



HV-CMOS in AIDA2

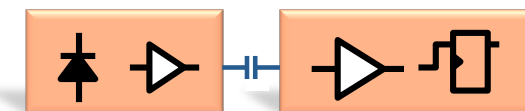
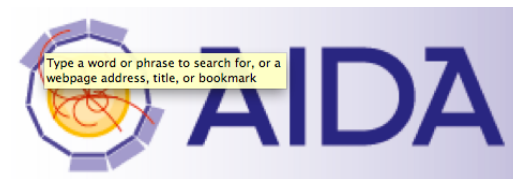
G. Darbo – INFN / Genova
HV-CMOS at Genova
Genova, 3 April 2014

Material from:

- Silicon Activity meeting 21/3/2014:
<https://indico.cern.ch/event/307650/>
- AIDA Talks in 3rd Annual meeting:
<https://indico.cern.ch/event/282487/session/12/contribution/213/material/slides/5.pdf>

Indico agenda:

<https://agenda.infn.it/conferenceDisplay.py?confId=7882>



HV/HR - CMOS

- *AIDA (Advanced European Infrastructures for Detector Accelerators)*

- *Previous Infrastructure Initiatives:*
 - FP6: EUDET: 2006-2010
 - Total budget 21M, EU contribution 7M
 - 31 partners + associates
 - detector development for a linear collider
 - pixel telescope, TPC magnet and field cage, calorimeter absorber and electronics, software, transnational access to test beams
 - FP7: AIDA: 2011-2014
 - Total budget 26M, EU contribution 8M
 - 80+ institutes, 40 (direct) beneficiaries
 - detector development for LHC upgrades, ILC, CLIC, neutrino physics and Super-B
 - TA to test beam and irradiation facilities, DD4HEP, more telescopes, 3D integration, etc pp

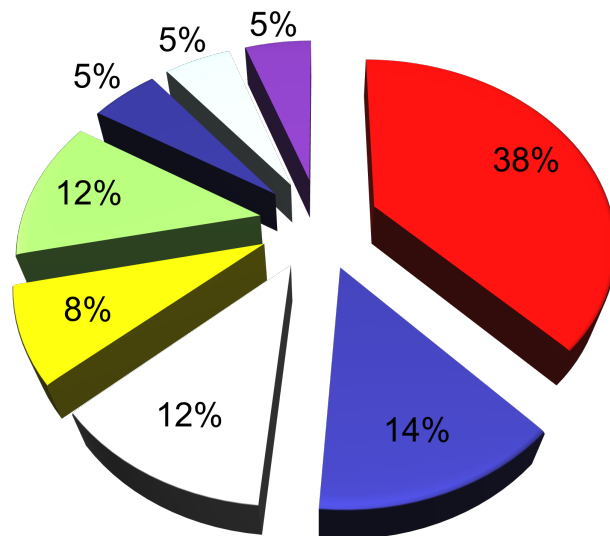
- *AIDA Web site:*
 - <http://aida.web.cern.ch/aida/index.html>

- *AIDA 3rd Annual Meeting – Vienna 16-28 March 2014*
 - <https://indico.cern.ch/event/282487/overview>

AIDA-2 Content

- End of 2013: call for “Expressions of Interest”
 - more than 50 EoIs received
 - more than 50 institutes
 - more than 50% LHC

- Solid state tracker, micro electronics, 3D
- Calorimeters
- gaseous detectors
- TransNational Access facilities
- Software
- Trigger/DAQ
- Infrastructure upgrade
- Others



Not weighted by
of institutes, tasks
or budget request

summarised at Open Meeting
CERN, 17.2.2014

<http://indico.cern.ch/event/289451/>

Silicon Tracking & Vertexing

- The largest community
- The biggest challenge for the LHC upgrade
- Four contacts charged to define structure
- First meeting took place last Friday, > 45 participants
 - Communities represented: LHC, ILC, CLIC, Belle
- Proposal:
 - ① Networking Activity: Capacitively coupled HV/HR CMOS Pixel Sensors
 - ② Networking Activity or Joint Research Activity: Light Support Structures and μ -channel cooling for Silicon Sensors
 - ③ Networking Activity: Network of European Companies for HEP Si Sensor Production



HV/HR CMOS Sensors in AIDA2



AIDA-2

Reorganization of activities on CMOS sensors

HV/ HR CMOS Sensors – Networking activities

3+14+38+ 44+37-a	CMOS sensors for colliders experiments	LHC+ILC+CLIC	CPPM, Bonn, CERN, Geneva, Heidelberg, Oxford, RAL, Sheffield, Glasgow, Liverpool
2+46+58	Hybridization of CMOS pixel devices	LHC+ILC+CLIC	IFAE, INFN Genua, Bonn, Trento, Santander, Liverpool, CERN

- ❑ Need to build larger consortia of beneficiaries, for example in this case the UK participants (comment also valid for all the other activities)



AIDA-2

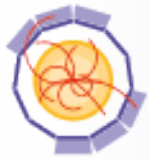
HV/HR CMOS sensors networking activities

Possible NA tasks:

- CMOS Technologies Evaluation
 - Coordination of MPW submissions → establish HEP as a possible market for the CMOS vendors
- Common TCAD simulation tools and set of libraries for HV/HR CMOS sensor design
- Coordination of the technological developments for hybridization: wafer to wafer (8") bonding options, R&D on dielectric layers for the capacitive coupling of the CMOS active sensors
- Establish an inter-experiment HR/HV CMOS sensor collaboration

Genova Possible contribution as Beneficiary

 *Fit well a Networking Action (NA)*



AIDA-2

Indicative budget for AIDA-2 Silicon activities

- Indicative AIDA-2 budget (EU contribution) for Si/ Pixel/ cooling activities: [1.6-2.1] MEuro
- Typical ratio of commitment : 40% from EC in case of NA and JRA
- Given the similar size of the groups in the three proposed activities we suggest to share the budget in equal parts: [500-700] kEuro
- NA (Networking Activity) has as deliverables results of new technology investigation; **financial support is mainly for post-docs and traveling, limited for material.**

JRA (Joint Research Activity) has as tasks developments to improve infrastructures (like accelerators, beam lines and similar); **financial support is mainly for material or manpower to be employed in related facilities** (not for R&D).



- Below 50 k€ EC contribution in AIDA-2 probably an institute will not be accepted as beneficiary
- If not defined as beneficiary, an institute can be an associate partner to the activity without committing, and thus receiving, resources from AIDA-2
- The proponents appearing in more than a WP should focus on the activity where they foresee to give the larger impact.
- For groups working together it's more effective to decide in which institute to allocate the budget, while the other participants could be members of the WP without being beneficiary.

🕒 *Next meeting of Silicon activities 16 April (probably)*

- Must present what are our interests...