WP8 – Improvement and equipment of irradiation and test beam lines

Status

Michael Moll
CERN PH-DT

Contents:

- ***WP8 – Task overview***
- ***Status of tasks***
- ***Status of Milestones and Deliverables***

WP8: Improvement and equipment of irradiation beam lines

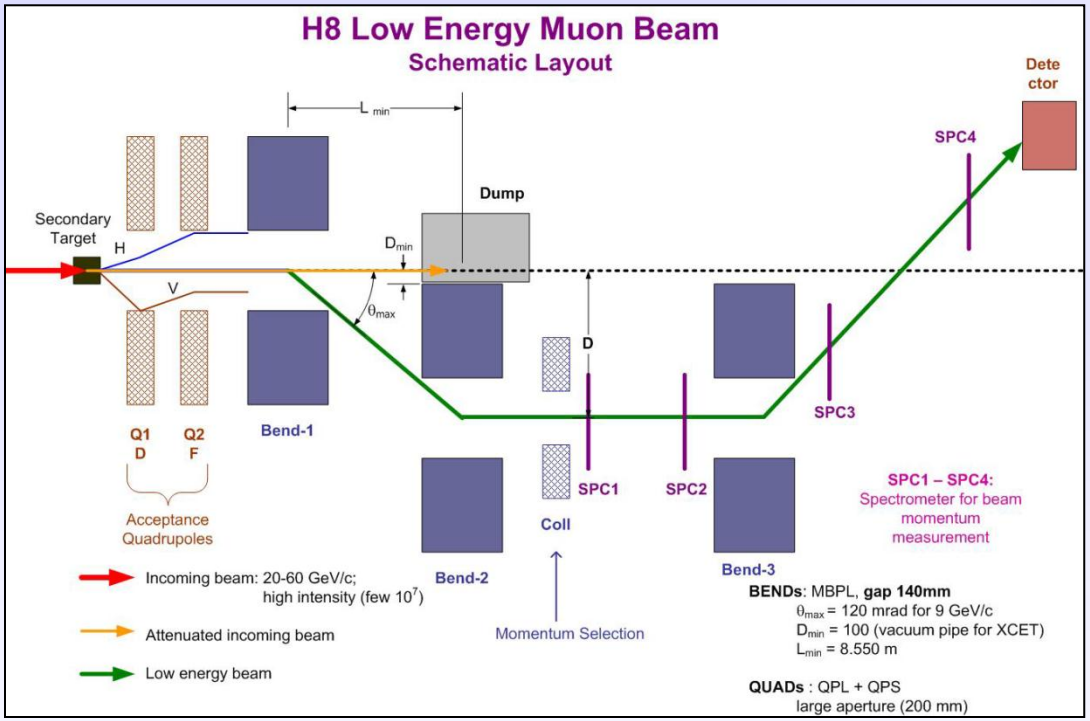
- WP 8 – Task overview

8.1.	**Coordination and Communication**	Co-leader: **Giovanni Mazzitelli (INFN LNF)** **Michael Moll (CERN)**
8.2.	**Test beams infrastructure at CERN and Frascati**	
	8.2.1. CERN	Leader: **Ilias Efthymiopoulos (CERN)**
	8.2.2. Frascati	Leader: **Giovanni Mazitelli (INFN-LNF)**
8.3.	**Upgrade of PS proton and neutron irradiation facilities at CERN**	Leader: **Michael Moll (CERN)**
	8.3.1. Improvement of existing irradiation facilities and evaluation of upgrade proposals	
	8.3.2. Common infrastructure for the facilities	
8.4.	**Qualification of components and common database**	Leader: **Simon Canfer (STFC)**
	8.4.1. Review existing data and experience from LHC, define test program	
	8.4.2. Define test procedures and conduct tests on selected components	
	8.4.3. Set-up and publish a WEB database compiling the information above	
8.5.	**General infrastructure for test beam and irradiation lines**	
	8.5.1. Commission and operate beam tracking telescope	Leader: **Ingrid Gregor (DESY)**
	8.5.2.TASD and MIND	Leader: **Paul Soler (STFC)**
	8.5.3.GIF++ user infrastructure	Leader: **Davide Boscherini (INFN Bologna)**
8.6.	**Coordination of combined beam tests and common DAQ**	
	8.6.1. Common test beam experiments at CERN and DESY	Leader: **Ties Behnke (DESY)**
	8.6.2. Common DAQ	Leader: **David Cussans (University of Bristol)**

Low energy test beam at CERN (8.2.1)

Ilias Efthymiopoulos CERN; presented by P.Soler (Glasgow)

- **Task:** Study possibility to produce beam line delivering low energy electrons, muons and hadrons for neutrino experiment prototypes
- **Status:**
  - Technical Student about to start to work on beam line simulation
  - MS27 "Specifications for beam line fixed" reached and documented in **AIDA MS-27**



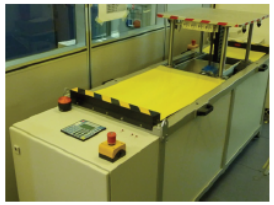
- Low energy particle beams: electrons, muons and hadrons (pions and protons) 0.5 - 5 GeV/c (up to 9GeV/c ?)
- Large aperture magnet like the MORPURGO magnet (dipole field of 1.6T) presently installed in North Area.
- Particle flux (muons) of 1-2 kHz for each given momentum, in spot size of 10x10 cm^2

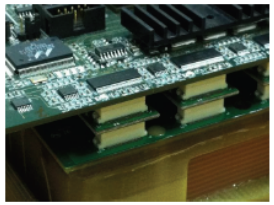
D8.3	**Design study on low energy beamline: Design and implementation study on a low energy beam to the range of 1 (or possibly less) to 10 GeV**	[month 26] **March 2013**

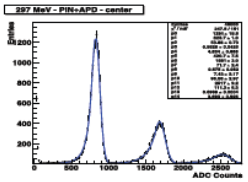
8.2.2 Test beam infrastructure in Frascati

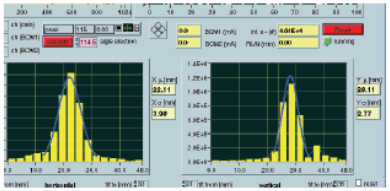
- LNF, Ferrara & Perugia INFN structure and University of Bergen; Leader: G.Mazzitelli (LNF)

Conclusions @ KICK-OFF MEETING (February 2011)









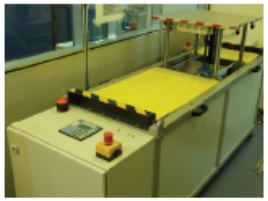
- design and put in operation a remotely controlled trolley for detector test
  - **installation foreseen in march 2011**
- equip the BTF with a GEM chambers for monitoring with a resolution of about 100 µm
  - **very good result obtained; high resolution device is under development**
- equip the BTF with LYSO calorimeter as monitor the beam energy
  - **preliminary test done. More measurements, electronic tests, etc are foreseen in 2011**
- muti purpose DAQ system
  - **continuously under implementation adding new board & drivers. Photon tagging & data tag and synchronization is in progress**

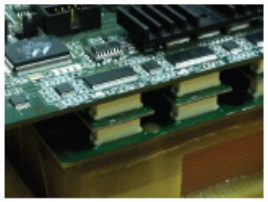
10

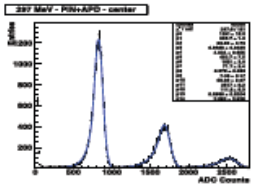
8.2.2 Test beam infrastructure in Frascati

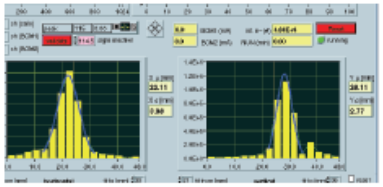
- LNF, Ferrara & Perugia INFN structure and University of Bergen; Leader: G.Mazzitelli (LNF)

Status @ 20 May 2011









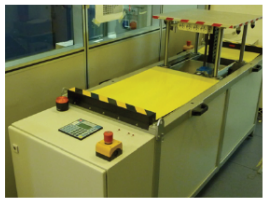
- design and put in operation a remotely controlled trolley for detector test
  - **done**
- equip the BTF with a GEM chambers for monitoring with a resolution of about 100 µm
  - **high resolution device is under development: neutron efficiency and rejection under test with new prototype**
- equip the BTF with LYSO calorimeter as monitor the beam energy
  - **Second test done in May, father measurements foreseen in Sep.**
- muti purpose DAQ system
  - **in progress: DAQ data ROOT interface complete and available for users.**

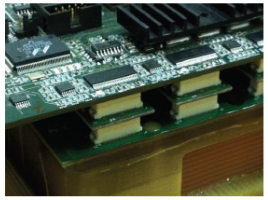
11

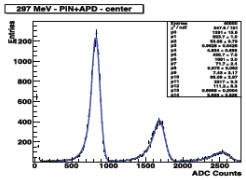
8.2.2 Test beam infrastructure in Frascati

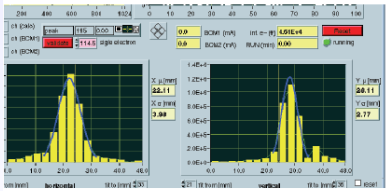
- LNF, Ferrara & Perugia INFN structure and University of Bergen; Leader: G.Mazzitelli (LNF)

Task 8.2.2 mileston status @ 28 Mar 2012









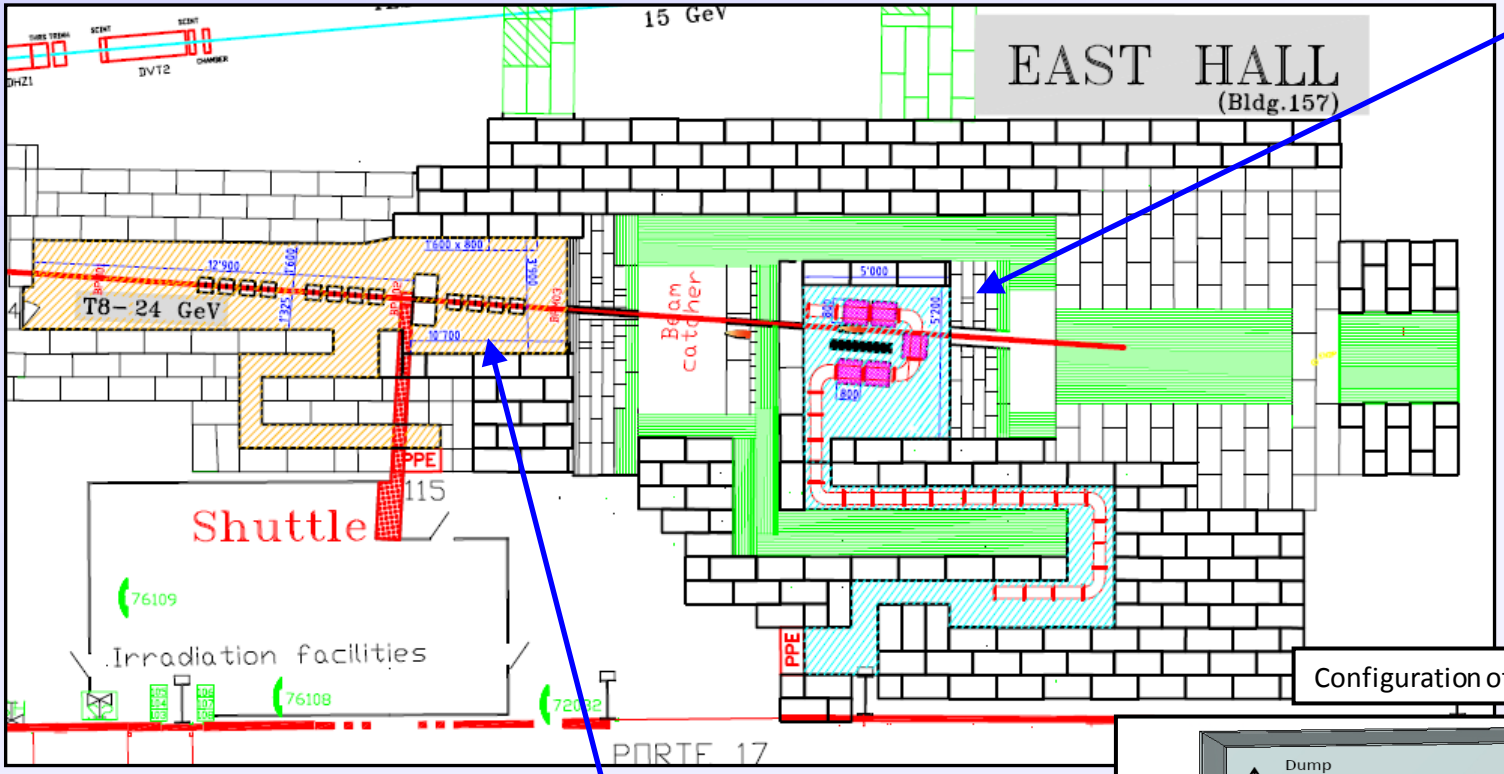
- **remote trolley**
  - **done**
- equip the BTF with a **GEM** chambers for monitoring with a resolution of about 100 µm
  - **in progress: HVGEM module will be ready in April. The test of two profile chamber prototypes is foreseen for the end of the 2012**
- equip the BTF with **LYSO** calorimeter as monitor the beam energy
  - **in progress: new measurement started on the 25/3. A cross calibration of LYSO is foreseen at Maintz in October.**
- muti purpose **DAQ** system
  - **in progress: we are working on the integration on new diagnostics and the porting under !CHAOS freimwork**

27

8.3. Layout studies using the DIRAC experimental area

- **Collaborative work:** CERN EN & PH; AIDA & R2E

  M. Brugger, M. Calviani, L. Gatignon, M. Glaser, E. Lebbos, M. Moll , F.Ravotti

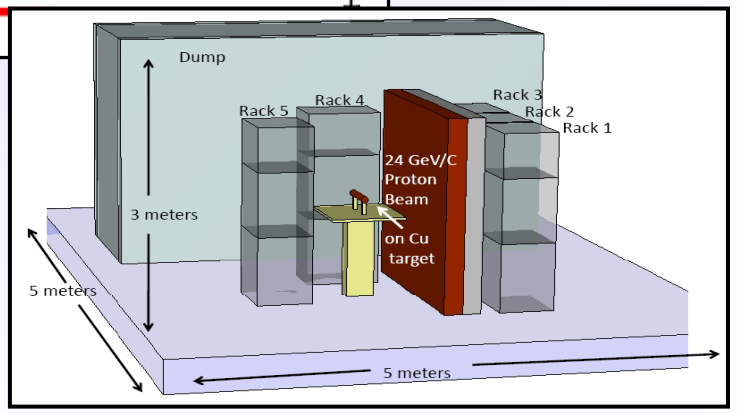


Mixed Field Facility

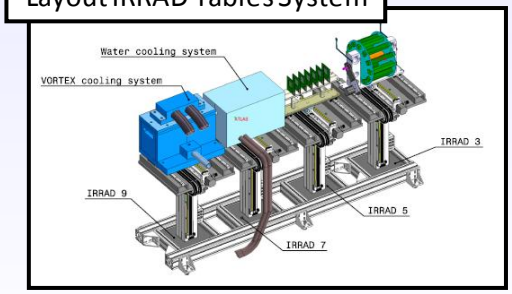
multiple user communities:
LHC machine
LHC Experiments,
Dosimetry (RP),
MC benchmarking

rail system on floor for heavy material, shuttle system or small rail system on ceiling (?)

Configuration of Mixed Field Area



Layout IRRAD Tables System

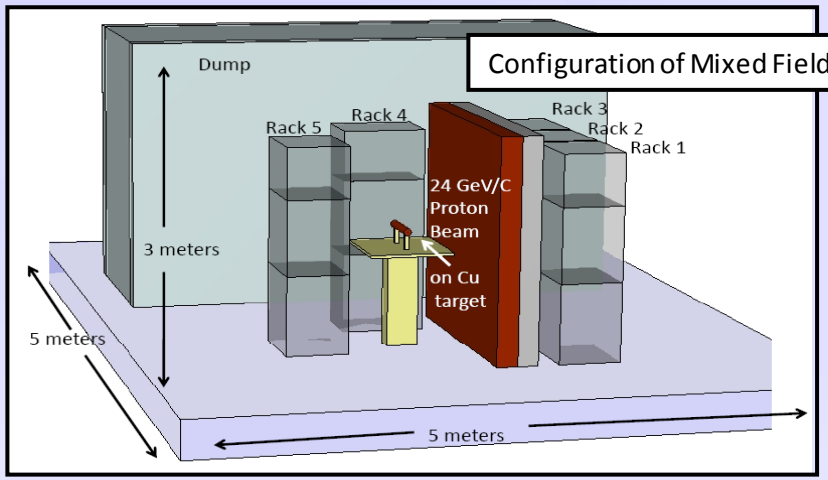


Proton Facility

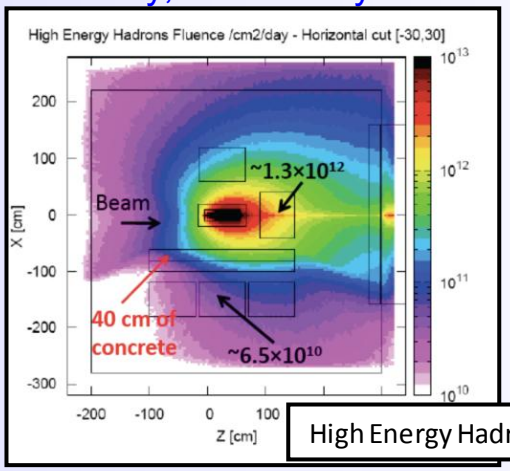
- main user community:
  LHC Experiments
- Irradiation tables
- Cold boxes
- Shuttle system

8.3. Fluka calculations (Mixed Field Area)

- **Documented in AIDA-NOTE-2012-001** "East Area Irradiation Test Facility; Preliminary FLUKA calculations"
  E.Lebbos, M. Brugger, M. Calviani, L. Gatignon, M. Glaser, M. Moll

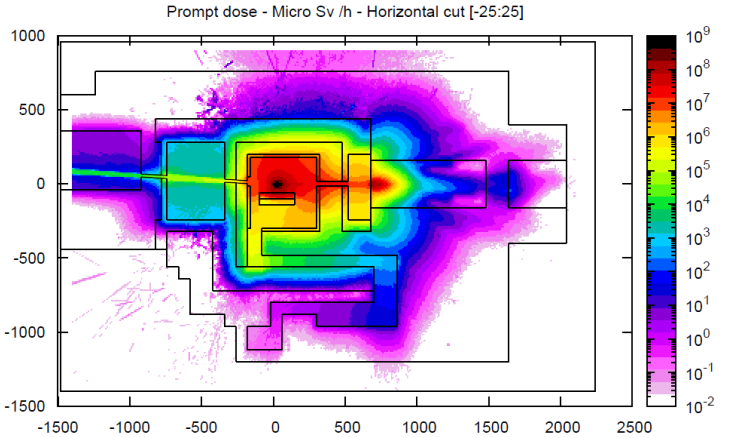


Configuration of Mixed Field Area



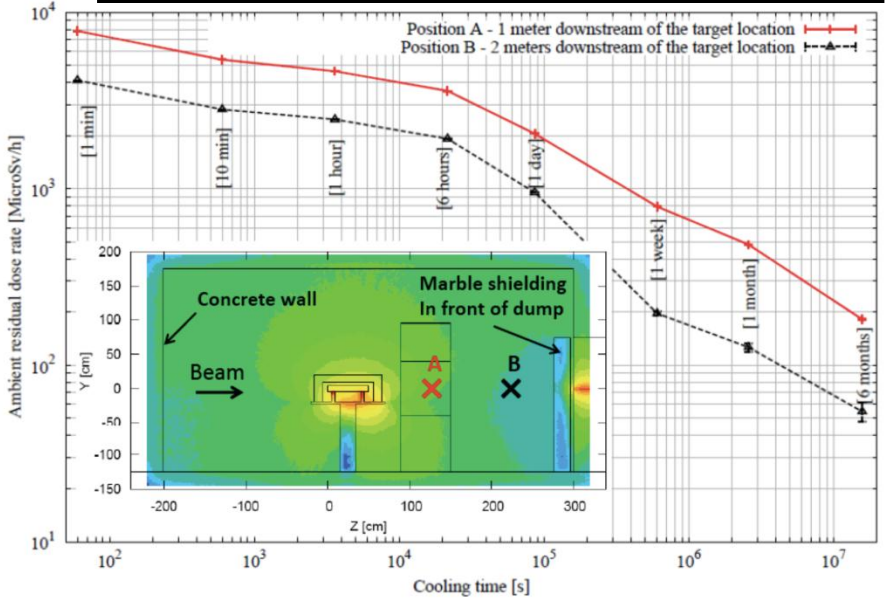
data for
2.2×10^{10} p/s

High Energy Hadron flux /cm2/day



Prompt dose rate micro Sv/h

Ambient residual dose rate (after 6 months at 2.2e10 p/s)



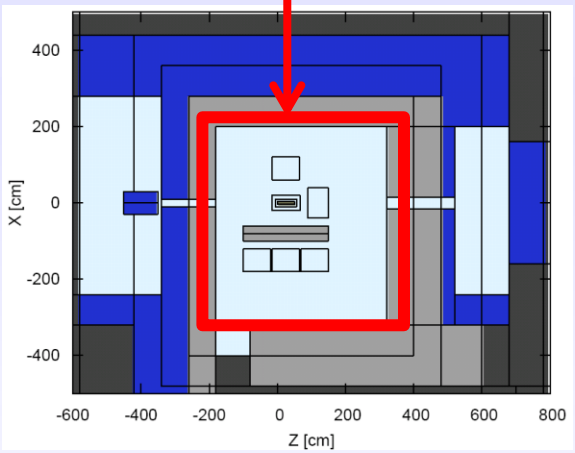
Air activation (worst case scenario)

Assuming:

the following parameters:

Loss Rate Ejection	**2.20E+10**	pps
Volume target area	**5.29E+07**	cm3
Leak Rate	**0**	m3/h
Irradiation time	**1.58E+07**	s (6 months)

and this area only:



Without intermediate target (*i.e.* proton beam directly on the production target)

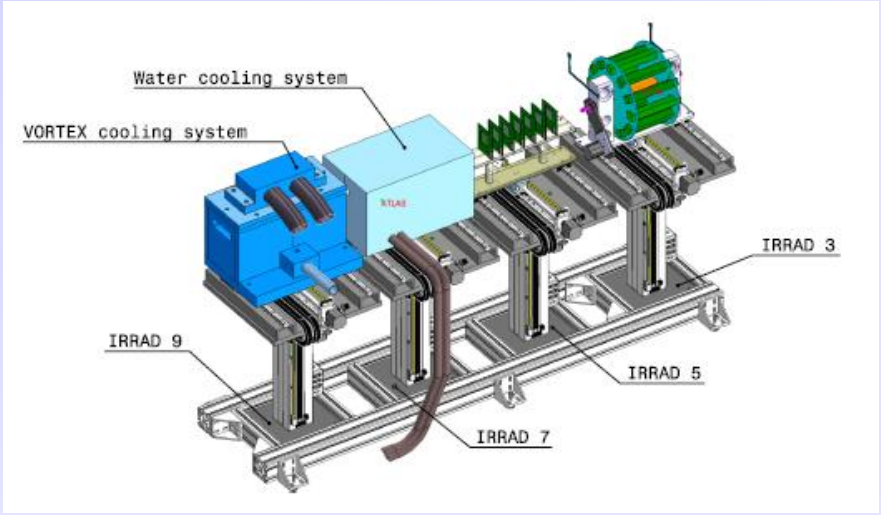
Isotopes	Yield Ejection	t 1/2	λ [s^{-1}]	λ' [s-1]	Activity Bq/m3	CA value Bq/m3	Ratio Act./CA	einh Sv/Bq	Dose inh. µSv/h
H-3	3.86E-03	12.35 y	1.78E-09	1.78E-09	4.45E+04	200000	0.22	4.1E-11	**2.19**
Be-7	8.20E-04	53.3 d	1.51E-07	1.51E-07	3.09E+05	100000	3.09	4.6E-11	**17.08**
Be-10	9.61E-04	1.6e+06 y	1.37E-14	1.37E-14	8.67E-02	90	0.00	1.9E-08	**0.00**
C-11	1.44E-03	20.38 m	5.67E-04	5.67E-04	5.99E+05	70000	8.56	3.2E-12	**2.30**
C-14	8.28E-01	5730 y	3.84E-12	3.84E-12	2.09E+04	10000	2.09	5.8E-10	**14.52**
N-13	2.47E-03	9.965 m	1.16E-03	1.16E-03	1.03E+06	70000	14.67	3.2E-12	**3.94**
O-14	1.22E-04	71 s	9.76E-03	9.76E-03	5.07E+04	70000	0.72	3.2E-12	**0.19**
O-15	1.72E-03	122.2 s	5.67E-03	5.67E-03	7.15E+05	70000	10.22	3.2E-12	**2.75**
O-19	7.05E-08	27.1 s	2.56E-02	2.56E-02	2.93E+01				
F-18	1.67E-06	109.8 m	1.05E-04	1.05E-04	6.95E+02	70000	0.01		
Ne-23	1.83E-07	28 s	2.48E-02	2.48E-02	7.61E+01				
Ne-24	3.76E-08	3.38 m	3.42E-03	3.42E-03	1.56E+01				
Na-22	6.29E-07	2.602 y	8.44E-09	8.44E-09	3.27E+01	4000	0.01	2E-09	**0.08**
Na-24	9.70E-07	15 h	1.28E-05	1.28E-05	4.03E+02	30000	0.01	5.3E-10	**0.26**
Na-25	3.42E-07	60 s	1.16E-02	1.16E-02	1.42E+02				
Mg-27	4.98E-07	9.5 m	1.22E-03	1.22E-03	2.07E+02				
Mg-28	2.09E-07	20.91 h	9.21E-06	9.21E-06	8.69E+01	6000	0.01	1.7E-09	**0.18**
Al-26	9.37E-07	7.16e+05 y	3.07E-14	3.07E-14	1.89E-04	400	0.00	1.4E-08	**0.00**
Al-28	2.75E-06	2.24 m	5.16E-03	5.16E-03	1.14E+03	6000	0.19	1.7E-09	**2.33**
Al-29	1.10E-06	6.6 m	1.75E-03	1.75E-03	4.57E+02				
Si-31	1.82E-06	157.3 m	7.34E-05	7.34E-05	7.57E+02	100000	0.01	1.1E-10	**0.10**
Si-32	1.07E-06	450 y	4.88E-11	4.88E-11	3.43E-01	30	0.01	5.5E-08	**0.02**
P-30	8.60E-07	2.499 m	4.62E-03	4.62E-03	3.58E+02				**0.00**
P-32	1.42E-05	14.29 d	5.61E-07	5.61E-07	5.90E+03	2000	2.95	2.9E-09	**20.55**
P-33	1.11E-05	25.4 d	3.16E-07	3.16E-07	4.58E+03	10000	0.46	1.3E-09	**7.15**
P-35	1.25E-06	47.4 s	1.46E-02	1.46E-02	5.20E+02				
S-35	1.50E-05	87.44 d	9.17E-08	9.17E-08	4.77E+03	10000	0.48	1.1E-09	**6.30**
S-37	6.36E-06	5.06 m	2.28E-03	2.28E-03	2.64E+03				
S-38	2.73E-06	2.87 h	6.71E-05	6.71E-05	1.14E+03				
Cl-34	5.11E-07	32 m	3.61E-04	3.61E-04	2.13E+02				
Cl-36	3.87E-05	3.01e+05 y	7.30E-14	7.30E-14	1.86E-02	1000	0.00	5.1E-09	**0.00**
Cl-38	2.86E-05	37.21 m	3.10E-04	3.10E-04	1.19E+04	40000	0.30	7.3E-11	**1.04**
Cl-39	4.91E-05	55.6 m	2.08E-04	2.08E-04	2.04E+04	200000	0.10	7.6E-11	**1.86**
Cl-40	8.33E-06	1.4 m	8.25E-03	8.25E-03	3.46E+03				
Ar-37	7.41E-05	35.02 d	2.29E-07	2.29E-07	3.00E+04	1E+11	0.00		
Ar-39	2.23E-04	269 y	8.17E-11	8.17E-11	1.20E+02	7000000	0.00		
Ar-41	1.74E-03	1.827 h	1.05E-04	1.05E-04	7.24E+05	50000	14.47		
K-38	4.11E-07	7.636 m	1.51E-03	1.51E-03	1.71E+02				
K-40	1.75E-06	1.28e+09 y	1.72E-17	1.72E-17	1.97E-07	3000	0.00	3E-09	**0.00**
Sum					3.58E+06		58.59		**82.86**

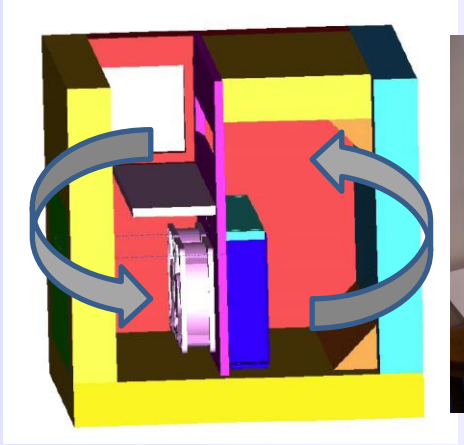
Simulations by E.Lebbos (CERN)

Conclusion: air activation is not an issue

8.3.2. Irradiation Tables and Cold Boxes

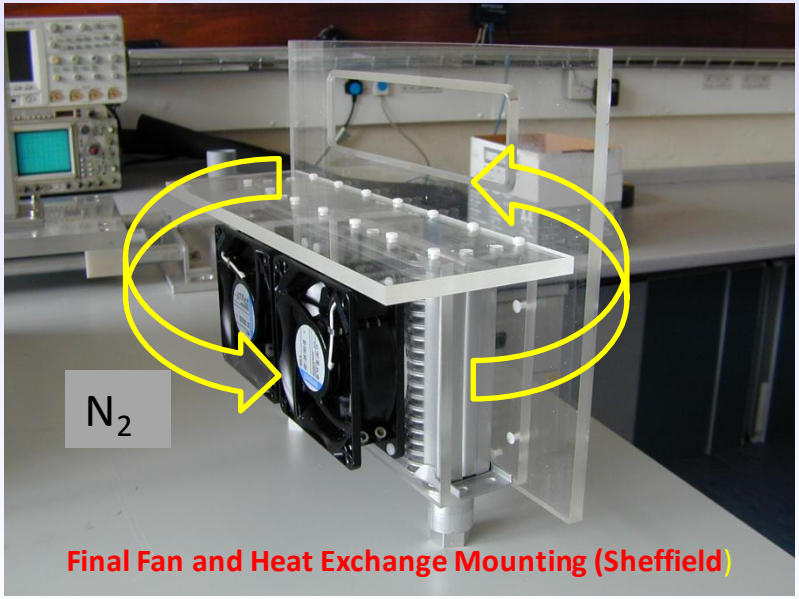
CERN, Liverpool, Sheffield, Queen Marry University; presented by Hector Marin-Reyes



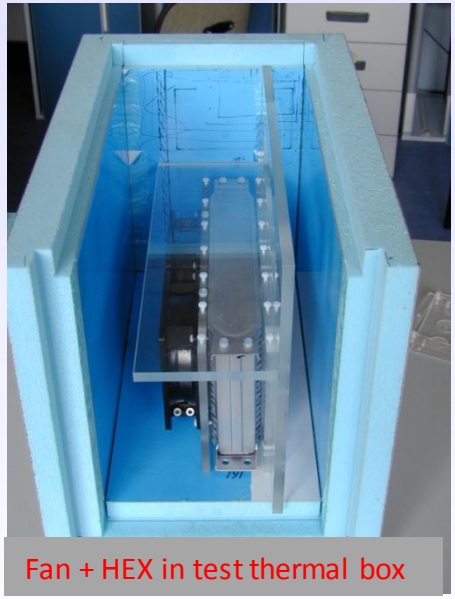


John Morris QMUL

First production box at QMUL



Final Fan and Heat Exchange Mounting (Sheffield)



Fan + HEX in test thermal box

Chilled N2 circulated by AC powered fans in thermally insulating box through HEX cooled by Glycol. All materials and components are radiation hard

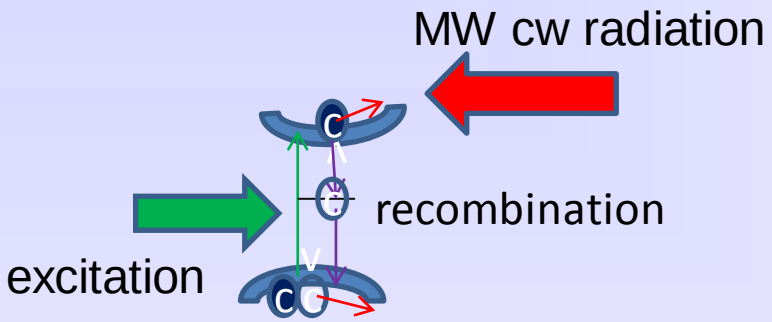
Status

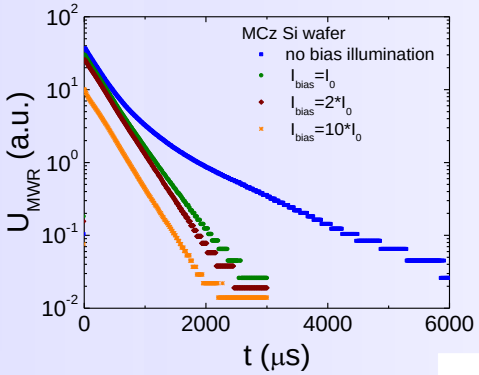
- 1 Box at CERN installed =ok
- 1 Box at QMUL testing
- 1 Box at Sheffield prototype

8.3.2 Fluence monitoring system

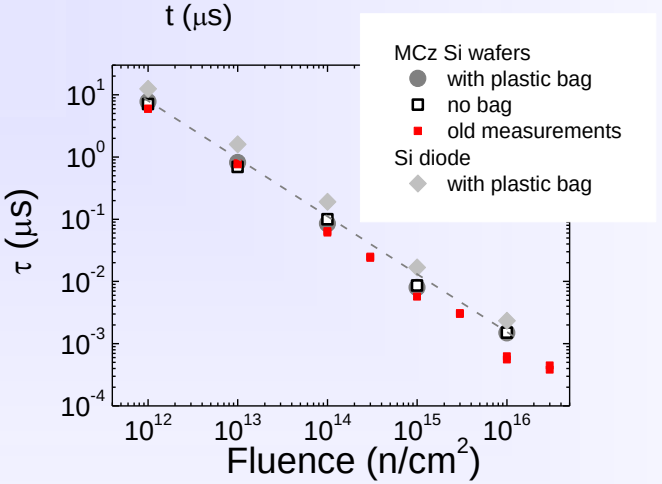
University of Vilnius, Lithuania

- **Monitoring based on carrier lifetime measurement in silicon by microwave absorption probed photoconductivity transients**





- **Prototype instrument designed and build**



- **Covering a wide dynamic range**
- Test: Measurement works even if silicon samples are packaged in plastic bags
- Next step: Perform a measurements at CERN

AIDA Task 8.4: Qualification of components and common database

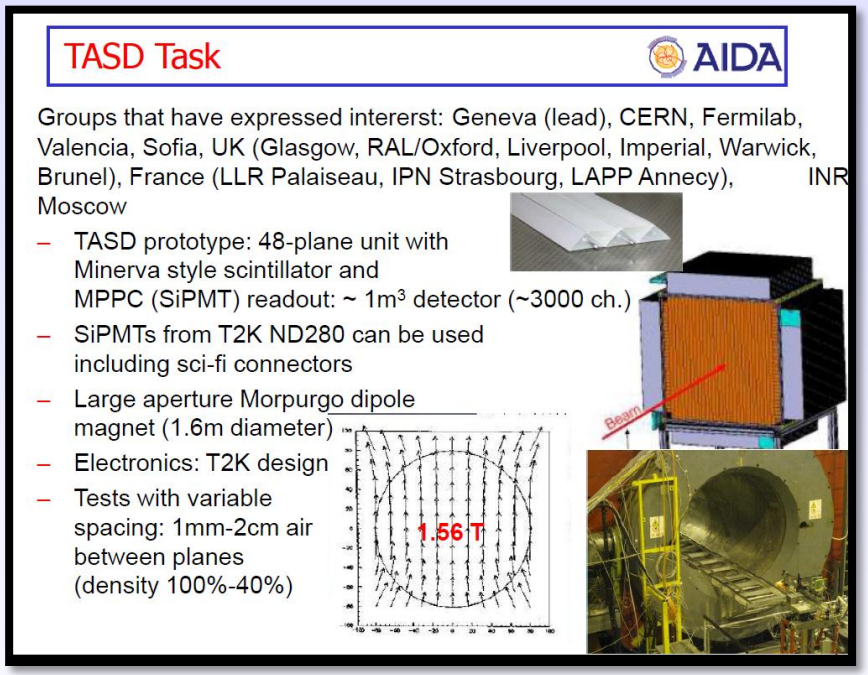
- Participants: INFN (MI, PG,PI), STFC-RAL, UNIGE, ETHZ *(Leader: Simon Canfer, STFC)*
- Sub-task: 1. Review existing data and experience from LHC, define test programme
  2. Define test procedures and conduct tests on selected materials & components
  3. Set-up and publish a WEB database compiling the information above
- Activities/Achievements:
  - Formulated and addressed letter to community
  - So far: 38 contacts established
  - Literature review in progress
  - Specification and software platform for Online Database under discussion
- Input from community welcome: Data (publications, reports, ..), interesting materials, comments & suggestions regarding database format, …
- 2 milestones and 2 deliverables

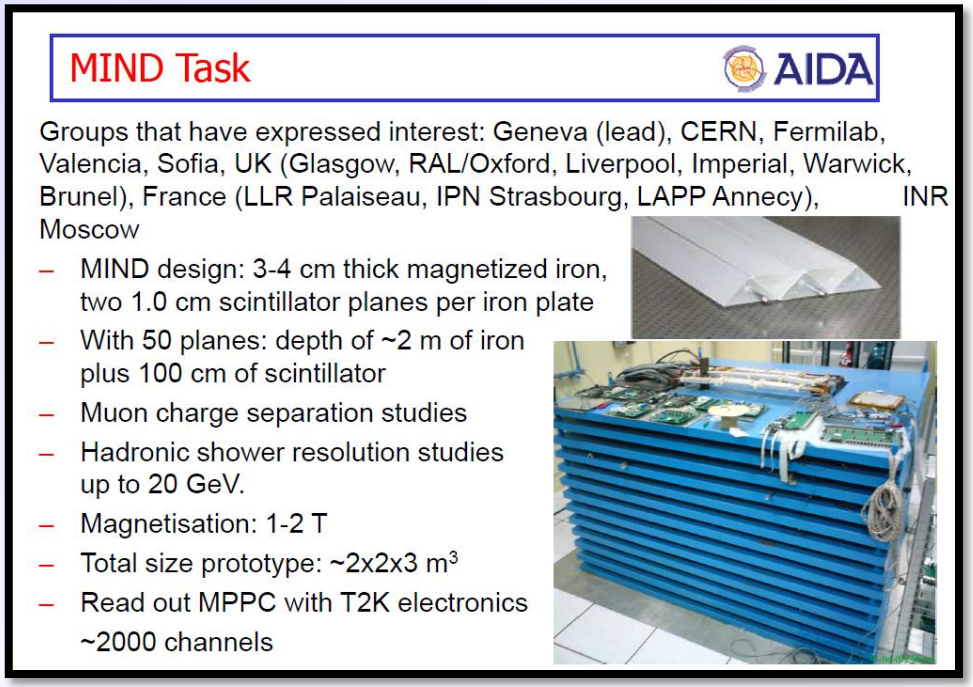
D8.1	**Experience at LHC and definition of test programme: Based on the experience and expectations for the LHC test programme is defined and described in a document.**	[month 12] **Jan. 2012**	Task 8.4	**Delayed!!**
D8.7	**Populated data base of components qualification: The materials and components database is online and populated with data.**	[month 46] **Nov. 2014**	Task 8.4.1.	

MS30	**Definition of test procedure and specification**	**m20 Sept.2012**	**Common agreement of how tests for materials will be conducted and which components to test (Task 8.4)**	
MS32	**First test results on selected components**	**m26 March 2013**	**Intermediate result with respect to D8.7 (Task 8.4)**	

8.5.2. TASD and MIND

- Sub-task Leader: Paul Soler (STFC)
- Participants: Geneva University, STFC, UNISofia, IFIC, Warwick, Brunel, INRNE
- Deliverables: A feasibility study of future neutrino detectors
  Prototype design, construction, installation and performance test of
  - TASD: Totally Active Sintillating Detector
  - MIND: Magnetised Iron Neutrino Detector





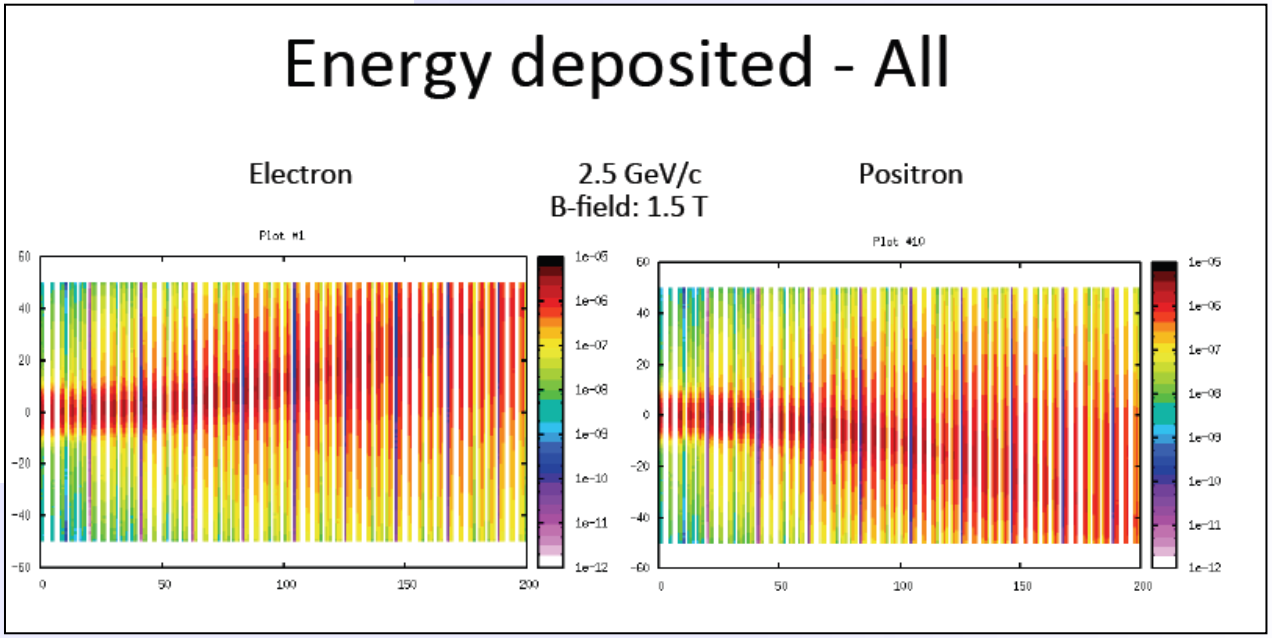
- **Test beam activity:**
  Measurement of electron charge in TASD
  Measurement of muon charge in MIND

8.5.2 TASD and MIND detectors

Simulations – FLUKA - preliminary

Presentation: Etam.Noah

- TASD geometry
  - 17 mm thick plastic scintillator
  - 25 mm gap (vacuum)
  - x48 planes
- Incoming beam on TASD
  - Momentum: 2.5 GeV/c
  - Size(FWHM): 10cm x 10cm
- Incoming particle type:
  - Electrons (TASD2)
  - Positrons (TASD1)
- B-field: 1.5 T



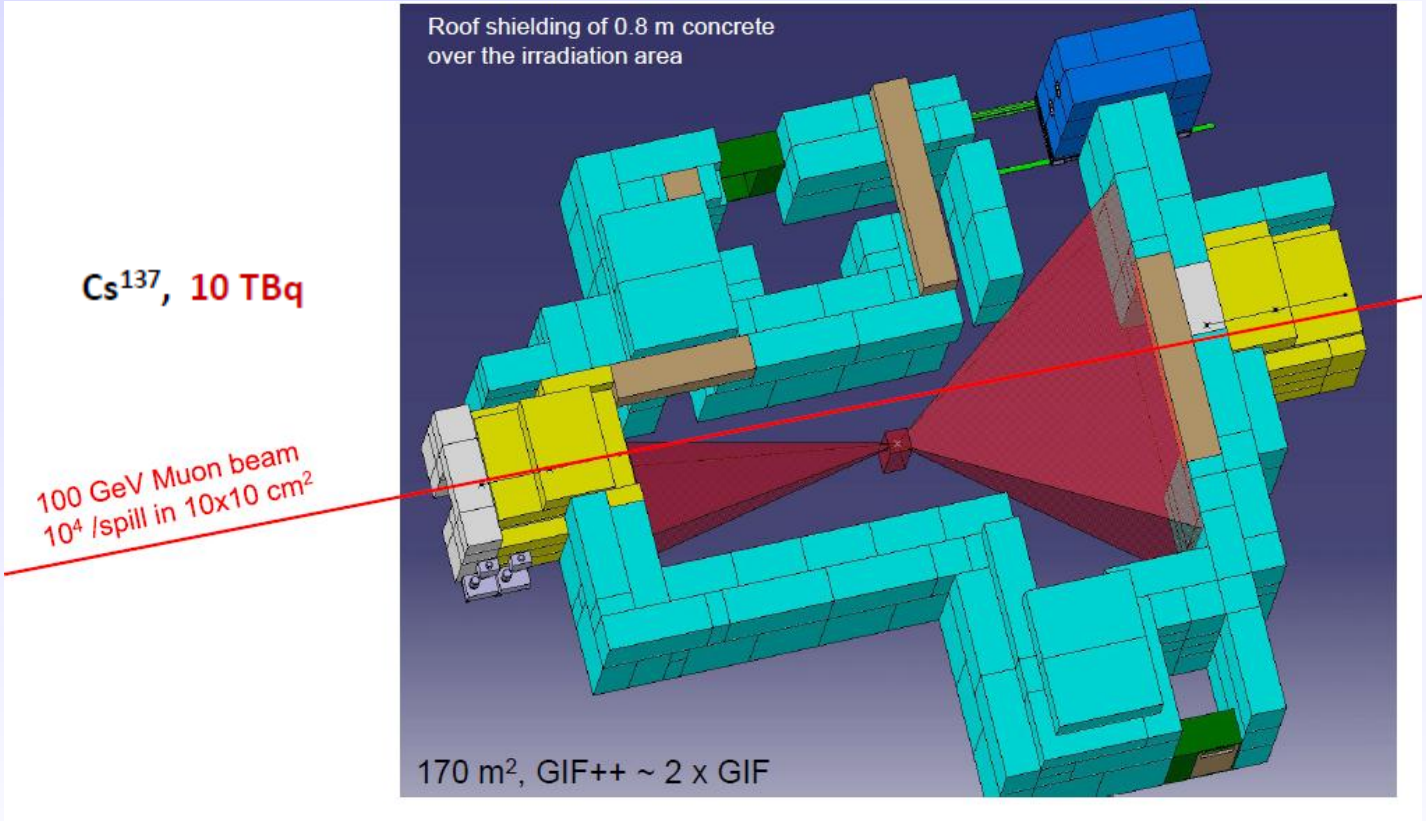
Next:

In the second year of AIDA, the goals are to:

1. Make a test beam study plan, carry out beam requests and submit to test beam coordinator;
2. Perform simulations of the test beam set-up for non-magnetized TASD and for MIND;
3. Finalise design of TASD and MIND based on simulation; and
4. organise construction work, including mechanics, electronics, DAQ and detector tests.

8.5.3. GIF++ user infrastructure

- Sub-task Leader: Davide Boscherini (INFN Bologna)
- Participants: *Bulgaria:* INRNE; *Greece:* NTUA, AUTh, Demokritos, NCUA; *Israel:* Weizmann, Technion; *Italy:* INFN-Bari, -Bologna, -LNF, -Naples, -Rome2
- Deliverable: Infrastructure for the GIF++ Facility
- Needed: Construction of GIF++ Facility !! (SPS H4 beamline)



Presentation: G.Mikenberg, Weizmann

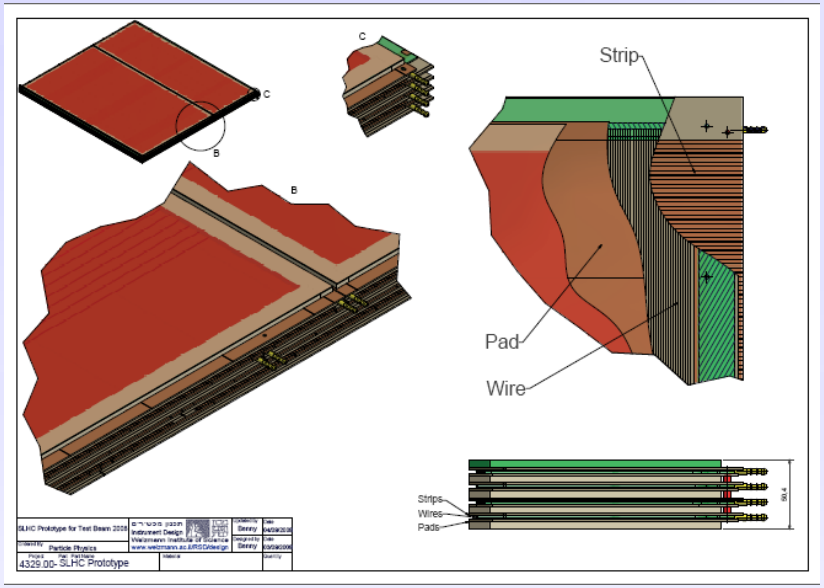
8.5.3. GIF++ user infrastructure

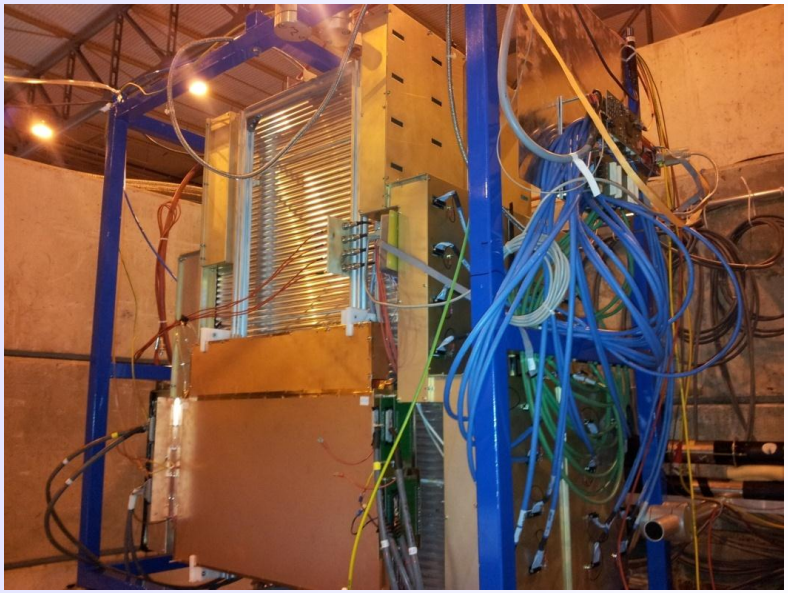
- Project items:
  - Precise muon tracking set-up
  - Large area cosmic ray set-up
  - Detector Control System
  - DAQ
  - System for active gamma dose measurements
  - System of environmental sensors

Presentation: G.Mikenberg

• Project items: Precise muon tracking set-up (TGCs)

2 Quadruplets were constructed (60X40cm²) with strip, wires and pads in each gap





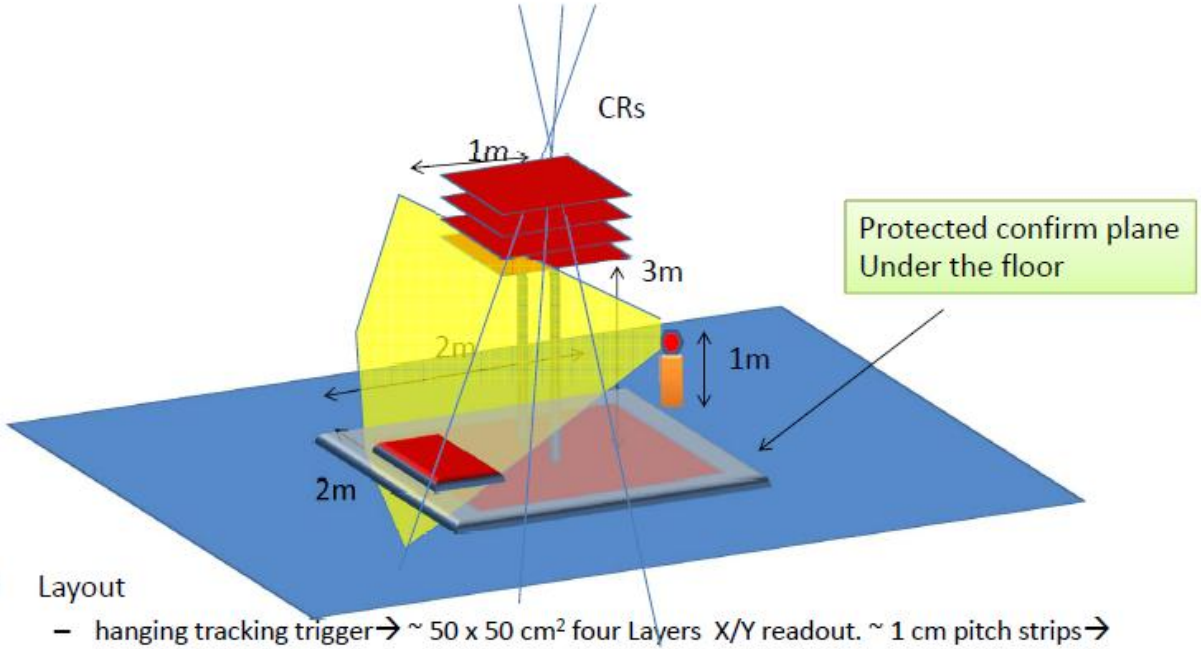
Testbeam at CERN (H8):

- Angular resolution 0.43/√2=0.3mRad
- Position resolution 0.117/√2=0.082mm

- The detectors to be used as a position monitor system for GIF++ have been constructed.
- Their expected angular and position resolution has been confirmed in test beam.
- The electronics to equipped the full detectors are being developed.

Presentation: G.Mikenberg, Weizmann

- Project items: Large area cosmic ray setup



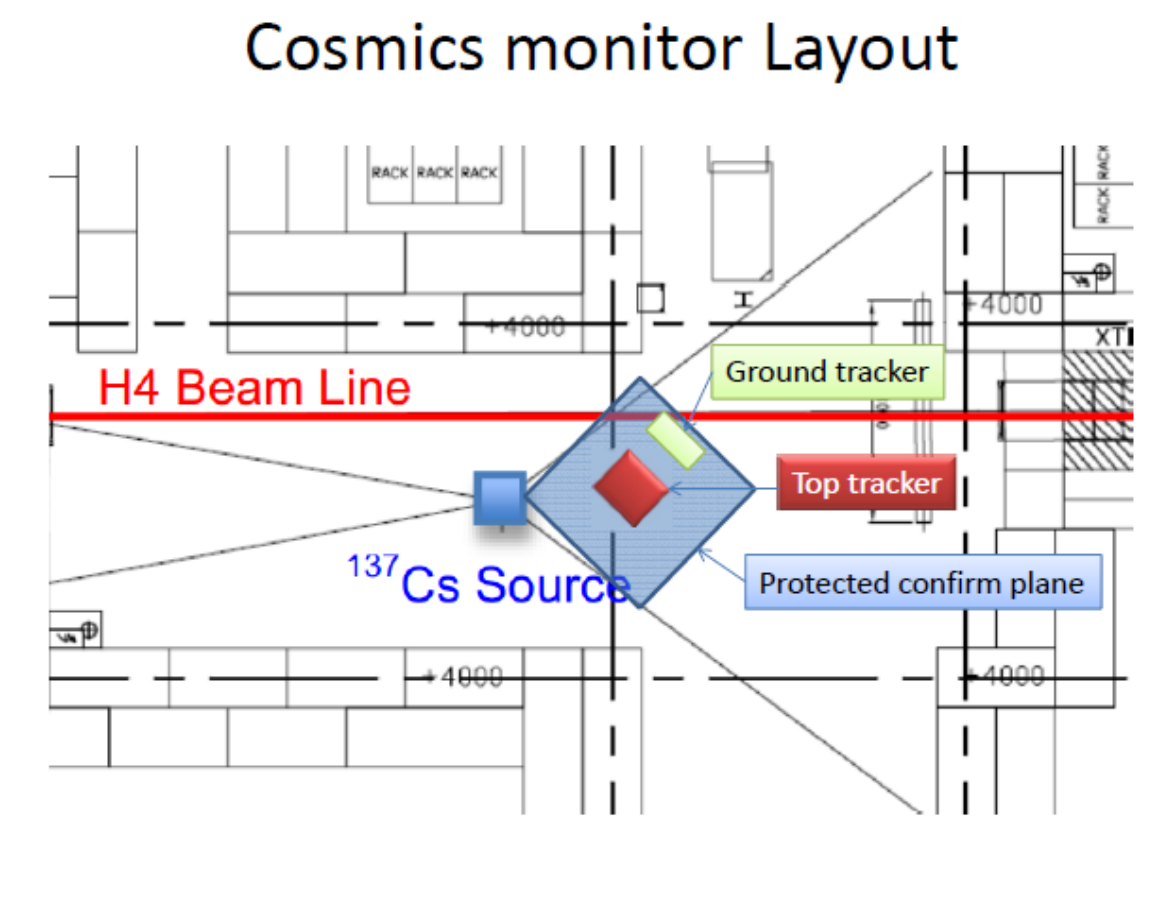
- Layout
  - hanging tracking trigger → ~ 50 x 50 cm^2 four Layers X/Y readout. ~ 1 cm pitch strips → 200 channels
  - Large confirm plane under the floor → 200 x 200 cm^2 singlet or doublet . ~ 3 cm pitch strips → 100 channels
  - Ground tracker (optional) → 50 x50 cm^2 doublet X-Y. ~ 1 cm pitch strips → 100 channels
  - Readout system: Digital pattern for the big chamber. Analog readout for small trackers (time+charge) or part of them.

G. Aielli
(Univ. and INFN Rome 2)

A first design of a Cosmic Ray tracking trigger is available

Presentation: A.Polini, INFN Bologna

- Project items: Large area cosmic ray setup



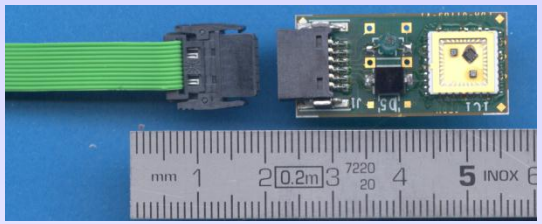
G. Aielli
(Univ. and INFN Rome 2)

A first design of a Cosmic Ray tracking trigger is available

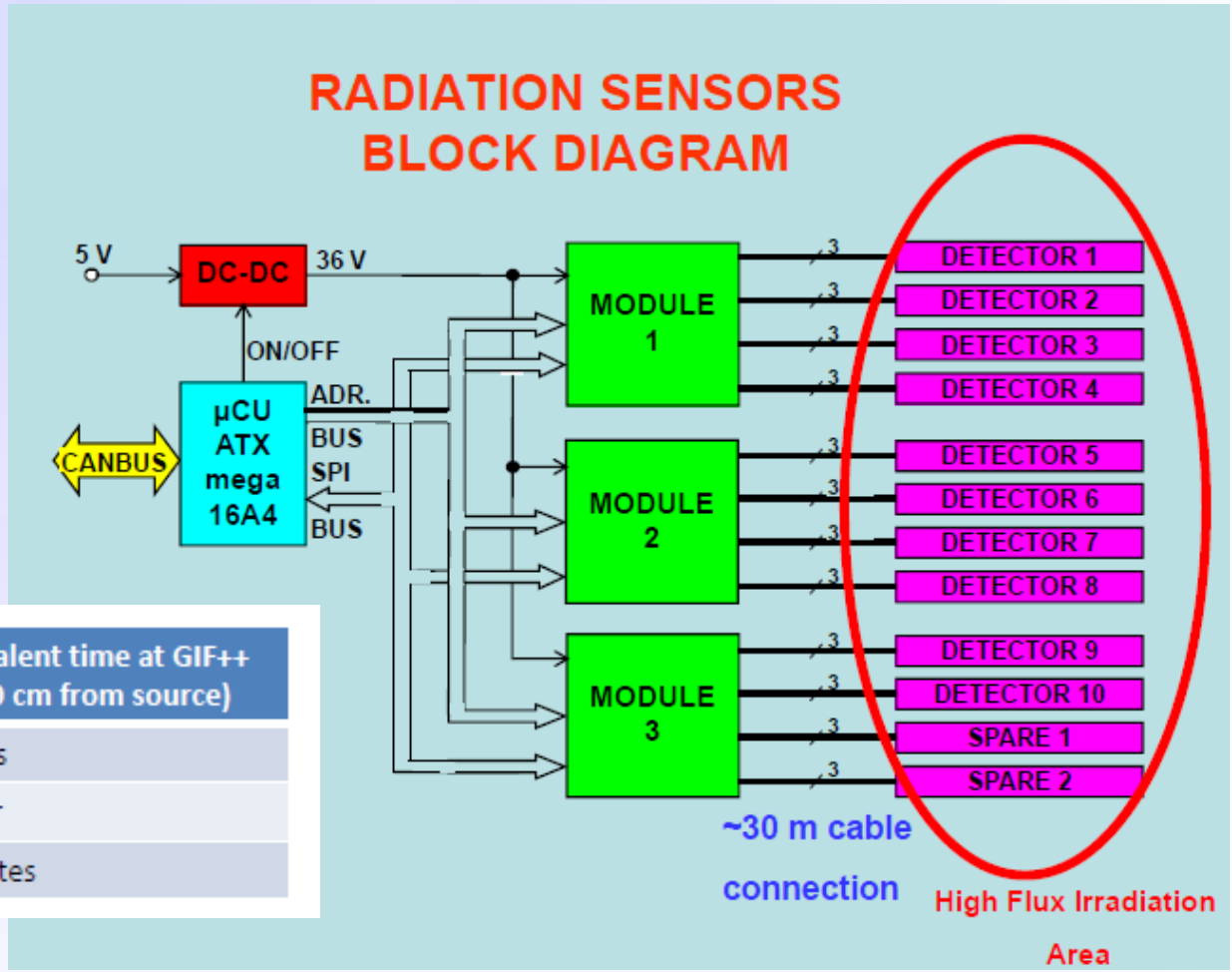
Presentation: A.Polini, INFN Bologna

- Project items: System for Gamma Dose measurement

Use of RADMON boards to monitor integrated dose



Max. expected doses at sLHC	Equivalent time at GIF++ (~ 50 cm from source)
Si-trackers: ~ MGy/y	>> years
Calorimeters: ~ 20 kGy/y	< 1 year
Muon systems: ~ 0.1 Gy/y	~ minutes



Presentation: **Plamen Iaydjiev, INRNE, Sofia, Bulgaria**

8.6.1 Coordination and support of common test beam experiments at DESY

Ties Behnke and Aura Rosca; DESY

- **Test beam support was delivered (see e.g. test beam use in WP9)**
- **DESY EDMS development presented here as major part of 8.6.1.**
  - **EDMS** - Engineering Data Management System
    is a framework which provides functionality for purposes as:
    - Document Management , 3D CAD Data Management
    - Configuration, Version and Change Management
    - Workflow Management !
    - Visualization and Digital Mock-up

- AIM within AIDA: Provide a central depository for the test-beam infrastructure with a focus on LC related tasks
  - DESY test beam infrastructure
  - CERN test beam infrastructure

- Approach
  - Step 1: conceive and test the system, develop on the specifications **(almost finished)**
  - Step 2: setup a coherent system for AIDA (including CERN) **(next step)**

8.6.1 Coordination and support of common test beam experiments at CERN

Erik van der Kraaij, CERN

Goals – Support for common test beam for linear collider

Milestones & deliverables (for CERN):

- Specification of EDMS and DAQ (month 20, del.)
- Testbeam, EDMS and DAQ commissioning. (Month 36, milestone)

- **Test beam support was delivered (see e.g. test beam use in WP9)**
  - **Main support directed towards test beams for calorimeter (see WP9.5)**
  - **Upcoming activity:** Database (à la EDMS) for technical drawings (Fully DESY EDMS compatible)

The test beam requirements for all Linear Collider sub-detector experiments have been expressed at the East Area Day (WP 8.6):

https://indico.cern.ch/getFile.py/access?contribId=11&sessionId=5&resId=0&materialId=slides&confId=167761

- NB: the (non-AIDA) goal of having all sub-detectors of a linear collider detector in a common test beam has been dropped.

8.6.2 Common DAQ (Close link to WP9)

David Cussans (University of Bristol)

- **David Cussans (University of Bristol) taking over from Emlyn Corrin (Geneva)**
- TPC-DAQ developments (design studies) at IIHE-ULB (Brussels) were presented by Yifan Yang with future work plans (to be integrated into WP 8.6.2.)
- **Discussions on specifications for the DAQ system and gathering of institutes that are interested to contribute**
  - **Next steps:**
    - **Establish Working Group**
    - **Fix of specification in a document**
    - **Define responsibilities**

see also WP9!

D8.2	**Publication of specification documents for the DAQ and for the central documentation facilities: Description of common infrastructures and interfaces for the linear collider test beams.**	[month 20] **Sept. 2012**	Task 8.6. 1&2	

MS34	**Test beam, EDMS and DAQ commissioning**	**DESY (9)**	**m36 Jan.2014**	**Intermediate stage for deliverable D8.8 (Task 8.6. 1&2)**	

D8.8	**DAQ performance and test beam utilization: Report on the performances and use of the integrated DAQ setup, and of the common test beam facilities at DESY and CERN**	[month 46] **Nov. 2014**	Task 8.6 1&2	

WP8 milestones

MS27	Specification for beam line fixed	CERN (1)	m12 Jan 2012	Final specification for the design study in task 8.2. (Task 8.2.1)	o.k.
MS28	Design of TASD and MIND	STFC (31)	m20 Sept.2012	Design for deliverable D8.11 (Task 8.5.2)	Coming year
MS29	Design of GIF++ infrastructure	INFN (18)	m20 Sept.2012	Detailed design ready for the cosmic ray tracker, the radiation measurement facility and the DCS (Task 8.5.3)	
MS30	Definition of test procedure and specification	STFC (31)	m20 Sept.2012	Common agreement of how tests for materials will be conducted and which components to test (Task 8.4)	
MS31	Installation of new equipment	CERN (1)	m26 March 2013	Movable irradiation tables operational (Task 8.3.2) CERN, UK	
MS32	First test results on selected components	STFC (31)	m26 March 2013	Intermediate result with respect to D8.7 (Task 8.4)	
MS33	Installation of TASD and MIND	STFC (31)	m36 Jan.2014	Installation at CERN for deliverable D8.11 completed (Task 8.5.2)	
MS34	Test beam, EDMS and DAQ commissioning	DESY (9)	m36 Jan.2014	Intermediate stage for deliverable D8.8 (Task 8.6. 1&2)	
MS35	Installation of infrastructure	(34)	m37 Feb. 2014	Cold boxes and Fluence monitoring system operational (Task 8.3.2) CERN, UK, VU	
MS36	Commissioning of tracking telescope	DESY (9)	m44 Sept.2014	Start of operation of telescope delivered in D8.5 (Task 8.5.1)	

WP8 deliverables

D8.1	Experience at LHC and definition of test programme: Based on the experience and expectations for the LHC test programme is defined and described in a document.	[month 12] Jan. 2012	Task 8.4	Delayed!!
D8.2	Publication of specification documents for the DAQ and for the central documentation facilities: Description of common infrastructures and interfaces for the linear collider test beams.	[month 20] Sept. 2012	Task 8.6. 1&2	Coming year
D8.3	Design study on low energy beamline: Design and implementation study on a low energy beam to the range of 1 (or possibly less) to 10 GeV	[month 26] March 2013	Task 8.2.1 CERN	
D8.4	Upgrade scenarios for irradiation lines: Design study on new or upgraded irradiation facilities at CERN based on slow extracted proton beams. Containing a proton and– if feasible – a mixed field irradiation facility.	[month 37] Feb. 2014	Task 8.3.1 CERN	
D8.5	Installation of tracking telescope: The tracking telescope is installed in the beam line and operational.	[month 40] May 2014	Task 8.5.1	
D8.6	Detector and detector control system operational: Cosmic ray tracker including front end electronics, power and gas systems. Detector for radiation measurement. Detector Control System monitoring the tracker working and the environment parameters.	[month 44] Sept. 2014	Task 8.5.3	
D8.7	Populated data base of components qualification: The materials and components database is online and populated with data.	[month 46] Nov. 2014	Task 8.4.1.	
D8.8	DAQ performance and test beam utilization: Report on the performancesand use of the integrated DAQ setup, and of the common test beam facilities at DESY and CERN	[month 46] Nov. 2014	Task 8.6 1&2	
D8.9	Performance of beamline and infrastructure: Report on performance of beamline and infrastructure including GEM based beam profile and tracking detector	[month 48] January 2015	Task 8.2.2 Frascati	
D8.10	Commissioning of new facility equipment: Report on commissioning of shuttle systems, movable irradiation tables with cold boxes and a fluence monitoring system based on a microwave absorption technique in silicon.	[month 48] January 2015	Task 8.3.2 CERN, UK, VU	
D8.11	Infrastructure performance and utilization: TASD and MIND are constructed and tested for their performance.	[month 48] Jan. 2015	Task 8.5.2	