The JACoW Collaboration

(the Joint Accelerator Conferences Website Collaboration)

Presented by J. Poole
on behalf of the collaboration

In the beginning ...

- In December 1990 the hypertext markup language project was introduced at CERN and by 1993 the WWW was being used at accelerator labs around the world.
- In this period, Adobe Portable Document Format (PDF) was arriving in the workplace.
- In 1994, conference papers were still submitted as camera-ready copy.

The Key Factors

- In 1995 there was a decision to publish EPAC electronically (using PDF).
- At the same time, preparations were being made for electronic publication of PAC95 and EPAC was invited to collaborate in the process in Dallas.
- Learning from this experience it was decided to develop author and editor education ahead of EPAC96.
- This led to the formation of a team which went on to become the basis of the JACoW Team.

The Conception

- Following publication of EPAC96 on the web, Ilan Ben Zvi, PAC'99 Programme Chair, suggested that PAC and EPAC should establish a joint website for publication of their proceedings.
- The organisers of both series agreed to the principle and to give continued support to such a collaboration.

The Birth

- APAC was subsequently invited to join the collaboration and JACoW was formally established after a meeting at PAC'97.
- It was agreed that the collaboration would report to a steering committee comprising officials from the collaboration and the programme chairs from previous, present and future member conference series.

The Growing Pains

- The Acrobat search engine used to be a separate plug-in and had to be purchased separately for inclusion on the conference CD.
- At the early conferences a very high proportion of the submitted files were unusable.
  - People did not know how to make PostScript.
  - Often PostScript containing graphics would contain pathological bugs (spinning and exploding figures).
  - LaTeX installations did not employ Type 1 fonts which rendered the PDF unreadable on the screen and unusable with the search engine.

Early Developments

- Effort was concentrated on author education:
  - Processing at the conference and feedback through the dotting board.
  - Seminars at various institutes and the development of documentation on the website.

  and on editor training:
  - Hands on experience at conferences with experts on hand to assist.
  - Technical meetings.

Coming of Age

- At the JACoW Team Meeting at LBNL in 2003, the foundations of the Scientific Programme Management System (SPMS) were laid with the definition of a functional specification and implementation plan.
- SPMS is based on two pillars:
  - a repository of author and affiliation definitions implemented in Oracle.
  - A set of Oracle based tools for conference organisation and management.
- SPMS has been in use since 2004 and is now a fundamental feature of JACoW activities.

JACoW Collaboration Today

- The collaboration is now involved in all aspects of conference organisation and proceedings production.
- The focus is now on provision of its services (website, SPMS and expertise), author education, and support to conference organisers.
- However, it should be noted that it remains the responsibility of the particular conference to deliver the proceedings to JACoW in an appropriate form for publication on the website.

JACoW Officers

- Chairman:
  Volker Schaa, GSI
- Deputy Chair:
  Ivan Andrian, ELETTRA
- Coordinator:
  Christine Petit-Jean-Genaz, CERN
- Webmasters:
  Ronny Billen, Christine Petit-Jean-Genaz, CERN (Europe)
  Kazuro Furukawa, KEK (Asia)
- Regional Support:
  Matt Arena, FNAL (N. America)
  Ronny Billen, CERN (Europe)
  Takashi Kosuge, KEK (Asia)

Membership

- There are currently 16 conference series in JACoW (98 sets of proceedings published):
  - BIW, COOL, CYCLOTRONS, DIPAC, ECRIS, FEL, HIAT, ICALEPCS, ICAP, ICFA ABDW, IPAC, LINAC, North American PAC, PCaPAC, RuPAC and SRF.
- Boundary conditions include attendance at Team Meetings and participation in JACoW activities, because these are essential to maintaining high standards and continuity and to the success of the entire venture. *JACoW therefore reserves the right to exclude publication for any conferences not respecting this condition.*

Personal Observations I

- JACoW provides a fantastic service to the accelerator community through its open archive.
- In 1996 it cost around $100k to produce the paper volumes and CDs for EPAC.
  - There is a cost to publication on JACoW but conferences are often reluctant to recognise this and it is a constant battle to maintain financial support for JACoW activities at a conference.
  - Publication on an ‘alternative’ open archive such as those offered by the publishing houses would cost more and would not offer the advantages of our unique site.

Personal Observations II

- The cost of publication on JACoW is very reasonable.
- The facility for refereeing is built into SPMS but is only used by one conference series at present.
- Preparation of a paper for publication on JACoW is much simpler than for most publishers.
- Publication is much faster.
- The JACoW model therefore offers everything that is needed for the open archive publication of scientific papers and perhaps members of the wider physics community could think about it.

The Key Elements of JACoW in 2010

- The open archive website with its custom search engine.
- Author guidelines, templates and help facilities.
- The repository of authors and affiliations.
- The event organisation tools known as ‘the SPMS’
- A core team of paper and transparency processing experts.
- Scripting utilities for automated abstract booklet, proceedings books and website production etc.

and most importantly - very dedicated people.

Proceedings Production Process

- Collect the abstracts, author names and the names of their institutes (affiliations).
- Accept abstracts for the conference
- Collect the files for the papers (before the conference)
- Process the files for the papers to make the raw PDF
- Feedback information to the authors about the processing
- Make quality control checks
- Number the pages, generate keywords
- Fill in the hidden fields in the PDF files and add page numbers and banners
- Generate the index files (table of contents, author index)
- Add the ‘wrapper’ (introduction, acknowledgements etc)
- Final quality checks
- Write the website, CD/DVD/USB stick (print hard copies etc.)

JACoW SPMS

- All of the activities on the previous page can be achieved without using the SPMS.
- However, if the expertise and support is available for a conference, the SPMS can automate much of the work and handle much of the event organisation as well …
- Furthermore, the JACoW Proceedings Script Package (JPSP) interacts closely with SPMS for automation of publication.

SPMS also Supports

- Conference registration (including payment) and accommodation.
- Scientific programme management (accept, classify, assign to sessions etc.).
- Industrial exhibition management.
- Management of presentations.
- Poster management.
- Refereeing of papers.
- Pre-press publication.
- Single click production of citation data for a conference.

At the conference

- In many cases, a team of dedicated volunteers is assembled to assist in the running of the proceedings and editorial offices.
- Each conference brings some new challenges (new versions of software, new tools) so we need to face up to these challenges and maintain the morale of the volunteers faced with a huge work load.
- We try to do this by encouraging a relaxed atmosphere in the office and by supplying food and beverages at social events.

Paper Processing

- We may call ourselves editors but at a conference, we are really only processing the papers.
- Processing can be characterised as:
  - Crap in – crap out[†].
- However, we make every effort to ensure that the authors are equipped to submit the files we require by providing:
  - templates
  - rules/guidelines
  - support

† Camera ready and processed

Training

- Significant efforts are made by many of the larger conferences to offer hands-on experience to future conference staff and editors.
- It is important to bring together experts and novices and to have them working side-by-side in the proceedings offices.

Behind the closed doors

- The team is instructed about how to proceed and various key pointers are given:
  - The aim is to produce a set of files for publication on JACoW, which means PDF files with correct paper size, fonts and performance.
  - They should not be surprised to learn that authors apparently cannot read, write or follow simple instructions.
  - They should not be concerned about the content of the papers.
- The editorial teams have a competition for the worst paper – the so-called brown dot papers.

Chamber of Horrors

Corrected by hand, scanned and inserted as an image into Word before making a PostScript file

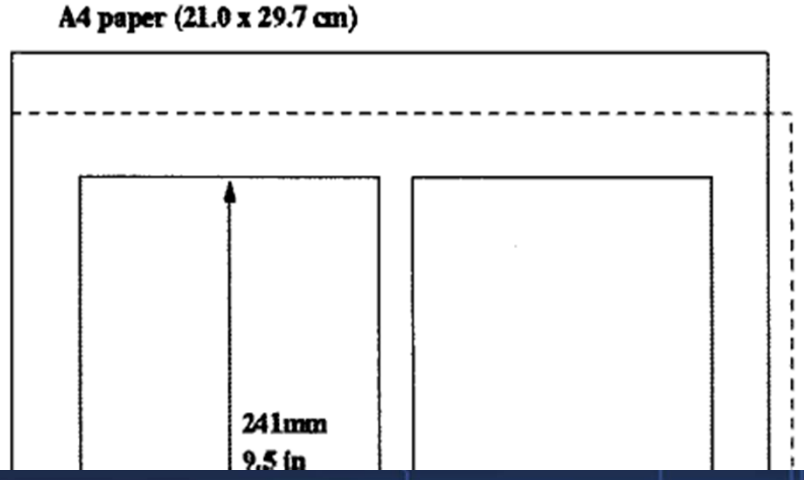
PREPARATION OF PAPERS FOR JACoW CONFERENCES*

J. Poole, C. Petit-Jean-Genaz, CERN, Geneva, Switzerland
C. Eyberger#, ANL, Argonne, IL 60439, U.S.A.

Abstract

Many conference series have adopted the same standards for electronic publication and have joined the Joint Accelerator Conference Website (JACoW) collaboration [1] for the publication of their proceedings. This document describes the common requirements for the submission of papers to these conferences. Please consult individual conference information for page limits, method of electronic submission, etc. It is not intended that this should be a tutorial in word processing; the aim is to explain the particular requirements for electronic publication at these conference series.

bottom of a page to ensure proper flow of the text (Word templates only).



More Horrors

Buried in the PostScript printer tools is the possibility to print mirrored …

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A4 paper (21.0 x 29.7 cm)

and more ...

LaTeX, all Type3 fonts, 16pt, single column 10 pages…

PREPARATION OF PAPERS FOR ACCELERATOR CONFERENCES

J. Poole, C. Petit-Jean-Genaz, CERN, Geneva, Switzerland
P. Lucas, FNAL, Batavia, IL 60510, USA

September 25, 2002

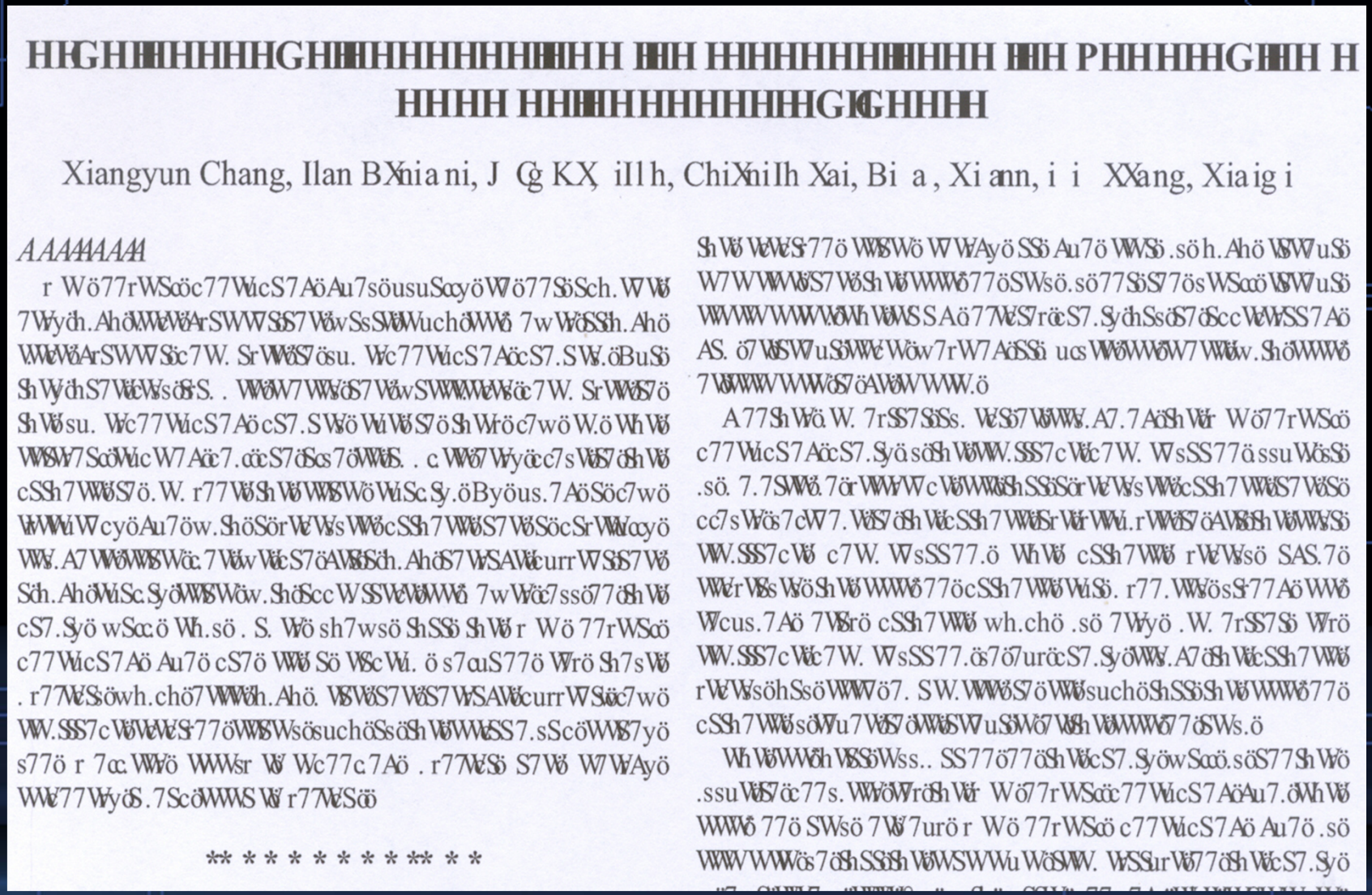
Abstract

APAC, EPAC and PAC have adopted the same standards for electronic publication and have created the Joint Accelerator Conference Website (JACoW) [1] for the publication of their proceedings. This document describes the common requirements for submission of papers to these conferences. Please consult individual conference pages for information on numbers of pages, method of electronic submission, etc. It is recommended that this should be a tutorial in word processing that aims to explain the particular requirements for electronic publication in these conference series.

1 SUBMISSION OF PAPERS

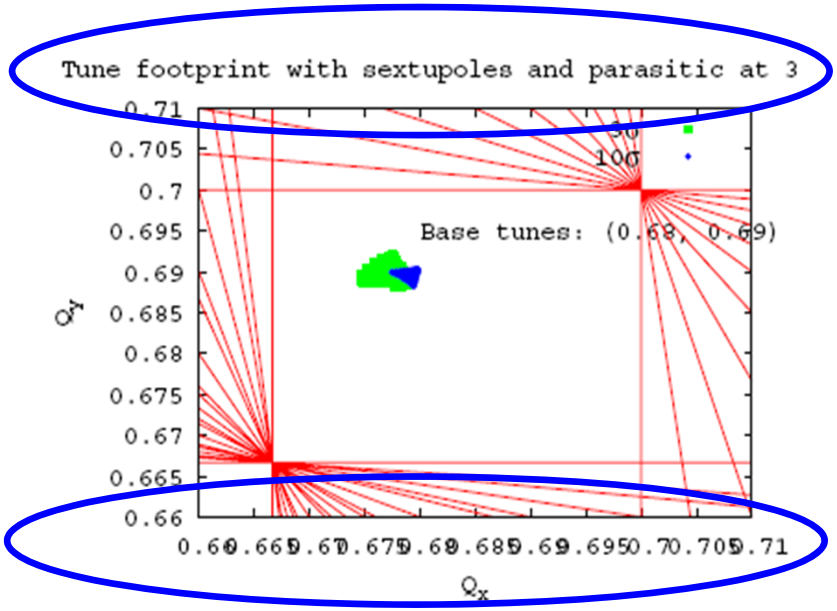
Each author should submit all of the source files (text and figures), the PostScript version and a hard copy of the paper. This will allow the editors to reconstruct the paper in case of processing difficulties and compare the version produced for publication with the hard copy.

Explain this !!!



Font Problems

gas scattering. Tune footprints, diffusion coefficients, emittance growth, and lifetimes are calculated by this code. Fig. 3 shows the tune footprints for the blue beam at the tunes (0.68, 0.69) for beam separations of 3 and 10 σ. At this working point the footprint is clear of the neighboring 3rd and 10th order resonances.



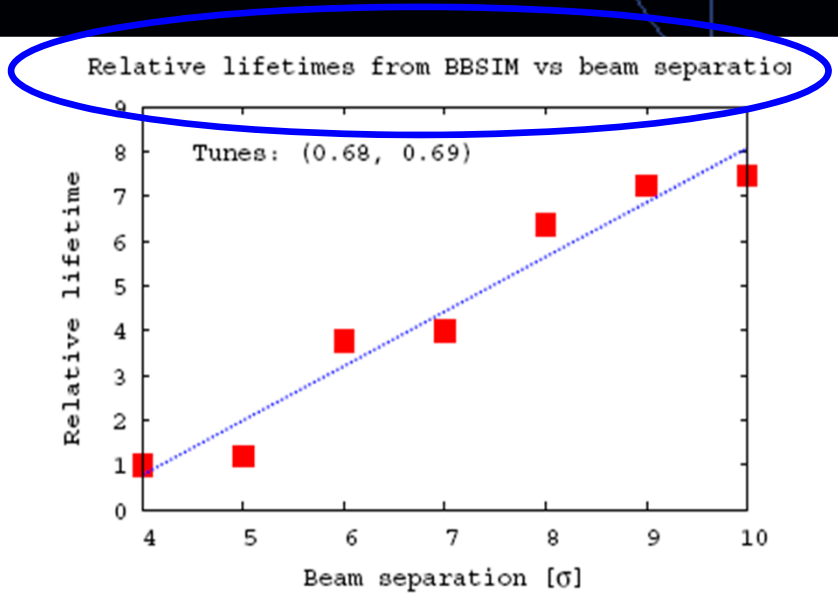


Figure 5: Relative lifetime vs separation with BBSIM.

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Fonts corrected

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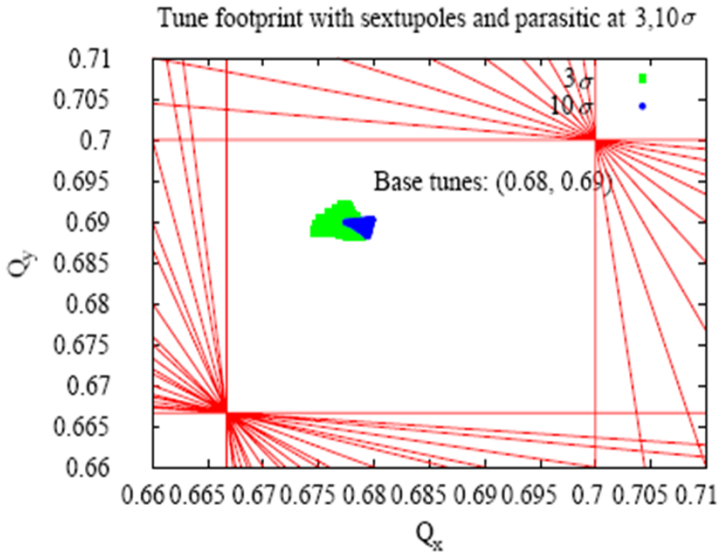

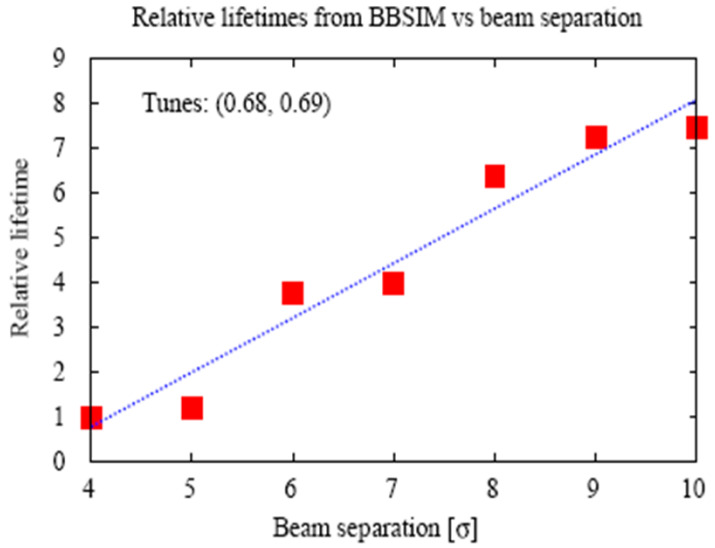

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Asian Font

Often a non-breaking space in an Asian font is not recognised and appears as a box, but equally it may be an unrecognised symbol !

J. Poole, C. Petit-Jean-Genaz, CERN, Geneva, Switzerland
C. Eyberger#, ANL, Argonne, IL 60439, U.S.A.

Abstract

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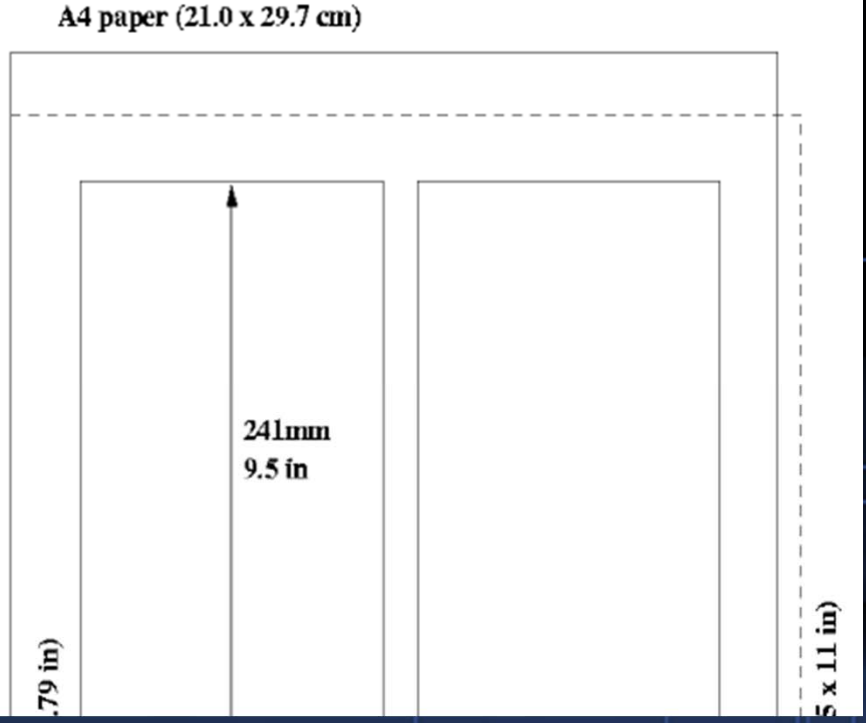


... and new this year

Using Ghostscript "pswrite" with a very low resolution to make the PS file

Plans for the ESS LINAC

S. Peggs[1], S. Bousson[2], R. Calaga[3], H. Danared[4], G. Devanz[4], R. Duperrier[4], J. Eguia[5], M. Eshraqi[1], S. Gammino[6], H. Halm[1], A. Jansson[1], M. Lindroos[1], C. Oyon[7], S. Pape-Møller[8], A. Ponton[1], K. Rathsman[1], R. Ruber[9], T. Satogata[10], G. Trahern[1]
-ESS, [2]IPNO, [3]BNL, [4]CEA-Saclay, [5]Tekniker, [6]INFN-LNS, [7]SPRL, [8]Århus U, [9]Uppsala U, [10]JLab.

Abstract

Lund was chosen as the site of the European Spallation Source in May 2009. The *Design Update* phase (January 2011 to December 2012) will be completed by the delivery of a Technical Design Report. After approval of the CDR, the ESS project will proceed to construction, installation, and commissioning. The superconducting linac is expected to begin delivering beam to users in 2019, eventually delivering an average beam power of 5 MW to a single neutron target station with a proton (H^-) macro-pulse current of (provisionally) 50 mA at 2.5 GeV in 2.0 ms long pulses at a repetition rate of 20 Hz.

Table 1: Primary ESS performance parameters in the long pulse conceptual design. Columns **B** and **S** show the minor differences between the ESS-Bilbao and ESS-Scandinavia nominal parameters (2009). The values in column **S** are called the "provisional baseline".

		B		S
INPUT				
Average beam power	[MW]		5.0	
No. of instruments			22	
Macro-pulse length	[ms]	1.5		2.0
Pulse repetition rate	[Hz]		20	

Slow Graphics

- Plots produced by software like tracking programs often contain millions of points which are faithfully reproduced in the PDF. However this makes them very slow to display. JACoW guideline is that any page of a paper should display in less than 5/N seconds (where N is the processor speed in GHz).
- The simplest way to fix this is to make a bitmap version of the graph (using a screen dump or there are some sophisticated tools one can use) and to re-insert this in the paper. The visual result is fast and virtually indistinguishable from the original but is not dynamic.

Why conform to JACoW Specifications

- Paper size – JACoW papers will place the text in the centre of the page whether they are printed on A4 or US Letter paper. There will therefore be no loss of information. The templates are set up for a final paper size of US Letter height and A4 width.
- The margins are set to allow whitespace for the subsequent headers and footers.
- Fonts – there are many issues with fonts which are related to copyright issues and the ability to embed the fonts in the PDF file. With embedded fonts, the paper will display correctly on any computer.

JACoW Templates

- Designed to enable authors to deliver papers which conform to the JACoW requirements and for ease of use.
- Margins and paper size chosen to meet JACoW technical requirements.
- The two column format allows one to fit 15% more text into the same number of pages.
- The10pt font is the minimum size for easy reading.
  - The latter two points are of less importance in these days of electronic publication, but some conferences still produce books and therefore it is important for them to minimise the number of pages.

Type 3 Fonts

- Some printer drivers will use Type 3 fonts when they generate a PostScript file. This used to be a problem in earlier versions of Acrobat (as seen a few slides back) but has been fixed for some years now.
- However, characters in Type 3 fonts are images and Acrobat cannot search text presented as images. Such files are useless on the JACoW server as they cannot be searched.

Why not accept PDF ?

- Most authors can generate PDF files however, the standard is far from uniform and often they are not acceptable for JACoW because:
  - The compression settings are wrong
  - Fonts not embedded
  - JACoW scripting procedures require a standard input
- Most importantly, PDF files produced according to the JACoW recipe are PDF/X compliant, which is fundamentally important for the long term.
- JACoW will therefore continue to ask for PostScript in the immediate future.

Feedback to Authors

- First line feedback is through the ‘dotting board’
- Second line is to be summoned to the proceedings office for a tongue lashing.
- If all else fails – we know who you are and, thanks to SPMS, we know where to find you !!
- Our approach has led to significant improvements in the quality of the submitted papers.
- However, engineers and physicists never cease to amaze us with their ingenuity and the lengths to which they will go to cheat. But be warned – we will meet this challenge head-on.

Problem Solving

- After each conference the problems are analysed and at the team meetings we try to come up with solutions which will make the authors' and our lives easier.
- Usually the result is a new page in the guidelines and help information.
- Less frequently there is some major technical development like the recent deployment of a downloadable generic postscript driver. This allows authors to install a driver locally which will produce conforming PostScript files for JACoW conferences.

Automated Publication

- Volker Schaa has developed a set of scripts, known as the JACoW Proceedings Script Package (JPSP) which automatically produce abstract booklets, proceedings volumes, CD/DVD images and indexed websites.
- The scripts also modify the processed PDF files, inserting page numbers, banners and footers as well as filling the hidden fields (Title, author names, keywords).
- The scripts are available under GPL and can be downloaded from JACoW.

Abstract Booklet

MOAAU — Opening Talk & FEL Prize New Lasing

FEL Prize Lecture: Coherent Electron-Beam Radiation Sources and FEL: A Theoretical Overview

MOAAU01

A. Gover (University of Tel-Aviv, Faculty of Engineering)

The theory of Coherent electron beam radiation devices in general, and FEL in particular, is reviewed in terms of a general simple formulation based on modal expansion of the radiation field. A variety of e-beam radiation mechanisms (FEL, TWT, Cerenkov Radiation) have common features. All these radiation mechanisms can emit coherent or partially coherent radiation by means of three basic kinds of radiation processes: Spontaneous emission (shot-noise radiation), Superradiance (bunched-beam coherent radiation) and Stimulated emission. The common radiation processes and their relations are explained, in both frequency and time domains, in terms of the radiation modes expansion formulation. It is shown that the coherence properties of the emitted radiation, in each radiation process, depend on the phase relations between the radiation wave-packets, emitted by the individual electrons and their entrance distribution statistics. In the high gain linear regime all these radiation mechanisms satisfy the Pierce dispersion equation, and all radiation characteristics are derived from the Pierce transfer functions. I employ the formulation to delineate limits of coherence of electron beam radiation sources, and particularly examine possible schemes for turning SASE FELs to operate as coherent radiation sources.

Evolution of FELs Over the Last 34 Years

MOAAU02

W.B. Colson (NPS)

The concept of the free electron laser (FEL) started 34 years ago with Madey's 1972 pa-

Websites for JACoW

FEL 2006, BESSY, Berlin

Contributions to the Proceedings

(Dec 1: 52 Orals, 191 Papers, 204 Contributions)

fel 06 BERLIN

Contributions to the conference have been classified into the following main groups:
invited papers, contributed papers, and poster presentations.

Note regarding the orals: **movies are embedded** into the PDF slides (hint: pointer shape changes).
Sizes of the high quality MP3 files vary between 7 and 57 MB (dependent on the talks duration).

BESSY

Programme Committee

Local Organizing Committee

Table of Sessions

Authors Index

List of Institutes

List of Participants

Abstract Booklet
complete Abstract Booklet [3MB]

All Papers / Single File
812 pages [80 MB]

Mon, Tue, Thu, Fri Sections
251, 248, 285, 28 p [27, 20, 30, 2 MB]

September 2006 The BESSY FEL Conference Team Skripts: Volker RW Schaa, GSI

PDF Files Banner and Footer

A TANK CIRCUIT MONITORING A LARGE NUMBER OF ANTIPROTONS IN MUSASHI *

H. Higaki, N. Kuroda[1], H. Imao[2], Y.Nagata[1], Y.Enomoto[1], K.Michishio[3], K.Kira, C.H.Kim[1], H. Okamoto, M.Hori[4], Y. Kanai[2], A. Mohri[2], H.A.Torii[1], Y. Matsuda[1] and Y. Yamazaki[1,2]
AdSM, Hiroshima Univ., 1-3-1 Kagamiyama, Higashi-Hiroshima, Hiroshima 739-8530, Japan

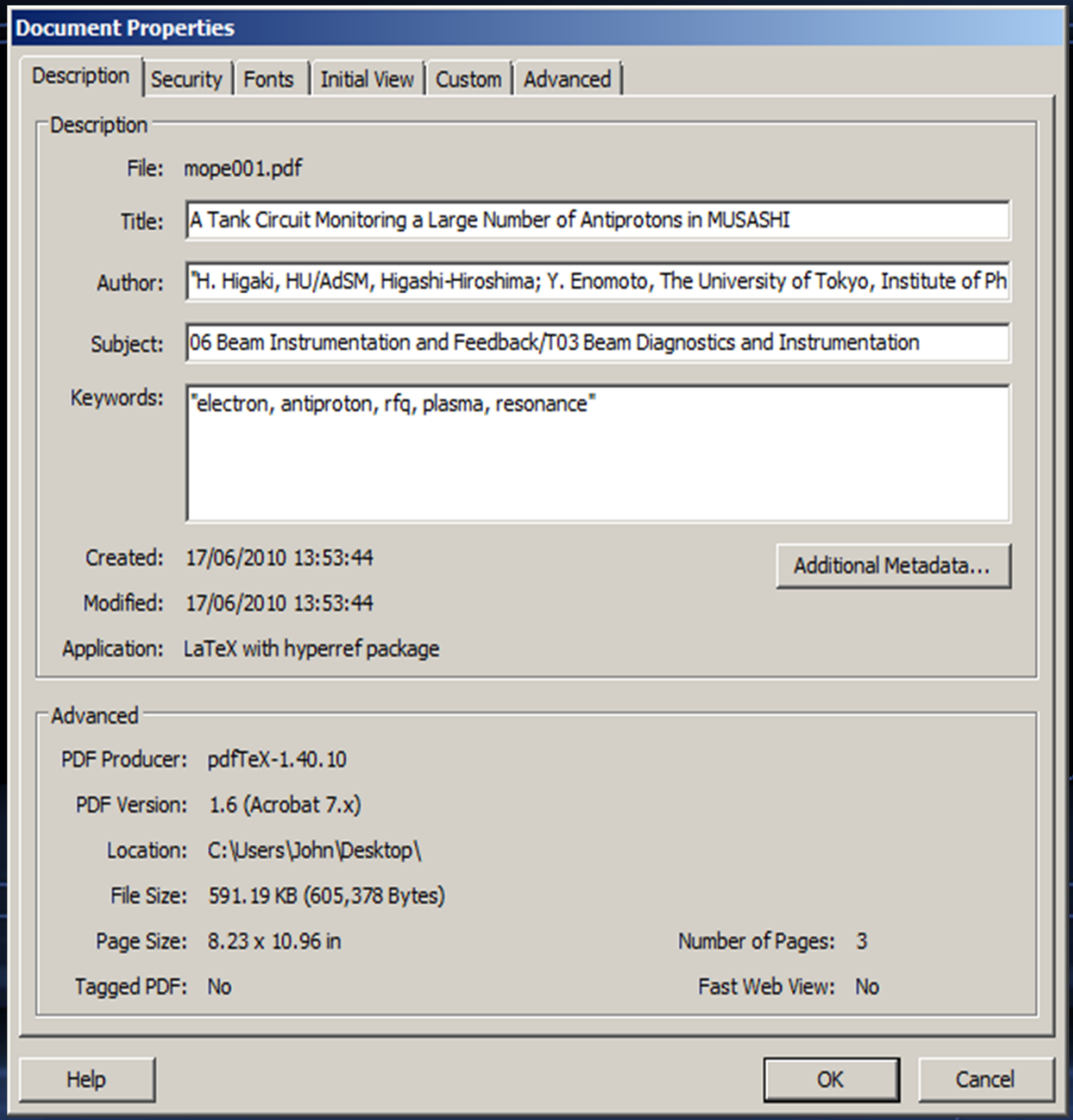
long uniform magnetic field B in z direction, the Hamiltonian H_{sol} of a test particle, which describes the motion in

* This work is partly supported by the Grant-in-Aid for Specially Promoted Research (19002004) from the Ministry of Education, Culture, Sports, Science and Technology

$\epsilon_0 B^2/2m$. Also, the bare tune σ_0, space-charge depressed tune σ, and the tune depression of the solenoid system are described as below.

$$\sigma_0 = \frac{eB}{2mc}, \quad \sigma = \sqrt{K_3 - \frac{K_s}{a^2}}, \quad \eta = \frac{\sigma}{\sigma_0} = \sqrt{1 - \frac{n}{n_{lim}}}$$

PDF Files Hidden Fields



JPSP Mechanism

- The scripts use XML data which has been dumped from the SPMS or InDiCo.
- The final output from JPSP is prepared by running a small number of perl scripts and batch processes.
- The scripts include several quality control and diagnostic processes leading to a guaranteed result.
- The final products only require a minimum of customisation and tuning before publication.

Typical JPSP Website Production

- The papers are analysed and compared against a standard set of keywords in order to assign keywords to each paper. Historically authors were asked to do this but …
- The scripts prepare the author, session, institute and keyword indices and build the links to all of the files (papers, transparencies, audio, etc.)
- The number of files produced is about ten times the number of contributions.

The Future of JACoW

- From a technical point of view, the long term prospects for JACoW look solid.
- The repository uses a standard commercial product (Oracle) and the tools are based on a standard scripting language and web interfaces. Migration to future products and platforms should not be difficult even if standard paths are not provided.

Long Term Archival

- As stated on the JACoW site:
  - The system is set up in such a way that it is not dependant on any particular person, platform or institute.
  - We regard PDF as a storage format which will be stable in the relatively long-term.
  - If PDF should disappear in the future, it will not be sudden and there will certainly be a migration path to its replacement.
  - JACoW would migrate to the new system and in the worst of all cases if this was not possible, JACoW has tools which can assemble the papers into volumes which can be printed.

Preparations for the Future

- The current specification for JACoW files is compliant with PDF/X-3 which means that they conform to certain ISO standards.
- This, in turn, means that they facilitate graphics and printing exchanges and therefore are suitable for migration to other standards.

Support for JACoW

- JACoW survives through the good will and enthusiasm of the team members and through support from several labs around the world.
- In addition to the provision of hardware, IT infrastructure and services, some labs are allowing people to devote time to JACoW activities.
- JACoW owns some licenses for software used for paper processing. This has been financed on an ad hoc basis by labs and conferences.

Special Thanks to (listed alphabetically)...

- CERN
  - Hosting and support for JACoW and the search engine
  - Hosting the repository and SPMS European support centre
  - Christine Petit-Jean-Genaz's and Ronny Billen's time
- Fermilab
  - Hosting N. American support centre
  - M. Arena's time
- GSI
  - Volker Schaa (100%) and Raphael Mueller (20%)
- KEK
  - Asian support, support centre and mirror site

And thanks also to ...

- ANL, DESY, ELETTRA, MSI, PSI, TRIUMF for continued support of travel and activities of team members.

JACoW in 2015 and beyond

- There are not many accelerator conference series which are not already members, so there will probably not be any large expansion.
  - Perhaps Magnet Technology is the only large conference missing from the collaboration.
- There is agreement in principle for the publication of some other material like legacy accelerator journals and this could be a major new direction in the near future.
- A number of conference series are working towards publication of legacy proceedings (scanning).

… 2015 and Beyond

- SPMS is already well established as a tool for accelerator conferences and will certainly continue to be so in the years to come. Its development is a continuing process which is regularly reviewed.
- Because software is continuously evolving, technical developments in JACoW will have to continue in order to keep pace with the new versions of existing programs and the new tools used by authors and editors alike.

Concluding Remarks 1/3

- There is much more to JACoW than the website.
  - SPMS, JPSP, author and editor education, conference support …
- Our aim is to provide a reliable and efficient service to the accelerator community.
- There is a continuous effort to improve
  - At and after every conference there is a lot of analysis of problems, development of solutions and feedback to authors.
  - Repository maintenance, new tools etc.

Concluding Remarks 2/3

- It is a collaboration in every sense of the word and it works (and hopefully will continue to do so).
- We invest heavily in training for conference editorial staff so that they can fully integrate in the JACoW community and benefit from our experience.
- We are conscious of the need to bring the team together to share experience and to agree on the path forward. That is why we are here at the moment – the annual team meeting is our means to achieve this goal.

Concluding Remarks 3/3

- JACoW relies heavily on a relatively small number of very dedicated people.
- The arrival of new (young) faces always brings fresh ideas and new techniques which constantly improve the service provided.
- JACoW needs this turnover of team members to ensure success in the future.
- More than ever JACoW needs the support of the labs and their support for the team members.