**Belle II PXD EVO Meeting**

22.6.2011

Present:

 Jochen Knopf, Soeren Lange, Jelena Ninkovic, Christian Koffmane, Carlos Lacasta,

Christian Kiesling, Arantza Oyanguren, Stefan Rummel, Hans Krüger, Hans-Günther Moser, Shuji Tanaka,Ivan Peric, Peter Kodys, Tobias P. Kleinohl, Andreas Moll, David Moya, Raimon Casanova, Zdenek Dolezal, Jochen Schieck, Elena Nedelkovska, Carlos Mariñas, Sergey Fourletov,

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| **Wednesday 22 June 2011** | [toptop](http://indico.mppmu.mpg.de/indico/conferenceDisplay.py?confId=1320#top)  |

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| 10:00 | Report on Tracking and CO2 Cooling Meetings (30') ([files Slides](http://indico.mppmu.mpg.de/indico/materialDisplay.py?contribId=0&materialId=slides&confId=1320) pdf file  )  | Christian Kiesling |

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| 10:30 | DAQ Meeting in Münzenberg (15')  | Soeren Lange |

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| 10:45 | Air cooling tests (20') ([files Slides](http://indico.mppmu.mpg.de/indico/materialDisplay.py?contribId=3&materialId=slides&confId=1320) pdf file  )  | Arantza Oyanguren |

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| 11:05 | Alignment Monitors (20') ([files Slides](http://indico.mppmu.mpg.de/indico/materialDisplay.py?contribId=6&materialId=slides&confId=1320) pdf file ppt file  )  | David Moya |

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| 11:25 | B2GM Presentations (20') ([files Slides](http://indico.mppmu.mpg.de/indico/materialDisplay.py?contribId=4&materialId=slides&confId=1320) ppt file  )  | Hans-Günther Moser |

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| 11:45 | AOB (20')  |  |
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| next meeting: July 26 (?) |

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1. **Tracking and CO2 Cooling (C. Kiesling)**

Firstly, some news:

The ground breaking ceremony will be on November 18 (during the B2GM from 16.11-20.11).

The contract with ITA on grounding has been signed

A meeting of the tracking group took place in Karlsruhe June 16, 17. Topics were track finding using Conformal Mapping, Hough Transform and Cellular Automata and track fitting with GENFIT.

Especially interesting is the Cellular Automate which finds low momentum tracks (> 75 MeV/c) with high efficiency using SVD only. It is proposed to extend it including PXD data, which is possible in the ATCA.

A meeting on CO2 cooling happened at CERN on June 20. It was reported that KEK has started its own CO2 cooling project, for ILC. So far they have built an open CO2 system working at room temperature. A closed system is now under construction.

The work on the MARCO test system has started (Immanuel is at CERN since June 6) and should be ready end of this year. The good news is that the parts will be paid by CERN. Assembly will be mainly in Munich.

Then three units of the final system (IBBelLe) will be built, one for CERN (ATLAS), one for tests at MPI/Vienna and one for Belle II.

There was some discussion about safety regulations and requirements for such systems in Japan. Even the KEK CO2 group does not know. They will consult the government (Shuji-san will follow up). Perhaps a German TÜV certification could be acknowledged in Japan.

Test beam will be in October (3-12) together with SVD.

1. **DAQ Meeting in Münzenberg (Sören Lange)**

Some important decisions were taken at Münzenberg:

The PXD readout will be based on ATCA (performance demonstrated), the work on the PC based system will continue as backup. The decision will be announced at the B2GM.

The fast 6.5 GBit/s optical links will be used (with slower links there is not enough bandwidth for multiple triggers).

The last frame before injection will be transferred completely for monitoring and pedestal update. The readout system will be prepared for this. The switching to this mode is not trivial, it will be done in the DHH. The machine will send a trigger 70µs (?) before the injection. The injection frequency will be stable (50 Hz).

The background seems to be rather uniform, so no sophisticated load balance is needed.

Location of the crates: PXD ATCA in the server room. Datacon ATCA probably close to SVD.

The data format for the DHP proposed by Hans Krüger at the Ringberg workshop was adopted.

1. **Air Cooling Tests (Arantza Oyanguren)**

Work continued at the cooling mockup. It was demonstrated that rather low airspeed is sufficient to cool the modules (1-2 m/s, air speed is measured at the inlet pipe. Arantza will provide figures on mass flow).

The preparation of cold air is not trivial. Vortex tube and cooling by liquid nitrogen failed. There problems are due to freeze out of CO2 clocking the pipes and regulation. A system which used gaseous N2 and heating with Al-blocks worked. Interesting observation: the cooling block temperature changes if air (above -20 C) passes through.

An effect of the cooling block temperature on the beam pipe temperature was not observed. Hence there seems to be no risk of freezing the paraffin used for beam pipe cooling.

We asked Valencia to look into air cooling using the return flow of CO2 (if the air inlet is mounted inside the CO2 outlet). This might be needed to avoid heating up of the air in the long transfer lines.

Munich will send carbon tubes to Valencia (Action ID=157 since 9.12.2010).

1. **Alignment System (Davide Moya)**

The location of the alignment sensors was discussed with Tscharlie Ackermann. They will be placed between the PXD support and the SVD support cone. For this a new design is needed. Fabrication should be ready in October 2010.

It is proposed to use further fibres to measure temperature and humidity in the PXD volume. This could supply important feedback to the slow control.

Irradiations are planned for autumn.

SVD is interested in these monitors, too.

1. **PXD Session at B2GM (Hans-Günther Moser)**

The PXD session at the B2GM will be Wednesday, June 6, 16:50-20:20 with the possibility to extend to Wednesday Morning.

We agreed on following agenda:

 Introduction, News: Christian Kiesling

 PXD6 Production, Tests, Irradiations: Jelena Ninkovich

 PXD6 matrix tests, hybrid production: Christian Koffmane

 ASICs: Ivan Peric

 DHH (or in DAQ): Igor Konorov

Services/Power/slow Control: Jochen Schieck

Grounding: Fernando Arteche

Geometry, Support, Alignment: Martin Ritter

Simulations: Performance Andreas Moll

DAQ, background and IP related mechanics will be in the respective sessions

1. **AOB**
* Hans Krüger reported that the DHP test chip has been submitted to Mosis (last IBM 90nm MPW). No confirmation of the production start yet, but this is expected to come. Work started (with Barcelona) to convert to TSMC 65 nm. This technology will also be used by CERN, which helps). Next run (mini asic) is in October.
* Jelena reported that a PXD6 matrix with DCD readout was operated at full speed (100ns sampling).
* Next meeting: July 26 (Tuesday) 10:00

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