PAC03 Editing and Processing

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Statistics

- Papers 1150 received, 22% of abstracts have no paper
- Pages 3571 plus front matter
- Editing and Proceedings preparation effort
  - 13 persons at the conference
  - 31 person-weeks since the conference
    - Including two summer workers, 8 weeks each
  - A few person-weeks remaining for final checking
- All submitted papers edited at the conference
- Large fraction QAed there and the remainder within a few weeks

Where Have the Time and Effort Gone? (1)

- Authors thought they had submitted, but we had no paper
  - We declared the lack of a paper our fault, and then had to wait >2 weeks for last one
- Paper marked as Withdrawn, but with non-zero page count noted in DB, confused TOC
- Special characters (in PAC font), subscripts and superscripts in titles gave difficulty in making TOC
  - e^+e^- will always be with us
- Alphabetization of authors
  - *al Bet*, *Al-Bet* and *Alàss* all precede *Alan* in Oracle's list

Time and Effort (2)

- Sorting of similar author names
  - Shi Jie, S.-J., S.J., S. J. and S.
  - New database may solve this
- Author list on the paper differs from that on the abstract
  - Major effort to check every paper
    - We could ask authors to tell us if there is a change
    - But would we trust them to do this?
- Stamping with Conference, IEEE and Page Number gives occasional errors
  - For about 25% of Asian papers and a few scattered others

Proceedings of the 2003 Particle Accelerator Conference

BEAM COMMISSIONING OF THE J-PARC LINAC MEDIUM ENERGY BEAM TRANSPORT AT KEK

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Abstract

The construction of the initial part of the J-PARC linac has been started at KEK for beam tests before moving to the JAERI Tokai campus, where J-PARC facility is finally to be constructed. The RFQ and MEBT (Medium Energy Beam Transport) has already been installed at KEK, and the beam test has been performed successfully. In this paper, the experimental results of the beam tests are presented together with simulation results with a 3D PIC (Particle-In-Cell) code.

INTRODUCTION

The J-PARC (Japan Proton Accelerator Research Complex) accelerator consists of a 400-MeV linac, a 3-GeV RCS (Rapid Cycling Synchrotron), and a 50-GeV synchrotron [1, 2]. The linac is comprised of a 50-keV negative hydrogen ion source, a 3-MeV RFQ, a 50-MeV DTL, a 190-MeV SDTL (Separate-type DTL), and a 400-MeV ACS (Annular Coupled Structure linac). The construction of the initial part of the J-PARC linac has been started at KEK to develop and establish the linac system before moving to the JAERI Tokai campus, where the J-PARC facility is finally to be constructed. The 324-MHz RFQ and the MEBT (Medium Energy Beam Transport) has already been installed at KEK, and the beam test has been performed successfully from April to July 2002, and January to February 2003. Between these two series of experiments, slight modification of the LEBT (Low Energy Beam Transport) was performed to install a pre-chopper cavity. These beam tests aim to verify the performance of key components of the MEBT. The MEBT has two main roles, namely, to perform transverse and longitudinal matching to the succeeding 324-MHz DTL, and to chop beams with the same frequency with the RCS injection cycle in order to minimize the beam loss at the injection. The schematic layout of the MEBT is shown in Fig.1(a). The MEBT includes eight quadrupole magnets (Q1 to Q8) for transverse matching, two 324-MHz buncher cavities for longitudinal matching, two rf deflection cavities (RFD's) and a scraper for beam chopping, and various beam diagnostic instrumentation for beam diagnosis. We also have five two-plane steering magnets for beam steering. Although various developments have been performed in the experiments, we focus on the emittance measurement results and its comparison with particle simulations in this paper. As for the rf chopper performance which is another key issue on the beam test, we present experimental results in a separate paper [3].

EXPERIMENTAL SETUP

In the beam test, a TBD (Temporal Beam Diagnostic system) is placed at the exit of the MEBT, which will be removed when installing the DTL. The TBD includes a transverse emittance monitor and a Faraday cup. The emittance monitor is double-slit type, and its first slit is located 534 mm downstream from the exit of the MEBT. The slit width and slit interval of the emittance monitor are 0.1 mm and 205 mm, respectively.

In the actual operation, the beam should be strongly focused at the exit of the MEBT to satisfy the matching condition to the DTL. However, the strengths of the last two quadrupoles are weakened in the experiment to enable the emittance measurement at the downstream beam diagnostic system. Figure 1 (b) shows a beam profile for a typical quadrupole setting which satisfies the matching condition to the DTL, and Fig.1 (c) shows a typical beam profile for the experiment, in which only the last two quadrupoles are weakened. In Fig.1 (c), the downstream end of the plot corresponds to the first slit position of the emittance monitor in the TBD. The quadrupole and buncher setting in Fig.1 (c) corresponds to those in Measurement I in the next section.

The transmission ratio through the MEBT is measured with three CT's (Current Transformers), which are located after Q1 (CT1), at the exit of the RFD cavities (CT2), and after Q7 (CT3). We also have three FCT's (Fast Current Transformers), eight BPM's (Beam Position Monitors), and four WS's (Wire Scanners) for beam tuning. Each WS has horizontal, vertical and oblique (45 deg) carbon wires with the diameter of 7μm. As for the detailed layout and specifications for beam monitors, refer to the reference [2].

We use a LaB_6 filament for the ion source in the experiments. The peak current reaches 33 mA at the exit of the

Suggestions

- Make some recommendation in instructions as to centering of figure captions
- Don't put off preparation of front matter until the end, it takes considerable effort
- Decide what to do about addresses for attendee list
  - Some people submit a home address, but what about this being in the Proceedings?
- Put in author instructions something about use of Gemini to fix very large files

One (Probably Impossible) Wish

Dual grids in Acrobat Viewer would remove a source of judgment calls and non-uniformity