**Minutes, 72th PXD EVO Meeting, July 15, 2014, 10:00**

Present: H.-G. Moser, A. Campbell, C. Lacasta, C. Marinas, C. Kreidl, D. Levit,, F. Müller, L. Andricek, P. Avella, R. Richter, H. Krüger, E. Prinker, M. Valentan, C. Niebuhr, D. Klose, S. Lange, L. Li Gioi, C. Koffmane, M. Boronat.

* Agenda

Tuesday, 15 July 2014

* 10:00 - 10:20B2GM report 20'

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| Speaker: | Hans-Günther Moser |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=0&materialId=slides&confId=2950)powerpoint file |

* 10:20 - 10:40PXD Numbering Scheme 20'

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| Speaker: | Manfred Valentan |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=1&materialId=slides&confId=2950)unknown type file |

* 10:40 - 11:00EMCM4 Testing 20'

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| Speaker: | Paola Avella |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=4&materialId=slides&confId=2950)pdf file |

* 11:00 - 11:20Status at NTC 20'

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| Speaker: | Carlos Lacasta |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=2&materialId=slides&confId=2950)powerpoint file |

* 11:20 - 11:30VXD only tracking 10'

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| Speaker: | Soeren Lange |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=5&materialId=slides&confId=2950)pdf file |

* 11:30 - 11:50AOB 20'

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* + EMCM3 Production 15'

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**News from the B2GM (H.-G. Moser)**

At the B2GM we reported the successful completion of phase I of the sensor production, the good yield estimate and the progress with the inter-metal insulation (‘solved’).

The Belle II management informed us that there are further delays due to the cut of KEK’s operation budget. Several plans were discussed:

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| **Plan** | **Beast II****PXD @ KEK** | **T****months** | **Installation VXD** | **T****months** |
| original | Feb. 2016 |  | July 2016 |  |
| A2 | Oct. 2016 | +8 | Mar. 2017 | +8 |
| A3 | Nov 2016 | +9 | Apr. 2017 | +9 |
| A4 | Dec 2016 | +10 | July 2017 | +12 |
| C4 | Feb 2017 | +12 | July 2017 | +12 |

Shown is the start of Beast II operation, which coincides with the PXD/SVD integration and the VXD installation date (~ 3 months before the physics run). A2 is the baseline for the moment but in practice it is already obsolete since it assumes that some additional funding will become available this year, which will not be the case. A3 is favoured by Belle II, A4 by the machine (more efficient use of shutdown periods). C4 is a schedule which allows to start with TOP completed (However, Tom Browder claimed that TOP could be ready even in A2). In any case there is an additional delay of at least 8-9 months. Although the PXD schedule has been changed recently (start of phase II in October) it is still compatible with the original schedule (delivery of PXD to KEK in February 2016). So the delay is an additional contingency.

KEK has an additional problem because some irregularities paying invoices were discovered. This may delay the negotiations with the ministry (<http://www.kek.jp/en/NewsRoom/Release/20140617100000/> )

EPICs has been accepted by Belle for the slow control. It will run in parallel to NSM2 with CSS as top layer (common user interface).

In satellite meeting after the B2GM it was decided that AIM (alternative installation method) is now baseline. The meeting started with successful demonstrations of the RVC, the baseline mock-up and the AIM mock-up (which had been shipped to KEK for this purpose). The AIM demonstration included a demonstration of EDI, the emergency de-installation in case RVC fails to open. In the following discussion it was concluded that both installation methods work but AIM has the advantage of decoupling machine and detector. Nevertheless the available space for cables was seen as a problem and we were asked to improve this (as first step one of the two Infiniband data cables of a module was replaced by a thinner CAT5 network cable).

**PXD Numbering Scheme (M. Valentan)**

First Manfred introduced the recommended Belle II numbering scheme:

* Numbering should start with 1 (not 0).
* In r number should increment with increasing r.
* In  numbering should increment counter-clockwise (increasing  ).
* In  it should increment with increasing .

For module and ladder numbering this is easy and already defined in Belle II Note 0010.

However, for the numbering of the components within a module (ASICs, pixel columns and rows) this is not possible (we have to different layouts which are oriented in different ways). Manfred proposed to introduce a hardware numbering scheme for the modules which is consistent for all modules (but deviates from the Belle II rules). Pixel numbers will then be transformed to the Belle II scheme in the DHH. According to Dima this is not a problem. Tools to convert between the two schemes need to be provided. Manfred will make a proposal and update note 0010.

**EMCM4 yield measurements (P. Avella)**

Paola reported on the latest yield measurements on the EMCM4 wafers (after aluminium 2, before copper. EMCM4 contains standard wafers, SOI wafers and wafers from the failed PXD9 batch (which is important since it checks the influence of the surface profile on the yield). Results are very good: Measurements at comb structures and contact chains show 100% yield, The PXD9 like structures show 100% yield on 4 wafers, 83% on one. The two wafers from the PXD9 batch show 100% and 99.6% yield. Now copper will be added and measurements with the ATG flying probe tester will follow (in 2 weeks).

**Status at NTC (Carlos Lacasta)**

Carlos reported on recent progress at NTC (population with SMD components). In the past NTC had problems wetting the pads with solder. Recently a new batch of test modules arrive which has seen a plasma cleaning process. With these modules the wetting worked well. The modules have now all solder balls and the SMD components will be added these days.

Carlos and Laci will organize a review end of July/ beginning of August.

**VXD only tracking (S. Lange)**

Sören reported on recent meeting on VXD only tracking. The idea is to recover hits from low momentum tracks (like the slow pion from a D\*) which are not selected by the ROI algorithm. This is the case for tracks which are only seen by layers 1,2 and 3. However, this task (reconstruction of these tracks) seems to be very difficult and needs extra hardware. Alternatively these hits can be recovered using the cluster charge (Karlsruhe). This will be discussed in the Pisa meeting.

**AOB**

* L: Andricek: three EMCM3 modules are now equipped with ASICs. They were sent to HLL, inspected and shipped to Finetech for SMD assembly. Afterwards two will be equipped with Kaptons for EMCM electronic tests. One will be used for probe card tests (no Kapton).
* In the meeting we had some discussion about the modules to be delivered to KEK PF. Questions by Hans:

Who will do the flip chip? Laci: at the moment IZM, not HLL.

How will the 2nd grade modules be selected? H-G: not defined yet, but is agreed that modules for Belle II have absolute priority. This includes modules needed for beam and irradiation tests, spares and modules retained in the lab for tests.

How will it be ensured that the use (and payment) of components is transparent and properly accounted? Will there be an extra production? Indeed, this could be problematic in case a module is assembled for Belle II and later rated 2nd grade in the QA.

It was concluded that this topic needs further discussion in a dedicated meeting.