**Minutes, 70th PXD EVO Meeting, 13.5.2014, 10:00**

Present: H.-G. Moser, A. Campbell, A. Ritter, A. Wassatsch, C. Lacasta, C. Marinas, C, C. Kiesling, C. Kreidl, D. Levit,, F. Müller, F. Lütticke, E. Konorov, J. Ninkovic, L. Andricek, L. Germic, M. Ritzert, P. Avella, R. Richter, T. Kleinohl, H. Krüger, Z. Dolezal, E. Prinker.

* Agenda

Tuesday, 13 May 2014

* + 10:00 - 10:20EMCM yield tests *20'*

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| Sprecher: | Paola Avella |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=0&materialId=slides&confId=2872)pdf file |

* + 10:20 - 10:40EMCM electronic tests *20'*

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| Sprecher: | Christian Koffmane |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=7&materialId=slides&confId=2872)pdf file |

* + 10:40 - 11:00DCDpipe *20'*

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* + 11:00 - 11:20DHPT *20'*

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| Sprecher: | Leo Germic |
| Material: | [**Slides**](https://indico.mpp.mpg.de/materialDisplay.py?contribId=2&materialId=slides&confId=2872)pdf file |

* + 11:20 - 11:30Bonding at PACTEC *10'*

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| Sprecher: | Laci Andricek |

* + 11:30 - 11:40Switcher production via Europractice *10'*

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| Sprecher: | Ivan Peric |

* + 11:40 - 12:00DEPFET workshop in Kloster Seeon *20'*

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| Sprecher: | Laci Andricek |

* + 12:00 - 12:20AOB *20'*

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

8 wafers with 7 DUTS (4 standard EMCMs, 3 EMCMs with PXD9 like matrix structures) and various test structures made in 6 technology variations were tested by Paola and Andreas for shorts, interrupts and breakdown voltages. All wafers showed very good results, with two wafers of one technology variation showing essentially 0 faults. Based on these tests the technology was chosen for the next EMCM (EMCM4) production and, if successful, for the processing of the PXD9 wafers. 8 wafers will be processed in EMCM4, 4 on standard material, 2 on SOI material and 2 on obsolete PXD9 wafers in order to test the effect of the surface profile.

This concludes a long work optimizing the inter-metal insulation technology and we congratulate all participants for the excellent outcome.

**EMCM electronic tests (C. Koffmane)**

From the latest EMCM production 2 modules were populated with ASICs (one DCD/DHP and 6 switchers). Unfortunately both modules have shorts between SMD components. One cannot be used, the other cannot power the analogue part of the DCD, but is ok for testing the switcher.

Clock, Strobe, Gate and Clear signals can be seen at all switchers. The module operates at the nominal frequency of 305 MHz or 105ns readout cycle. It is important to disable the internal termination resistors (for clk, and strb) to achieve clean and large signals. Correct setting of the internal timing (relative delays of clock, gate\_strobe and clear\_strobe) is important to avoid double pulses of the clear signal.

Hans Krüger suggested changing the SW design such that the termination is activated by the bonding footprint. This would make the JTAG configuration obsolete. However, this needs layout changes to the modules and it was felt that it is rather late for that.

**DCDpipe Tests (C. Kreidl)**

The JTAG based tests of the DCEpipe is still being debugged. Christian hopes that this can be finished end of the week. Then he can prepare chips for the EMCM3.

**DHPT tests (L. Germic)**

Leo explained the test procedure of the DHPT using a needle card. This requires connecting 158 bumps (~ 200µm x 180µm pitch). Many tests were already performed, what is missing is a test with a DCD, memory write/read and the sequencer for the switcher control. Tests are difficult due to contact problems of the needle card.

The DHPT has worked already on a hybrid 5 board, so there is no principal show stopper, it is a matter of debugging the test system. The aim should be to prepare the DHPT for theEMCM3

Laci wants to send the components (EMCMs and chips) to IZM in the week after the Kloster Seeon meeting.

**Bonding at PACTEC (L. Andrice**k)

Laci had a lengthy discussion with PacTech. They are willing and able (this is what they claim at least..) to bump ~500 SWB on chip level. Technology would be electroless nickel plating for UBM and Sac305 balls per solder jetting. They are preparing a quotation.  We should start a trial assembly.

For the process details Laci would need more info on last metal and passivation of the SWB. Ivan should contact AMS.

**Switcher production via EUROPRACTICE**

AMS 18µm HV can be ordered as engineering run at EUROPRACTICE. Unlike AMS EUROPRACTICE does not require a follow up volume production. It is also possible to use the AMS standard cells.

Hence we have 3 options for the next swither submission:

* Switcher18 by AMS MPW with single chip bumping at PacTec
* Switcher18 by EUROPRACTICE engineering run with wafer level bumping by IZM
* Switcher33 (with modifications for gating) by AMS MPW with wafer access and waver level bumping by IZM

To be decided at Kloster Seeon

**DEPFET Workshop at Kloster Seeon (L. Andricek)**

The agenda (sessions) is at: <https://indico.mpp.mpg.de/conferenceDisplay.py?confId=2809>

Unfortunately the ILD/ILC talk by Ties Behnke had to be postponed from Sunday to Tuesday. It was discussed to have the TB (or IB) on Sunday instead. However this is also not optimal due to late arrival(s) and the wish to have the TB after the relevant sessions. However, the agenda can be relaxed by running the database tutorial in parallel to the TB.

Slow control should go in the ‘DAQ’ session on Wednesday (Igor). In case more time is needed, the TC session can be cut to 45 minutes.

**AOB**

Carlos Marinas organized a irradiation of ASICs for 23.6. – 27.6. ASICs and boards need to be prepared. To be discussed and organized at Kloster Seeon.