Some New Scripts for the Wrapper

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Darmstadt, Germany

JACoW Team Meeting,
Trieste, Italy,
Dec 2003

Some Reasons for the New Scripts

- no (Oracle) database was used for submission, therefore no use of existing VB scripts,
- no experience adapting VBS to
  - a different DB structure, and
  - computer speed (John's warning),
- platform independency (Linux, OpenVMS, Windows),
- re-usability was an issue:
  - first DIPAC2003 and old DIPACs (OpenVMS & Windows),
  - later LINAC2004, (on Unix/Linux & Windows),
- open source approach,
- knowledge using PDFTEX, PERL, XML, etc.

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My Approach

- starting from various input formats
  - combining it in a database with only needed fields,
  - using different import tools
- database export to XML
  - with Perl, DB-, and XML-Modules
  - alternatives: "native" export (from Oracle 9_i Release 2, or Oracle 10_g)
  - Oracle SQLX
- read XML with script
- and transforms it to `<html>` and \pdfTeX

Now a short excursion to XML and Structure...

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Now a short excursion to XML and Structure...

What kind of structure(s) do we need for a conference?

```
<conference name="...">
  <session name="...">
    <paper code="...">
      <institute ...>
        <author><name>...</><email>...</></author>
        (more »authors«)
      </institute>
      (more »institutes«)
    </paper>
    (more »papers«)
    <paper>...</paper>
  </session>
  (more »sessions«)
</conference>
```

(more conferences??)

A *conference* consists of several *session*s. And for a session you need talks (↦ *paper*) or posters (↦ *paper*).

```
<conference name="conference name">
  <session name="session name" abbr="abbreviation of session">
    <paper code="paper code id" abstract="yes|no">
        (xml »paper« sub-structure)
    </paper>
  </session>
  <session name="..." abbr="...">
      (xml »session« sub-structure)
  </session>
  (more »session« structures)
</conference>
```

A *paper* consists of several sub-structures: You need a *title* for your paper, and some *keywords*.

```
<paper code="paper id" abstract="yes|no">
   <title[ note="optional title note"]>
       paper title
   </title>
   <keywords>
       (xml »keyword« structure)
   </keywords>
   <institute>
       (xml »institute« structure)
   </institute>
</paper>
```

And there is always an *institute* you are working for, so you have to be defined as a part of it.

Now you have to define the *institute*, you are part of.
Finally your name appears in an *author* structure.

```
<institute name="name of institute"
           abbr="institute (abbreviation)">
  <author[ main="optional: "yes" for main author"]
         [ note="optional author note"]>
     <name>(xml »name« structure)</name>
     <email>email address</email>
  </author>
  (more »author« structures)
</institute>
```

Even your *name* has some structure, and that comes now. . .

As the *author* preparing the paper, the key *main* is set to *"yes"*.

```
<author main="yes"[ note="work funded by ..."]>
   <name>
      <initials>author's initials</initials>
      <lastname>author's lastname</lastname>
   </name>
   <email>author's email address</email>
</author>
```

And your *name* consists of *lastname* and *initials* (and maybe an *email address*).

Finally you have to define the *keywords*. Each entry consists of a single line with a given *keyword*.

```
<keywords>
   <keyword>keyword</keyword>
   <keyword>another keyword</keyword>
   (more xml »keyword« structures)
   ...
   (a maximum of »5« keyword structures)
</keywords>
```

Now you are done. . .

or even better, everything is done for you by a script from database entries!

What is the script doing?

1. It reads pdf-files and counts pages in each file,
2. reads XML, and generates `<html>` for
   - Session List,
   - Authors' List,
   - Keyword List,
   - Institute List
3. generates \pdfTeX wrappers
   - for each single (raw) pdf-file,
   - for proceedings file,
4. writes command files for
   - generating pdf-files with Authors and Keyword information,
   - building of proceedings file(s).

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Actually built-in features:

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- Web pages are in Unicode (UTF8),
- All names with accented characters and umlauts,
- Math formulas (in abstracts) on web pages,
- Sorting author names is rule based (accented letters, umlauts, ...)

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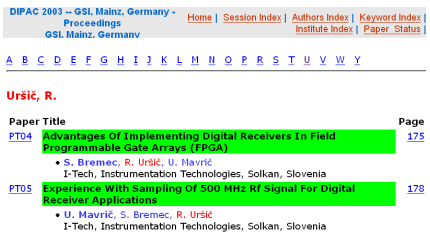
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Uršič, R.

Paper	Title	Page
PT04	Advantages Of Implementing Digital Receivers In Field Programmable Gate Arrays (FPGA) • S. Bremec, R. Uršič, U. Mavrič I-Tech, Instrumentation Technologies, Solkan, Slovenia	175
PT05	Experience With Sampling Of 500 MHz Rf Signal For Digital Receiver Applications • U. Mavrič, S. Bremec, R. Uršič I-Tech, Instrumentation Technologies, Solkan, Slovenia	178

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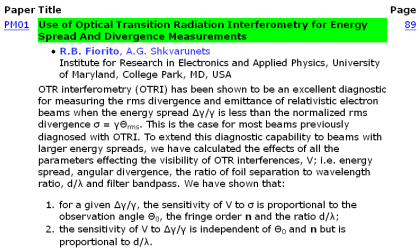
Paper	Title	Page
PM01	**Use of Optical Transition Radiation Interferometry for Energy Spread And Divergence Measurements** • **R.B. Fiorito**, A.G. Shkvarunets Institute for Research in Electronics and Applied Physics, University of Maryland, College Park, MD, USA	89

OTR interferometry (OTRI) has been shown to be an excellent diagnostic for measuring the rms divergence and emittance of relativistic electron beams when the energy spread $\Delta\gamma/\gamma$ is less than the normalized rms divergence $\sigma = \gamma\Theta_{rms}$. This is the case for most beams previously diagnosed with OTRI. To extend this diagnostic capability to beams with larger energy spreads, we have calculated the effects of all the parameters effecting the visibility of OTR interferences, V; i.e. energy spread, angular divergence, the ratio of foil separation to wavelength ratio, d/λ and filter bandpass. We have shown that:

1. for a given $\Delta\gamma/\gamma$, the sensitivity of V to σ is proportional to the observation angle Θ_0, the fringe order **n** and the ratio d/λ;
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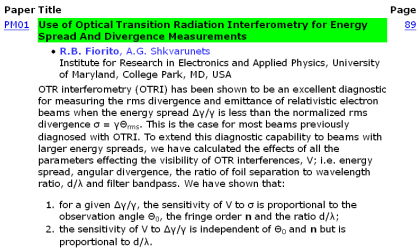
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Goethe, J.W.v.
Göttlicher, P.
Groening, L.
Gschwendtner, E.
Guimbal, Ph.
Gulbekian, G.G.

Click on an author to display a list of papers.

\pdfTeX{features}

Actually built-in features:

- printing of header and footer information,
- transfer of all meta-information into pdf-file,
- (down)scale depending on size of `crop`/`media`/`object`/`mask`-box,
- setting of page numbers after count of all pages,
- inclusion of paper or "missing" note,
- `config` file with settings for directories, sort-rules, and any dependencies etc.

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pdfTeX: complete code for one paper

```
\documentclass[twoside]{book}
\usepackage[papersize={595pt,792pt}, body={ 483pt, 680pt},
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\usepackage{fancyhdr}\pagestyle{fancy}

\begin{document}
\pdfinfo{%
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  /Author   (M. Ferianis, S. Bassanese, G. D'Auria ELETTRA, Sincrotrone Trieste, Trieste, Italy;
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  /Subject  (Proceedings DIPAC 2003 -- Mainz, Germany)
  /Keywords (diagnostics, electron, ELETTRA, instrumentation, linac)
}
\setcounter{page}{113}
\fancyhead[CE,CO]{\large\sffamily Proceedings DIPAC 2003 -- Mainz, Germany}%
\fancyfoot[RE,LO]{\large\sffamily Posters Monday}%
\fancyfoot[RO,LE]{\large\sffamily\thepage}%
\fancyfoot[CE,CO]{\large\sffamily PM10}
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              {\Huge\mbox{}\vfill
               \centering\textsf{\textbf{PAPER NOT YET RECEIVED}}
               \vfill}
\end{document}
```

»geometry« helps to keep the tight frame

```
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               \vfill}
\end{document}
```

»fancyhdr« prints header and footer information

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              {\Huge\mbox{}\vfill
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               \vfill}
\end{document}
```

»pdfinfo« transfers all meta info into the pdf file

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\end{document}
```

»pdfpages« imbeds the (raw) paper

```
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\end{document}
```

»\IfFileExists« ensures that there is at least a paper with a note

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\end{document}
```

»pagenumber« is set after checking/counting all pages

```
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```

»path« information are set in the config file

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```

»scaling« is determined by maximum of crop/media/mask-box sizes

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               \vfill}
\end{document}
```

What happens, if you compile this TeX script without the necessary pdf-file?

You only get the "missing" note.

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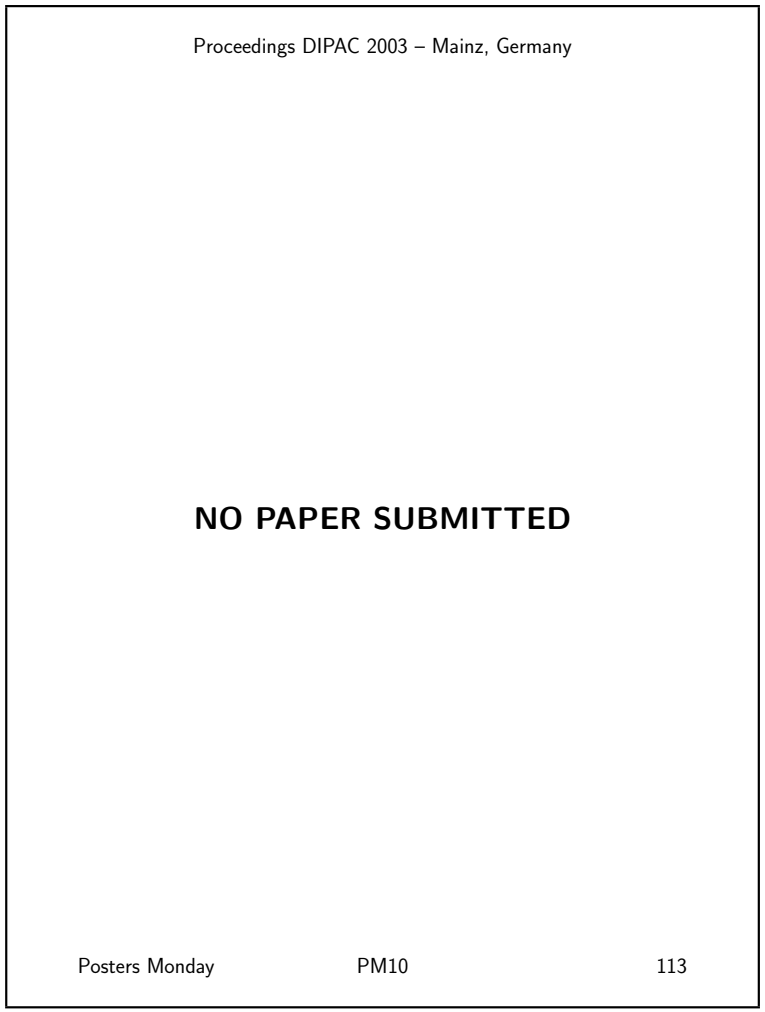
You only get the "missing" note.

The text is configurable in the `config` file.

And if it's there, you get. . .



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And if it's there, you get. . .

Proceedings DIPAC 2003 – Mainz, Germany

CHARACTERISATION OF FAST FARADAY CUPS AT THE ELETTRA LINAC

M. Ferianis, S.Bassanese, G. D'Auria, Sincrotrone Trieste, I-34012 Trieste, Italy
C. Deibele, SNS, Oak Ridge, TN, USA
M. Poggi, INFN-LNL, I-35020 Legnaro (PD), Italy

Abstract

Since several years, the Diagnostic Group at Laboratori Nazionali di Legnaro (LNL) has been designing Fast Faraday Cups (FFC) to be used on their Heavy Ion Accelerators. Latest developments in this field include a Stripline FFC, jointly developed with the Spallation Neutron Source (SNS). A collaborative partnership has been set-up between LNL and the ELETTRA Laboratory to fully characterize new FFCs, using the 1GeV electron Linac in operation at the ELETTRA Synchrotron Light Source. Two FFCs, the stripline FFC, built at SNS, and a coaxial FFC, made at LNL, have been installed at ELETTRA who provided the wideband data acquisition and the remote control of the measurement. The first measurements, carried out using a 1GHz oscilloscope, have allowed the proper set-up of the instrument remote control as well as a low jitter triggering system, synchronous with the injected electrons. Wideband measurements were performed using oscilloscopes with bandwidths up to 20GHz, whereas the bandwidth of the Stripline FFC has been estimated to be roughly 20GHz.

A complete set of tests was carried out both on the coaxial FFC and on the stripline FFC. Moreover, thanks to the information provided by these wideband measurements, the Linac working point has been further optimized as well as the injection process into the ELETTRA Storage Ring.

INTRODUCTION

The ELETTRA Linac [1] is in operation since 1992 as injector of the ELETTRA Storage Ring, providing a 1.0GeV electron beam. Since 1996 [2] the Linac has also been used parasitically as a "test facility" both for material irradiation experiments and for testing diagnostic equipments [3]. The characterization of the new Fast Faraday Cups was carried out in the frame of this second activity.

The FFCs, designed to have information on beam temporal structure, have been developed at LNL for several years to measure the bunch length of ion beams. The experience gained in that field also yielded a collaboration with the SNS project at Oak Ridge, where a strip line FFC has been developed to measure the bunch length out of the low energy (E=2.5MeV of H^-) section of the machine.

The ELETTRA Linac bunching structure

The bunching section of the ELETTRA Linac, shown in Fig. 1, includes:

- a 500MHz Sub Harmonic Chopper (TM_{110} deflecting cavity)
- a 500MHz Buncher (TM_{101} pill box cavity)
- 3GHz Pre-Buncher (TM_{101} pill box cavity)
- 3GHz Buncher (0.4m long 2/3π SW accelerating section)

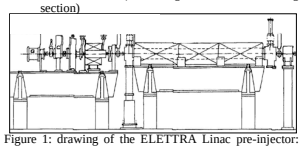

Figure 1: drawing of the ELETTRA Linac pre-injector: G=Gun, C=Chopper, PB5=Pre-buncher @500MHz, PB3= Pre-buncher @3GHz, B=Buncher @3GHz

With a proper setting of the parameters (amplitude and phase of the cavities) this configuration allows to select and fill a pure 500 MHz bucket of the Storage ring, in single bunch mode. This means that at the Linac exit all the charge is compressed in less than 1 nsec with a 3 GHz fine structure of the beam (2 or 3 S-Band micro-bunches, spaced by 330 ps). As we have observed with those measurements, changing the relative phases between the 500MHz cavities and the 3GHz ones, it is possible to change the number and the relative amplitude of the S-Band micro bunches.

THE FAST FARADAY CUPS

The FFC station, built at LNL and holding the two FFCs, has been installed on the Linac User port at 1GeV (fig. 2). An already available fluorescent screen located upstream the station has been used for alignment purposes and for checking the electron beam focusing.

Figure 2: view of the FFC station installed on the Linac User port at 1GeV. The cable of the coaxial FFC is visible in the foreground. On the right hand side, there is the linear translation stage of the Stripline FFC.

Summary

- the scripts are usable, but only tested on DIPAC related conference papers and settings,
- translation of special character to Unicode has to be extended
  - actually 65 accented letters,
  - 17 special characters,
  - 113 math symbols, and
  - 39 Greek letters.
- generating wrappers for pdf-files and Web pages is one script at the moment (if you want one, you get the other free)
- I'm willing to maintain and extend the scripts
- <advertisement>
  everything runs with the new TeX Collection Set
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  everything runs with the new TeX Collection Set
  `</advertisement>`

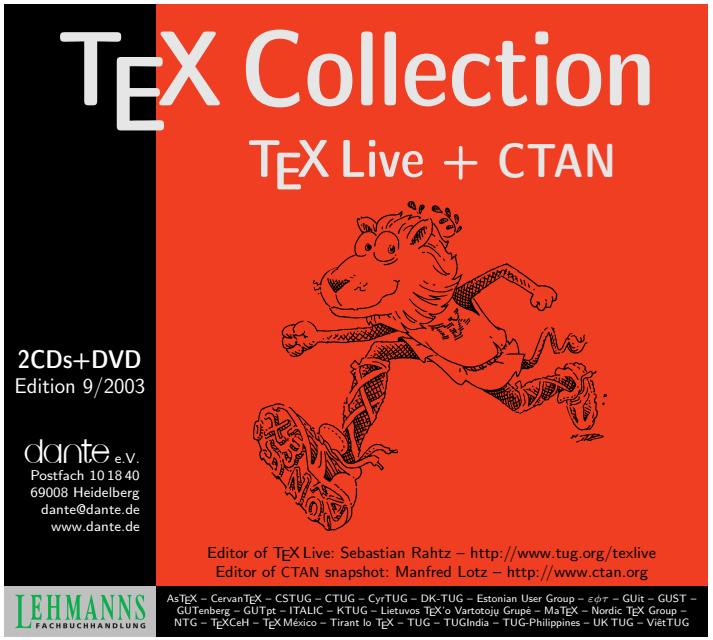
Some New Scripts for the Wrapper

Volker RW Schaa

Gesellschaft für Schwerionenforschung mbH
Darmstadt, Germany

JACoW Team Meeting,
Trieste, Italy,
Dec 2003

<advertisement>



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Thank you!