

WG4: simulations

M. Mandurrino, H. Wennlöf

04/12 -24

WG4 Research Goals and talks related to them this week

Non-exhaustive list of talks, roughly grouped

- RG 4.1: Flexible CMOS simulation adaptable to different technology nodes and development of connections between tools for device-level simulation and electronic circuit design/validation
- RG 4.2: Implementation of newly measured semiconductor properties into TCAD and MC simulations tools
- RG 4.3: Definition of benchmark for validating the radiation damage models with measurements and different benchmark models
- RG 4.4: Developing of bulk and surface model for $10^{16} \text{ cm}^{-2} < \Phi_{\text{eq}} < 10^{17} \text{ cm}^{-2}$
- RG 4.5: Collate solutions from different MC tools and develop an algorithm to include adaptive electric and weighting fields

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| CMOS Strip Sensors – Characterisation, Simulation and Test Beam Results 500/1-001 - Main Auditorium, CERN | Iveta Zatocilova 15:00 - 15:20 |
| Simulations and characterisation of the first monolithic CMOS LGAD implemented in 110nm 500/1-001 - Main Auditorium, CERN | Mr Umberto Follo 16:50 - 17:10 |
| H2M – Characterization of a MAPS in a 65 nm CMOS Imaging Process 500/1-001 - Main Auditorium, CERN | Finn Feindt 17:10 - 17:30 |
| Semiconductor Detector End-to-end Simulations with Allpix Squared: Latest Features, Ongoing Developments, and Ap. Paul Schütze et al. | |
| On the properties of signal formation in LGAD sensors 500/1-001 - Main Auditorium, CERN | Nicolo Cartiglia 10:55 - 11:15 |
| SMALLGAD: Capacitively-coupled AC-LGAD pixel detector for particle detection 500/1-001 - Main Auditorium, CERN | Mathieu Benoit 09:00 - 09:20 |
| Update on the RD50-SiC-LGAD Project 4/3-006 - TH Conference Room, CERN | Andreas Gsponer 11:10 - 11:30 |
| TCAD Parameters for 4H-SiC: A Review 500/1-001 - Main Auditorium, CERN | Jürgen Burin 16:20 - 16:40 |
| TCAD Simulation of Electrical Characteristics and Irradiation Modeling for ATLAS ITk-Strip Sensors 500/1-001 - Main Auditorium, CERN | Yuzhan Zhao 15:10 - 15:30 |
| Radiation tolerance and annealing studies at various temperatures using test-structure diodes from 8-inch silicon sens Leena Diehl | |
| Simulation of Irradiation Damage and Defect Evolution Induced by Neutrons in LGAD 500/1-001 - Main Auditorium, CERN | Wei Li 13:50 - 14:10 |
| Defect investigation in irradiated ATLAS18 ITk Strip Sensors using transient spectroscopy techniques Christoph Thomas Klein | |
| Carrier recombination characteristics in neutron irradiated Si at extreme fluences 500/1-001 - Main Auditorium, CERN | Tomas Ceponis 09:20 - 09:40 |
| TCAD + AllPix2 pipeline for the ATLAS ITk-Strip Digitization Model 500/1-001 - Main Auditorium, CERN | Jeff Dandoy 15:30 - 15:50 |

Note: should also interface to **DRD7**, especially for RG 4.1

The role of WG4 in DRD3

- As an example, a **majority of presentations** on Monday talked in some part about simulations
- However, participation in WG4 is lacking a little
- WG4 is about all aspect of simulations, and it should be a **forum for discussions** of simulation-related activities
 - There are definitely **synergies between different work**
 - To utilise this, we should have a place to **present and discuss methods and results**
 - WG4 should be this place for DRD3
 - Please join our e-group and meetings when possible
 - E-group: <https://e-groups.cern.ch/e-groups/Egroup.do?egroupId=10615627>
 - Mattermost: <https://mattermost.web.cern.ch/drd3/channels/wg4-general>
 - We know it can feel like a waste of time to present in this meeting as well as in meetings in “your main WG”, but it’s important that we **build this community and benefit from collective experience**

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| Preliminary results on 3D silicon sensors using femtosecond TCT-SPA and TPA-TCT techniques at ELI: Work in Progress Gordana Lastovicka Medin | |
| On the properties of signal formation in LGAD sensors 500/1-001 - Main Auditorium, CERN | Nicolo Cartiglia 10:55 - 11:15 |
| ASIC Development for Timing Measurements using LGAD Sensors 500/1-001 - Main Auditorium, CERN | Abderrahmane Ghimouz 12:15 - 12:30 |
| Research of AC-LGAD strip detector for 4D tracking 500/1-001 - Main Auditorium, CERN | Weiyi Sun 14:10 - 14:30 |
| Update on the DC-coupled Resistive Silicon Detector for 4D tracking 500/1-001 - Main Auditorium, CERN | Roberta Arcidiacono 14:30 - 14:50 |
| Characterization of Low Gain Avalanche Detector Gain by Means of the Transient Current Technique Mohamed Hijas Mohamed Farook | |
| Controlled charge multiplication in thin small-pitch 3D pixel sensors 500/1-001 - Main Auditorium, CERN | Andrew Donald Gentry 16:00 - 16:20 |
| RD50 Common Fund Project - RD50-2023-03: Deep Junction LGAD 500/1-001 - Main Auditorium, CERN | Dr Simone Michele Mazza 16:20 - 16:35 |
| NEUROPIX: A neuromorphic computing framework for pixelated detector data processing 500/1-001 - Main Auditorium, CERN | Mathieu Benoit 16:35 - 16:50 |
| LGAD and 3D technology at the IMB-CNM 500/1-001 - Main Auditorium, CERN | Neil Moffat 17:05 - 17:20 |

Backup slides

WG4 Research Goals

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