/lualatex/xetex
% !TEX TS-program = pdflatex/lualatex/xetex
% !TeX encoding = utf8/isoLatin/isoLatin
% !TEX root = <main file name>
```

TextMate, SublimeText, Atom, vimtex, and Overleaf understand some of the magic comments.

- When an author uses `\usepackage{authblk}` you probably see a spacing between author and affiliation block. This can be suppressed using `\setlength{\affilsep}{0pt}`. If there is a “, and” before the last author’s name, this can be suppressed using `\renewcommand\Aauthsep{, }`
- Equation formatting: the JACoW template requires the equation numbers to be put in brackets. This can easily be achieved using `\eqref{label}` instead of `(\ref{label})`.

BOUNDING BOX CHECK

- Please make sure that the bounding boxes (Media Box and Crop Box) are set correctly. The safest way to do this without PitStop is to use Ivan’s built-in Acrobat scripts “Crop and Save” (only versions starting with v20190822 or younger should be used). “Crop and Save” removes the Crop Box which is restored when using “Save as” in Acrobat (see Fig. 2 for “Crop” option and “JACoW-utils” revision date).

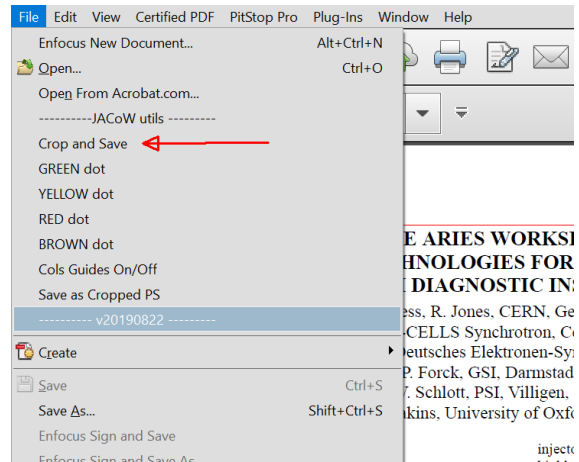


Figure 2: Cropping a PDF using built-in JACoW-utils.

- With PitStop you can control the Media Box and Crop Box in Acrobat Pro using Enfocus Inspector selecting the “Page Box Overview” and the parameter display Defined Values as shown in Fig. 3 below.

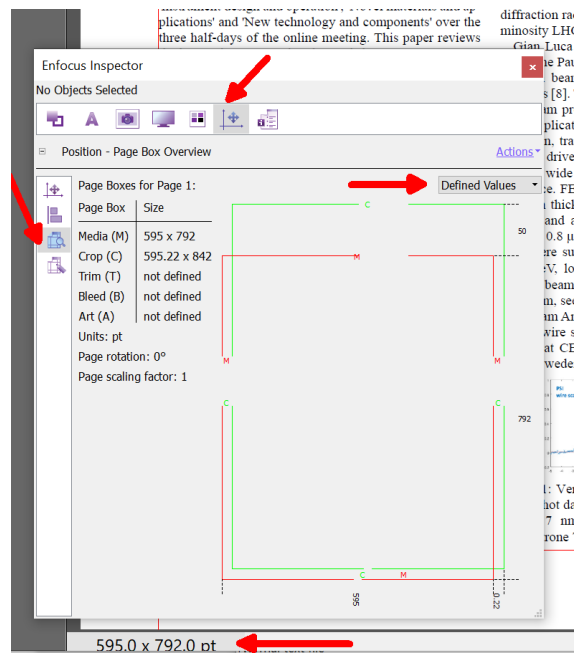


Figure 3: Page Box Overview with all settings to show the real box sizes.

The Media Box is shown in **RED** and the Crop Box in **GREEN**. The page size in Acrobat is given as 595.0 × 792.0 pt in the status bar at the bottom. In the wrapping

process while generating the proceedings (adding page numbers, conference infos, ISSN, ISBN, DOI and Copyright) the Crop Box screws up the placement of the page body.

FINAL QA

- No PDF uploads are allowed in “Final QA” **without comments**, what had been done to the file. In cases like the one shown below in Fig. 4, the paper has to be reprocessed from before QA or even earlier when errors show up and it’s not clear where changes had been done in the PDF.
- When you **FAIL** QA give all reasons **WHY** you failed QA. A comment is important even when reassigning the paper to yourself as in the final stage of wrapping up the proceedings, problems might show up.
- Please make sure that QA and column marks are not shown on the paper before uploading it to the file server.
- When checking DOIs and URLs in the paper, please pay special attention to mangled links. In the case shown in Fig. 5, PitStop Inspector shows »Courier« as the font used. The link shown can be copied and pasted from the PDF file and pasted string of Ref. [1] shows doi:https://doi.org/10.2172/1029479, [2] shows doi:10.18429/JACoW-NAPAC2016-MOPOB32. The # at string end are not picked-up when copying and are obvi-



Figure 4: Uploaded PDF with column marks, barcode and dotted for printing. In addition the text body is shifted horizontally.

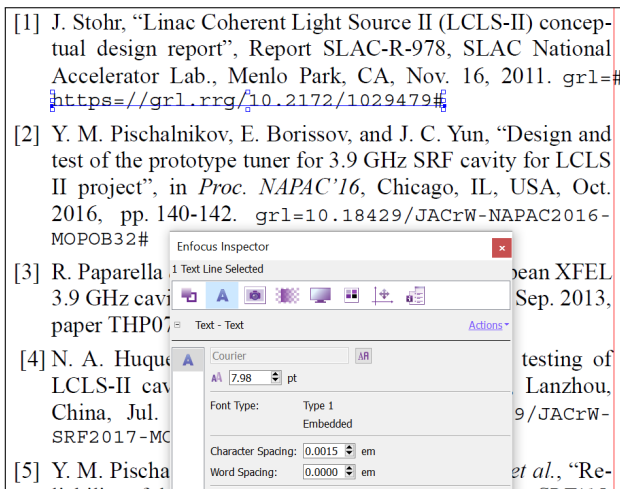


Figure 5: Mangled links in PDF.

ously just string delimiters. This is a special case of broken encoding, which displays different glyphs than encoded in the string.

WORD

- What has happened, when you open a Word document and suddenly see chipmunks, rain clouds at a golf hole flag, black clouds with lightnings, remember ribbons, an italic bike or an truck with a Swiss flag?

$$Q_0 = \frac{\omega W}{P_c} \cdot d \cdot \frac{N}{2} \cdot \frac{E_{peak}}{E_{acc}}$$

the

$$R_s = R_{res} + R_{BCS}$$

$$R_{BCS} = 0.0002 \cdot \frac{1}{T} \cdot \left(\frac{f [GHz]}{1.5} \right)^2 \cdot \exp\left(-\frac{17.67}{T} \right)$$

$$G = \frac{1}{2} \int_S H^2 ds = \frac{\omega W}{P_c} \cdot R_s \cdot Q_0$$

Figure 6: Chipmunk and rain clouds.

$$Q_0 = \frac{\omega W}{P_c} \cdot d = \frac{N}{2} \beta \lambda \cdot \eta_E = \frac{E_{peak}}{E_{acc}}$$

the $R_s = R_{res} + R_{BCS}$

$$R_{BCS} = 0.0002 \cdot \frac{1}{T} \cdot \left(\frac{f [GHz]}{1.5} \right)^2$$

$$G = \frac{\omega W}{2 \int_S H^2 ds} = \frac{\omega W \cdot R_s}{P_c} = Q_0 \cdot R_s$$

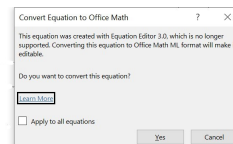


Figure 7: Chipmunk and rain clouds – part 2.

- You obviously encountered a Word document which used an outdated version of the Equation Editor, which is not supported anymore. Conversion to Office Math ML format as suggested when double clicking¹ the symbol zoo works and let you edit the content.

¹ Thanks to Michaela for the double-click suggestion!

DOIs FOR arXiv

- In general, arXiv references could be treated in the same way as URLs and DOIs. For some time now, DOIs have also been assigned for arXiv contributions via Datacite. Therefore my recommendation is to use the corresponding DOI instead of the arXiv URL.
 - arXiv:xxxx.yyyy then becomes
→ doi:10.48550/arXiv.xxxx.yyyy
 - arXiv:physics/zzzzzzzz then becomes
→ doi:10.48550/arXiv.physics/zzzzzzzz
 - arXiv:physics/030405067v3 becomes
→ doi:10.48550/arXiv.physics/030405067
which means that version numbers (revisions) do not change the DOI.
 - A full reference to an arXiv preprint (in this case for the arXiv:xxxx.yyyy variant) should look like the following:
A.N. Author, "Title of the Pre-Print", year.
doi:10.48550/arXiv.xxxx.yyyy
-
- Up to now I found only one link that didn't work that way and it was one of the format without ".":
(arXiv:xxxxxxxx).
 - **Nevertheless is probably better to check the link online after modifying it to DOI format.**

TYPESETTING UNITS

- Numbers and units are typeset with the thin space between them, this should preferably be a non-breaking space to insure that number and unit are not split over line breaks or column/page breaks. A thin space is entered in L^AT_EX using »\,«. The alternative is to use the siunitx package (preloaded in jacow.cls) with \SI{<number>}{<unit>}.
- In Word the easiest way to enter a non-breaking space for the purpose of keeping Numbers and units together is to use Ctrl-Shift-Space. The spacing is wider than a thin space but entering it in Word requires hex-input for the corresponding Unicode character.
- The numerical value always precedes the unit, and a space is always used to separate the unit from the number, e. g. »30.2 °C« (not »30.2°C« or »30.2° C«).
- The only exceptions to this rule are for the unit symbols for degree, minute, and second for plane angle (»°«, »'«, and »"«, respectively), for which no space is left between the numerical value and the unit symbol.
- Unicode provides the Celsius symbol at code point However, this is a compatibility character provided for compatibility with legacy encodings. It easily allows correct rendering for vertically written East Asian scripts, such as Chinese. The Unicode standard explicitly discourages the use of this character: *In normal use, it is better to represent degrees Celsius »°C« with a sequence of U+00B0 »°« DEGREE SIGN »+« U+0043 »C« LATIN CAPITAL LETTER C, rather than U+2103 »°C« DEGREE CELSIUS. For searching, treat these two sequences as identical.*