

Proposal of a practice experiment using a hadron beam for EDIT 2013

June 11, 2012

the EDIT 2013 Local Organizers ¹

1 Purpose

The Excellence in Detector and Instrumentation Technologies (EDIT) symposium was created to ensure researchers entering the field today get the hands-on experience they need to successfully further their careers [1].

EDIT is a symposium of Excellence devoted to young researchers, in their graduate studies or in their first year as a post doc, seeking to acquire a deeper knowledge on the major aspects of detectors and instrumentation technologies. This goal is achieved by providing a diversified program that integrates topical academic courses with hands-on laboratories. The practice-oriented approach of the symposium will be particularly profitable for physicists with limited hardware experience, as they can explore the performance and limitations of the technologies which are used in state-of-the-art experiments. Participants' understanding of technologies will be extended beyond their immediate circle to a broader view, favoring strong skills in understanding the operation of Detectors and fostering innovative ideas on R&D and data interpretation.

The third EDIT symposium will be held at KEK from March 12th to March 22th in 2013. The symposium consists of some lectures and training courses. We will have 48 students and a student will take two training courses. One training course have 4 days with 6 students.

A practice experiment as a training course at EDIT 2013 is being proposed at Hadron-hall in J-PARC. Using a hadron beam, we'd like to provide following hands-on experiences.

- Basic understands of interactions between radiation and matter
- Practice for Particle identification and tracking

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2 Setup

The setup is similar with a detector test experiment, as shown in Fig. 1. The momentum beam is up to $1 \text{ GeV}/c$ and un-separated beam is used

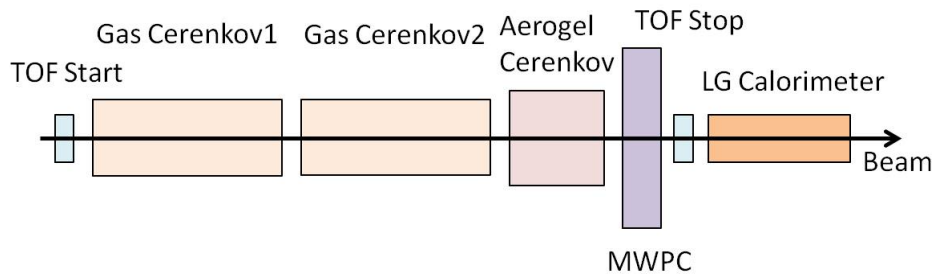


Figure 1: Schematic view of the setup

to have a practice of particle identifications. The beamline of K1.1BR is suitable.

Following detectors will be set up in line.

- Time of Flight counter (for Proton/Kaon/Pion identification)
- Gas Cherenkov counter (For electron identification)
- Aerogel Cherenkov counter (for Kaon/Pion identification)
- Multiwire proportional Chamber
- Lead Glass Calorimeter (For electron energy detection)

3 Beam Time Requests

At the symposium. one course consists of 4 days and 4-days course is repeated two times. The schedule is following.

May 12th: Opening Lecture / Tour

May 13th: Lecture / Preparations with radiation sources (No beam) for Gr.1

May 14th: Signal check with beam (1 shifts/9:00-17:00) for Gr.1

May 15th: Data Acquisition with DAQ (1 shifts/9:00-17:00) for Gr.1

May 16th: Data analysis / Discussions (No beam) for Gr.1

May 17th: A day off

May 18th: Lecture / Preparations with radiation sources (No beam) for Gr.2

May 19th: Signal check with beam (1 shifts/9:00-17:00) for Gr.2

May 20th: Data Acquisition with DAQ (1 shifts/9:00-17:00) for Gr.2
May 21th: Data analysis / Discussions (No beam) for Gr.2
May 22th: Lecture / Tour

Then, total 4 shifts are requested with the proposed schedule.

References

- [1] <http://edit2011.web.cern.ch/edit2011/>
<http://detectors.fnal.gov/EDIT2012/>