AIDA++
uElectronics related EoIs

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EoI related to Microelectronics

EoI #	Title	Presenter	Comment
50	28 nm CMOS readout ASICs and high-speed data links for advanced silicon trackers and 4D detectors	Valerio Re	
20	cold/timing 65/130n electronics	Christophe de la Taille	
27	Optimisation of the light sensing system of a Dual Readout Calorimeter	Massimo Caccia	
59	Cyber Physical Systems for Data Acquisition and Control Systems	Alberto Aloisio	Not clear if it requires chip design
110	Accelerated Neuromorphic Sensing for Wide range of detEctoR applications	Victor Coco	ASICs any?
144	Compact readout electronics for a highly granular SiPM-on-tile calorimeter	Katja Krüger	In Calo, but needs ASIC(s)!
61	Advanced Readout CMOS Architectures with Depleted Integrated sensor Arrays	M Da Rocha Rolo	In CMOS, but mostly uelectronics
106	Development of high performance readout electronics for gas detectors	Ilaria Vai	Should it not be in uelectronics?
8	Wireless system of portable radiation monitors for distributed dose control	Plamen Iaydjiev	In Irrad facilities, but how do they get RH without an ASIC?
51	Development and characterisation of integrated electronics for the readout of pixelated µRWELL detectors	Paolo Giacomelli	In FCC, but should it not be in uelectronics?

AIDA microelectronics and interconnect

- 2 EoIs emanating from AIDA2020 (50,20)
- 1 new EoI (27)
- 2 EoIs not really related to microelec (59,110) : DAQ? SW? Reject?
- 5 or more ASIC designs in various detector subpackages (8, 51, 61, 106, 144)

=> Debate whether AIDA++ should focus on technology (« à la AIDA2020 ») or on (common) ASIC design (« à la RD53 »)

AIDA2020 WP4 EoIs

- Preliminary discussions during AIDA2020 annual meeting
- Very positive feedback on the «community building» with the 65 and 130 nm. Sharing experience and also engineering runs. Helped also to bring groups together
- To improve : publications !
- Interest from the participants to further improve along this line and on new technologies
  - 28 nm CMOS for trackers
  - 65/130 nm CMOS for calorimetry/timing
  - advanced interconnections also desired but also more debated
  - Possibility also of orienting more on aspects of detectors : e.g. timing
- Well fitted to networking and platforms
- Can be opened to industrial partners

Techno oriented WP

- Select a few largely shared technologies
- Share a few MPWs (as we can afford)
- Advantanges
  - Advanced pioneering work possible
  - Expertise sharing, possibly blocks
  - Bringing groups together (including industry)
  - Fits well target of the call (timing, neutrinos…
- Drawbacks
  - Restricted to a few technologies
  - Unlikely to provide full chips for detectors (area limitation)

ASIC design oriented WP

- Select a few emblematic common projects (timing chip ?)
- Provide readout chip for a community
- Advantages
  - ASICs often useparable from detectors
  - Can allow real advances in detectors (MAPS, timing…)
- Drawbacks
  - Very selective, cost and manpower will only allow a few chips (if any!)
  - Technology often different from mainstream (MAPS)
  - Possible large area is likely way out of the budget

Conclusion

- Microelectronics is essential for detector progress
- Need to choose between technology oriented or ASIC design oriented workpackage
- The convenors profited from being all three at TWEPP to discuss pros and cons of both options
- They are more inclined to technoloby WP for its community building advantage and making best use of the ressources
- They are open to the feedback from the detector WPs