Milestone Report

Simulation workshop on HV/HR-CMOS TCAD and Geant4 simulations

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MILESTONE REPORT

SIMULATION WORKSHOP ON HV/HR-CMOS TCAD AND GEANT4 SIMULATIONS

MILESTONE: MS7

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Due date of milestone:	End of Month 6 (October 2015) – *Delayed to M13 (May 2016)*
Justification for delay:	The simulation workshop milestone needed to include results for the CMOS ATLAS demonstrators to validate the simulation tools. Since these results were expected in March 2016 and the workshop was organised on 12-13 May 2016, the milestone was postponed to M13.
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Abstract:

The workshop was focused on the methodology for simulating the performance of HV and HR CMOS detectors fabricated in various CMOS technology node (AMS 0.35 and 0.18 nm, LF 150 nm, etc.) using TCAD and Geant4. It was organised by WP6.

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Delivery Slip

	Name	**Partner**	**Date**
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1. WORKSHOP SUMMARY

1.1. OBJECTIVES

The two days' workshop took place at the Amphitheater, Centre de Physique des Particules de Marseille (CPPM), 163, avenue de Luminy, Marseille (FR) on the 12-13th of May 2016. The various aspects covered by the workshop included introductions for putting the simulation activity in the context of LHC experiments and the role of Geant-4 simulations in this context. It was followed by the introduction of device simulations using TCAD tools, comparison with measurements and hands-on sessions on TCAD simulation practice.

1.2. DETAILS ABOUT THE MEETING

Type of activity	Thematic Workshop
Title	WP6 workshop on simulations
Date	12-13 May 2016
Place	Marseille (FR)
Type of audience	Scientific community, ESRs
Size of audience	25
Scope of the workshop	International
Link	https://indico.cern.ch/event/497449/

1.3 AGENDA

Thursday, 12 May 2016

09:00 → 09:10	Welcome 10m
09:10 → 09:40	Pixels needed for LHC flavour tagging 30m *Speaker: Laurent Vacavant* *(CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))*
09:40 → 10:10	ATLAS CMOS pixel program 30m *Speaker: Marlon B. Barbero* *(CPPM - CNRS/IN2P3 / Aix-Marseille Université (FR))*
10:10 → 10:40	Simulation of silicon detector with GEANT-4 (part1) 30m *Speaker: Fares Djama (Universite d'Aix - Marseille II (FR))*
10:40 → 11:00	Coffee break
11:00 → 12:30	Simulation of particle detector with GEANT-4 (part2) 1h 30m *Speakers: Fares Djama (Universite d'Aix - Marseille II (FR))*

12:30 → 14:00	Lunch
14:00 → 14:30	Pixel simulation studies and performance with HV-CMOS 30m *Speaker: Alessandro Calandri* *(CPPM, Aix-Marseille Université, CNRS/IN2P3 (FR))*
14:30 → 15:15	CMOS perspectives and what do we need to simulate 45m *Speaker: Walter Snoeys (CERN)*
15:15 → 15:45	TCAD infrastructure, tips and tricks for successful simulation 30m *Speaker: Mathieu Benoit (Universite de Geneve (CH))*
15:45 → 16:15	TCAD simulation of LF CCPD 30m *Speaker: Jian Liu (CNRS (FR))*
16:15 → 16:45	Coffee break
16:45 → 17:05	TCAD Simulation of CCPDv3 and C3PD for CLIC 20m *Speaker: Matthew Daniel Buckland (University of Liverpool (GB))*
17:05 → 17:25	TCAD Simulation of SiGe CMOS Monolithic integration and AMS HV-CMOS Sensors 20m *Speaker: Francesco Armando Di Bello (Universite de Geneve (CH))*
17:25 → 17:45	Experience on the process and electrical simulation of Foundry process 20m *Speaker: Lingxin Meng (University of Liverpool/Universite de Geneve)*
17:45 → 18:30	Discussions

Friday, 13 May 2016

09:00 → 11:00	Hands on TCAD simulation (part1) 2h *Speakers: Jian Liu (CNRS (FR)), Mathieu Benoit (UNIGE), Patrick Pangaud (CNRS (FR))*
11:00 → 11:20	Coffee break
11:20 → 12:30	Hands on TCAD simulation (part2) 1h 10m *Speakers: Patrick Pangaud (CNRS (FR)), Jian Liu (CNRS (FR)), Mathieu Benoit (UNIGE)*
12:30 → 14:00	Lunch
14:00 → 14:45	HV CMOS results and simulation program 45m *Speaker: Ivan Peric (KIT - Karlsruhe Institute of Technology (DE))*
14:45 → 15:15	Recent CMOS results and simulations 30m *Speaker: Tomasz Hemperek (Universitaet Bonn (DE))*
15:15 → 15:35	Coffee break
15:35 → 15:55	KDetSim - a ROOT based detector simulation package 20m *Speaker: Gregor Kramberger (Jozef Stefan Institute (SI))*
15:55 → 16:15	Edge TCT measurements and simulation of charge collection on HVCMOS detector prototype 20m

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	Speakers: Igor Mandic (Jozef Stefan Institute (SI)) , Bojan Hiti (Jozef Stefan Institute (SI))
16:15 → 16:35	Simulation of High Resistivity Pixels 20m *Speaker: Stefan Lauxtermann (Sensorscreation)*
16:35 → 17:15	Discussions 40m
17:15 → 17:25	Closure

1.4.   LIST OF PARTICIPANTS

Name		Institute
Fabrice	Balli	CEA/IRFU,Centre d'etude de Saclay Gif-sur-Yvette (FR)
Marlon B.	Barbero	CPPM - CNRS/IN2P3 / Aix-Marseille Université (FR)
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