

BESIII Inner Tracker Upgrade Meeting

(July22, 2024) 14:00 - 16:00pm (Beijing Time)

Meeting agenda and minutes

- Indico page: <https://indico.ihep.ac.cn/event/23040/>
- Participants:
 1. Present in the meeting room
Zheng Wang, Qun Ouyang, Janguang Lv, Xiaoyan Shen, Tingxuan Zeng, Giulio Mezzadri, Gianluigi Cibinetto, Mali Chen, Yinghong Zhang, Jian Zhang
 2. Online at ZOOM
Haibo Li, Kejun Zhu, Monica Bertani, Shuangshi Fang, Mingyi Dong, Michela Greco, Chenglong Jinlian, Yunhua Sun, Jinfang Chang, Hongliang Dai, Wenxuan Gong, Huirong Qi, Stefano Graminia, Jinyu Fu, Liangliang Wang, Jing Dong

Schedule and Progress last week: Mingyi Dong

- **Summary of the report:** (Slides by Mingyi Dong: [Slides](#))
 1. Progress last week
 - 1) Disconnected the valve box of the accelerator superconducting magnet on both sides
 - 2) Removed the support structure for small angle luminosity detector and ZDD
 - 3) Removed the equipment (Q2、 BV02, BH02) on both sides
 - 4) Removed support structures of the magnets
 - 5) Opened the east and west doors of BESIII
 2. Preparation for tests of cooling and cutting the iMDC flange
 - 1) Will fix the motor vertically and cut the step of the flange with a small steel file. The jigs are being prepared in the factory.
 - 2) The design of tools for cooling the iMDC flange has been finished and will be manufactured in the factory
 3. Plan for the next week
 - 1) Remove the valve box of the accelerator superconducting magnet

- 2) Remove Q1A, Q1B, ISPB on east side;
Move Q1A, Q1B, ISPB on west side away from the IP region
- 3) Remove SCQ and its support structure on both side;
- 4) Remove depleted uranium shield on both sides
- 5) Remove beam pipe

- **Questions during the slides or planning:**

1. The time and way of the tests of cooling and cutting the iMDC flange has been discussed.
 - 1) Jingyu: About the timing, finished all the drawing last Friday, got the feedback during the weekend from the factory, and will modify again then start production today, it will cost at least 10 days for the tooling ready. Xiaoyan reminds it is delayed, but the toolings and drawings will have to be carefully checked.
 - 2) Gigi wondered how to evaluate the cutting test. Mingyi explained the cutting is the final way if cooling is ineffective. Compared with the previous cutting test, the difference is that we will cut through the small step of the the flange and cut off a piece in z-direction. If one piece is not enough, we will cut more.
2. About the gas for iMDC and cgem
 - 1) Mingyi will discuss with Xiaolan Luo about the gas during the operation. Nitrogen is suggested.
 - 2) Stefano asked if the gas system supporting the CGEM has been discussed? Giulio said he has discussed with Xiaolan Luo and will update it to all the Italian colleagues(in Italiano).
3. Zheng Wang showed some figures of the interaction region, and Mingyi explained the upgrade schedule again.

Progress and plan in CGEM: Giulio Mezzadri

- **Summary of the report: (Oral report by Giulio Mezzadri)**

1. On Tuesday, the dehumidifier was connected to the wash basin so that it can operate all time. Humidity is between 40 and 55%
2. From Wednesday to Friday, we powered on the detector. Everything was stable. We took few run, two of them of 60 and 75 minutes without interruptions. We are using these data to keep improving our knowledge on the full system.
3. We have started planning the time before the installation.

4. We worked with Zeng Tingxuan in Room106 to keep improving the status of the daq: she took several data to evaluate the size of the GEMDC buffers and tried to acquire data with no interrupt mode. More tests are planned for the week of 22/7.

- **Questions during the slides or planning:**

Mingyi asked Giulio to prepare a presentation next time. A summary is suggested this time for the minutes.

Data issues found and tests: Tingxuan Zeng

- **Summary of the report:** (**Slides by Tingxuan Zeng:** [Slides](#))

1. Tingxuan reminds some issues found during last data taking
 - 1) Several issues have been found during last data taking, the reason is that the DC firmware supports two GEMROC data format, which is confirmed with Pawel.
 - 2) Two issues still need to be studied as below:
 - a) GEMROC L1 counter is sometimes incorrect.
 - b) DAQ software is able to acquire data for 2 minutes, after that, no interrupts happened.
2. Test items and results last week (DAQ with CGEM)
 - 1) Test DC board buffer length. Result show: buffer length of DC board is 128kB
 - 2) Read out data directly when no interrupt happens:
 - a) Read out ~50kB data and the interrupt recovers
 - b) DC Buffer empty but the interrupt does not recover
 - 3) Read out data continuously without interrupt mode :
 - a) For single DC board, it can work normally.
 - b) When two DC boards work together, data format errors always occur.
 - 4) Repeat the simulation test with dummy data and try to understand the problems, but the firmware needs to be modified.

Questions during the slides or planning:

1. The issue left: buffer empty when reads directly & 2minutes interrupt need to be fixed by the firmware coding.
2. Michela comments:
 - 1) The dummy code is intended only for the test, it's for the beginning to go on, but not for the real system. We can use the real system.
 - 2) Pawel who writes the firmware code is in vacation, not available for 2 weeks. But Angelo is trying to help to solve this problem.