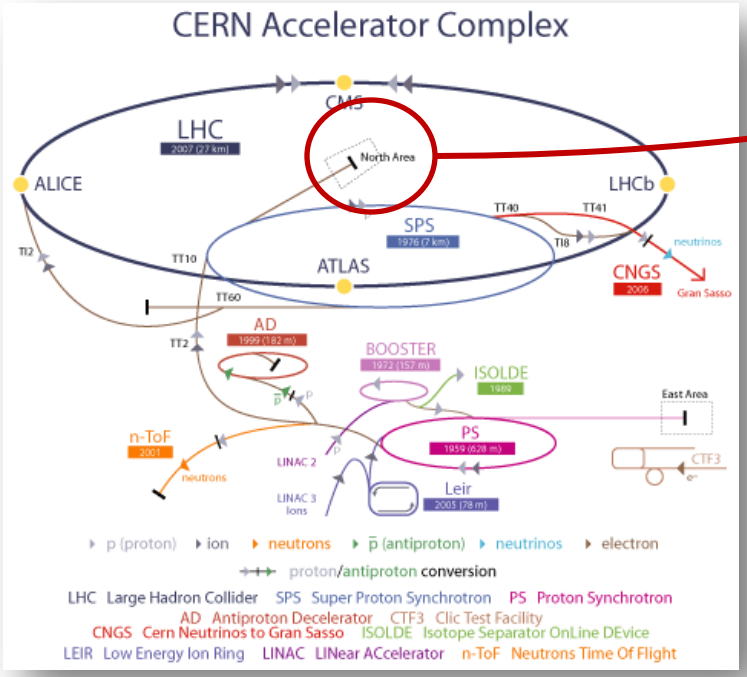
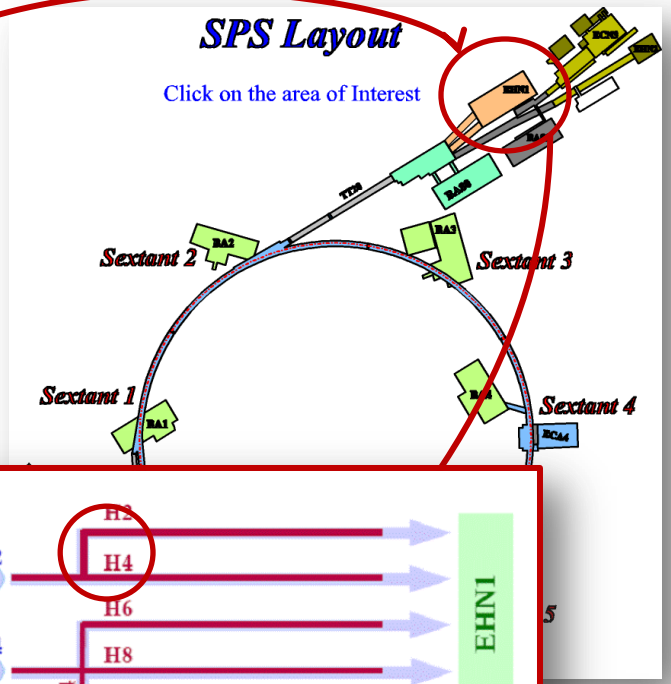
WG7: 2014 RD51 Test Beam

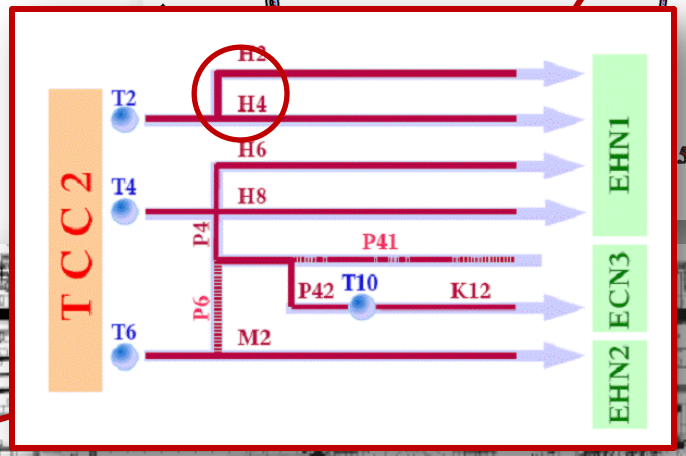
- Brief introduction to the RD51 semi-permanent test beam area H4 (mostly for our Indians colleagues)

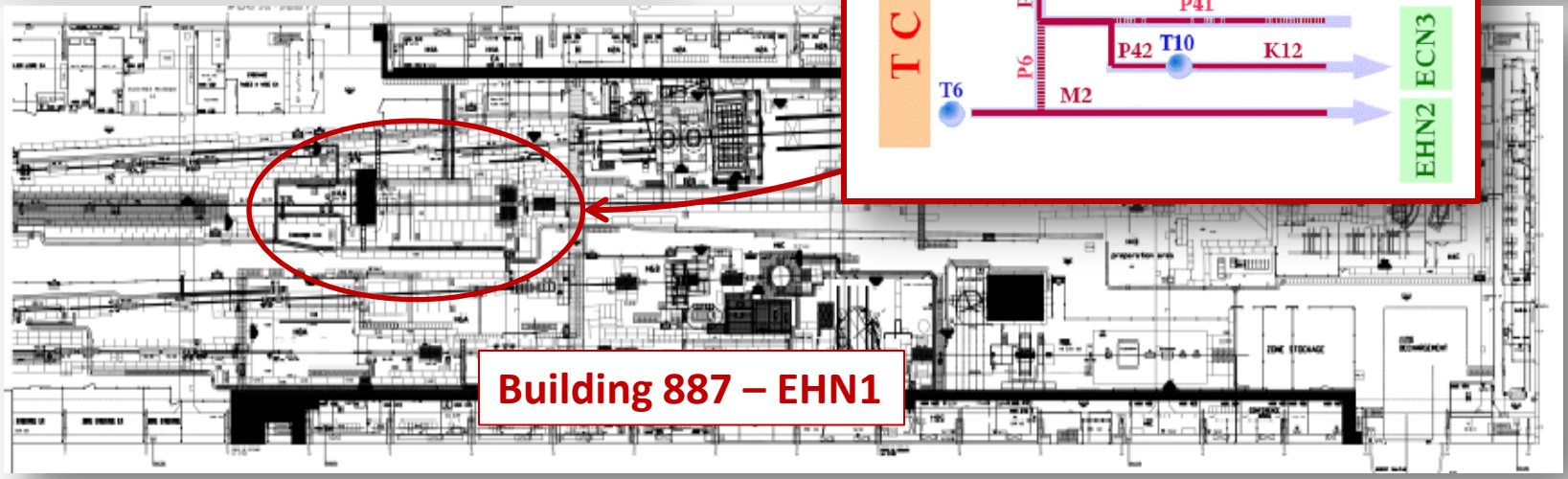
- News & Reminder (mostly for incoming-beam users)

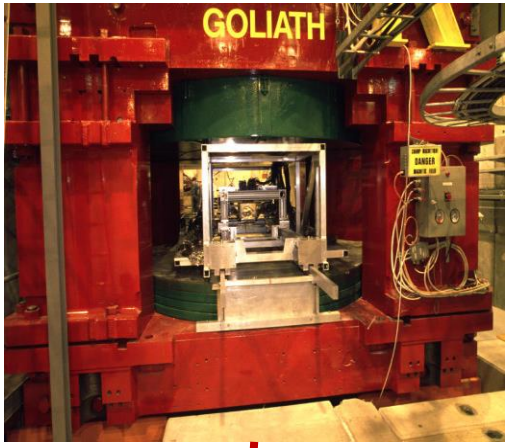
Yorgos T., Eraldo O.

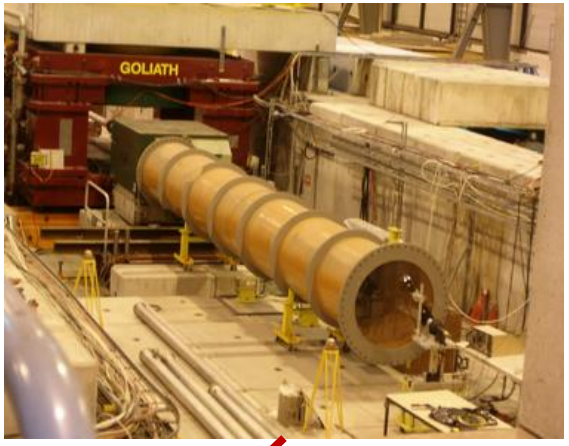

CERN Accelerator Complex
LHC
2007 (27 km)
CMS
North Area
ALICE
LHCb
SPS
1976 (7 km)
ATLAS
TT40
TT41
TI8
neutrinos
CNGS
2006
Gran Sasso
TT10
TT2
TT60
AD
1999 (182 m)
BOOSTER
1972 (157 m)
ISOLDE
1989
East Area
n-ToF
2001
neutrons
PS
1959 (628 m)
LINAC 2
LINAC 3
Ions
Leir
2005 (78 m)
CTF3
p (proton)
ion
neutrons
p̄ (antiproton)
neutrinos
electron
proton/antiproton conversion
LHC Large Hadron Collider
SPS Super Proton Synchrotron
PS Proton Synchrotron
AD Antiproton Decelerator
CTF3 Clic Test Facility
CNGS Cern Neutrinos to Gran Sasso
ISOLDE Isotope Separator OnLine DEvice
LEIR Low Energy Ion Ring
LINAC LINear ACcelerator
n-ToF Neutrons Time Of Flight

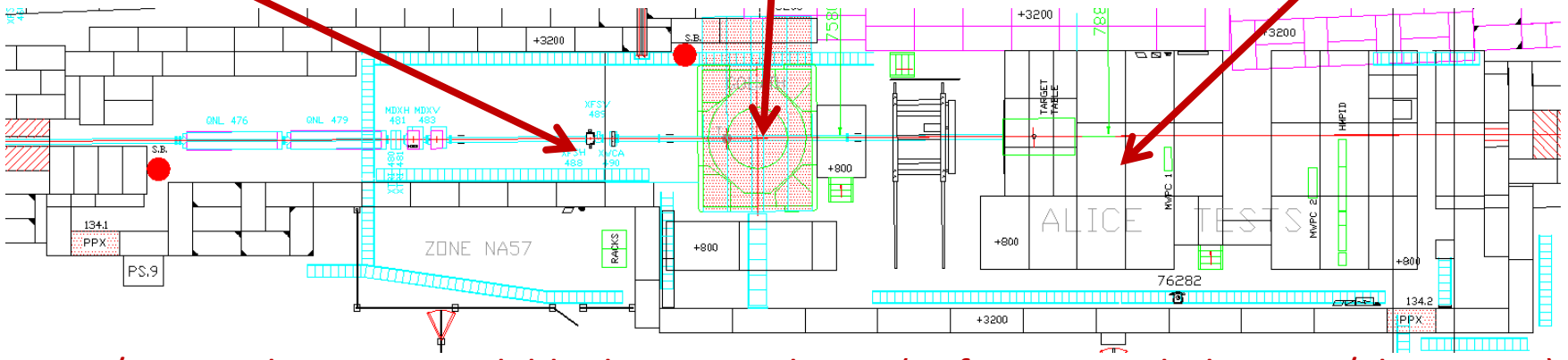

SPS Layout
Click on the area of Interest
Sextant 1
Sextant 2
Sextant 3
Sextant 4


T C C 2
T2
H4
H6
T4
H8
P4
P41
P42
T10
K12
P6
T6
M2
EHN1
ECN3
EHN2


Building 887 – EHN1







+ GDD/RD51 Laboratory available during test beam (to fix issue with detector/electronics)

H4 beam line

- **The** H4 beam line is located in EHN1. It is a high-energy, high-resolution general purpose beam suitable for both experiments and tests. Main parameters: Pmax= 330 (450) GeV/c, Acc.=1.5 μSr, Δp/pmax= ±1.4 % The maximum momentum is 400 GeV/c.
- **detailed user guide:** H4

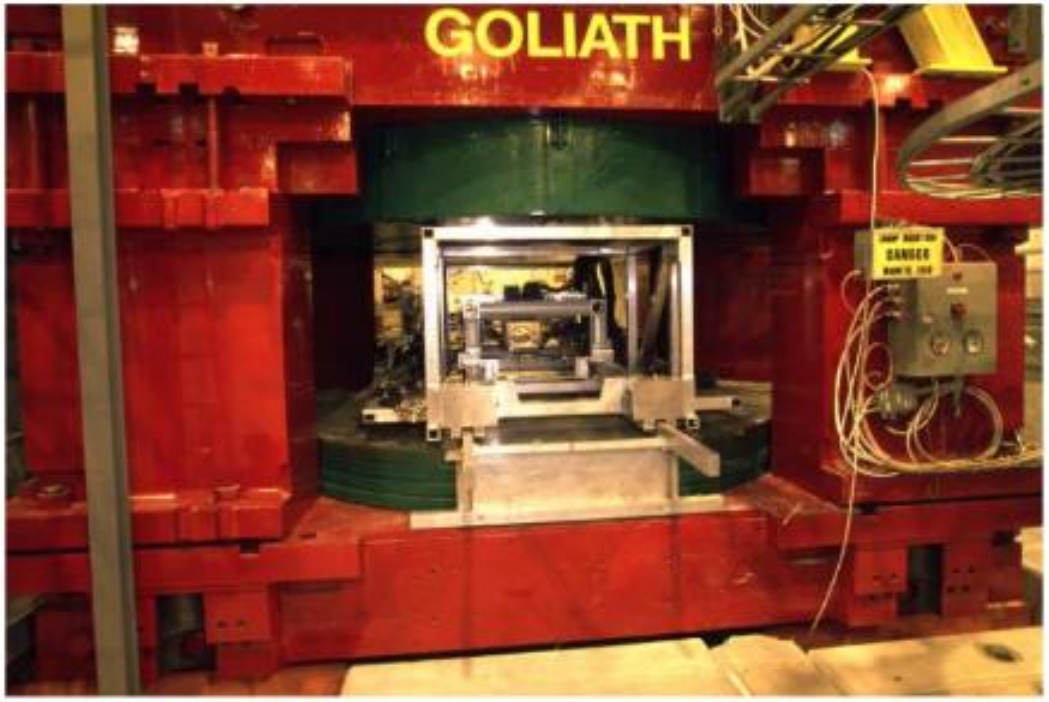
- **Beam types:**
  - polarized protons for Λ0 decay, enriched low-intensity beam of anti-protons, or K+
  - electrons from γ-conversion,
  - Attenuated primary beam, Heavy ion beam
- **Maximum intensities** for 10^{12} incident protons at 400 GeV/c:
  - π+, e fluxes similar to H2
  - ~ 10^{7} protons at 400 GeV/c
  - ~ 10^{7} Pb

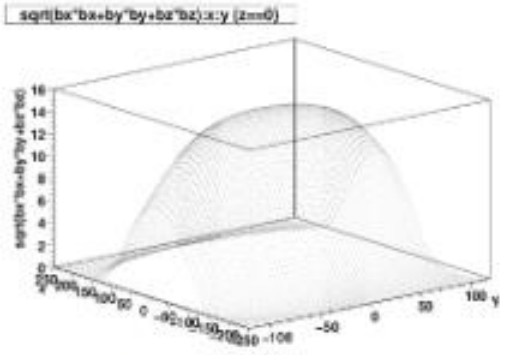
The type of particles

- Electrons from converted gammas
- Hadrons from decay of lambdas and kaons
- Secondary pions and protons
- Muons

Main Parameters	
Pmax:	360 GeV/c (SPS at 400GeV/c) or 400 GeV/c for primary protons
Acceptance	± 1.5 μsr (2.5 μsr at p < 200GeV/c
max Δp/p	± 1.4%
Dispersion at momentum slit (C3)	27 mm / % Δp/p
Intrinsic Δp/p with slit = 0	0.05%
Beam height in EHN1:	2060 mm
Beam lenght	~655 m

http://sba.web.cern.ch/sba/BeamsAndAreas/resultbeam.asp?beamline=H4

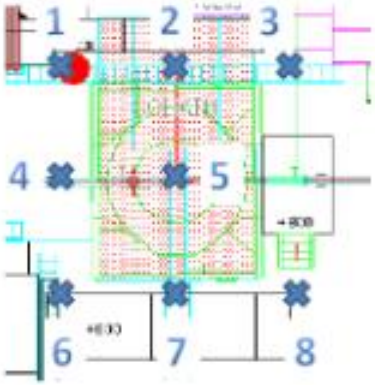




Field map realized during NA57 experiment, file decoded by Frascati group

Power: about 2MW
Maximum field: 1.4T
Gap volume: around 8 m^3

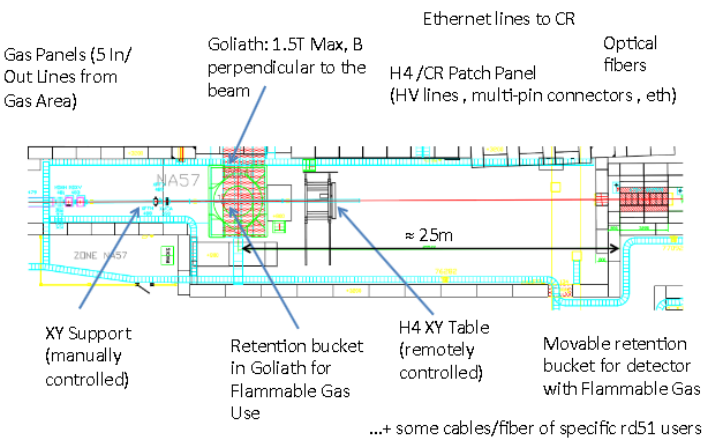
http://ab-div-po-mpc.web.cern.ch/ab-div-po-mpc/Pages/SPS_EA/Spectro/Goliath/Goliath.htm



Point	Half Current	Maximum Current
1	0.0005 T	0.007 T
2	0.0004 T	0.010 T
3	0.0005 T	0.007 T
4	0.005 T	0.011 T
5	0.868 T	1.518 T
6	0.0003 T	0.006 T
7	0.0009 T	0.009 T
8	0.0004 T	0.008 T

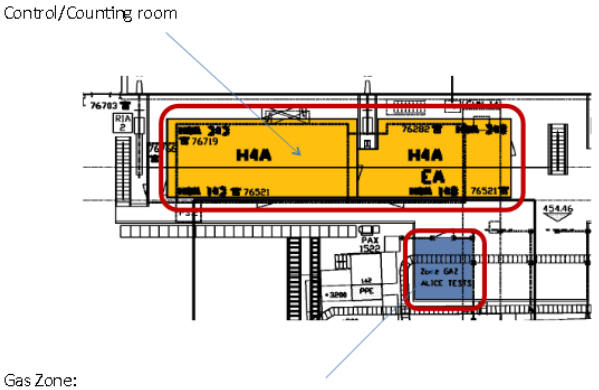
RD51 Common Infrastructures and services

H4-Common Test Beam Facility



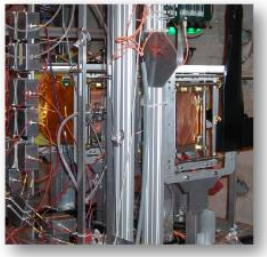
...+ some cables/fiber of specific rd51 users

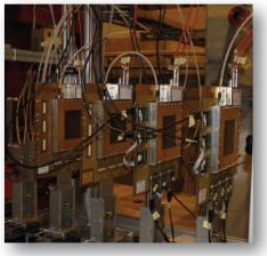
CR & Gas Zone-Common Test Beam Facility



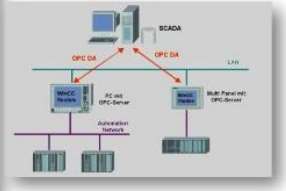
Rd51 trackers

- Triple GEM Tracker
  - XY strips readout, 400um pitch
  - 10x10 cm^2
  - APV (VFAT2)
  - DAQ&FE: SRS/APV (TURBO/VFAT)
- Resistive µmegas tracker
  - XY strips readout, 250um pitch
  - 9x9 cm^2
  - APV
  - DAQ&FE: SRS/APV





Slow Control System (HV/LV)



K. Karakostas

News & Reminders

2014 rd51 Test Beam Period (November 26th – December 15th)

12 Day as Main User + …

November						December														
25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MD	MD					GIF++		MD					SCRUBBING							
NO	NO	BEAM (Main User)				BEAM (Parasitic)		NO BEAM	BEAM (Main User)				NO BEAM		BEAM (Main User)					
NO	NO	From 26/09 -7pm				From 01/12 -7pm		NO BEAM	From 03/12 -7pm				NO BEAM		From 10/12 -7pm					
NO	NO	Until01/12 -7am				Until03/12 -7am		NO BEAM	Until08/12 -9am				NO BEAM		Until15/12 -7am					
Inst, (from:2pm)	Installation					Absorber OUT		ALICE Detectors In												

ALICE TPC Upgrade with MPGD

Specific Requirements: End of the beam line (Shower)

ATLAS NSW Project (micromegas)

Specific Requirements: GOLIATH

CMS GEM Muon Upgrade : GEM Collaboration

Specific Requirements: One Tracker and APV/SRS & VFAT/TURBO readout

FRASCATI - Triple GEM in magnetic Field (BESIII and Ship experiment)

Specific Requirements: GOLIATH, Isobutane

WIS/Aveiro/Coimbra - Large single-stage THGEM detectors

Specific Requirements: One Tracker and APV/SRS readout

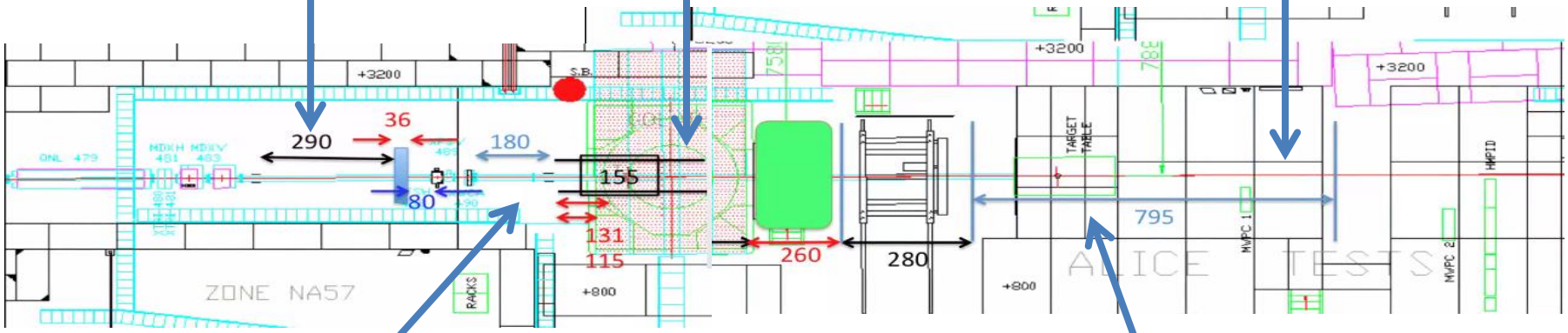
LAPP/UA/NCSR/IRFU – Resistive micromegas for calorimetry

Specific Requirements: End of the beam line (Showers)

ATLAS NSW
+
LNF (BESIII and SHIP)

CMS GEM

ALICE TPC



WIS/Aveiro/Coimbra
Large single-stage THGEM detectors

LAPP/UA/NCSR/IRFU
Resistive micromegas for calorimetry

Typical Shift Scheme

	MAIN	Parasitic1	Parasitic2	Parasitic3	Parasitic4	Parasitic5
Shift1	ALICE TPC	WIS/Aveiro/Coimbra	LNF	LAPP/UA/NCSR/IRFU	CMS GEM	ATLAS NSW
Shift2	ATLAS NSW	ALICE TPC	WIS/Aveiro/Coimbra	LNF	LAPP/UA/NCSR/IRFU	CMS GEM
Shift3	CMS GEM	ATLAS NSW	ALICE TPC	WIS/Aveiro/Coimbra	LNF	LAPP/UA/NCSR/IRFU
Shift4	LAPP/UA/NCSR/IRFU	CMS GEM	ATLAS NSW	ALICE TPC	WIS/Aveiro/Coimbra	LNF
Shift5	LNF	LAPP/UA/NCSR/IRFU	CMS GEM	ATLAS NSW	ALICE TPC	WIS/Aveiro/Coimbra
Shift6	WIS/Aveiro/Coimbra	LNF	LAPP/UA/NCSR/IRFU	CMS GEM	ATLAS NSW	ALICE TPC
Shift7	ALICE TPC	WIS/Aveiro/Coimbra	LNF	LAPP/UA/NCSR/IRFU	CMS GEM	ATLAS NSW
...						

What you need to access the Test Beam

Counting/Control Room

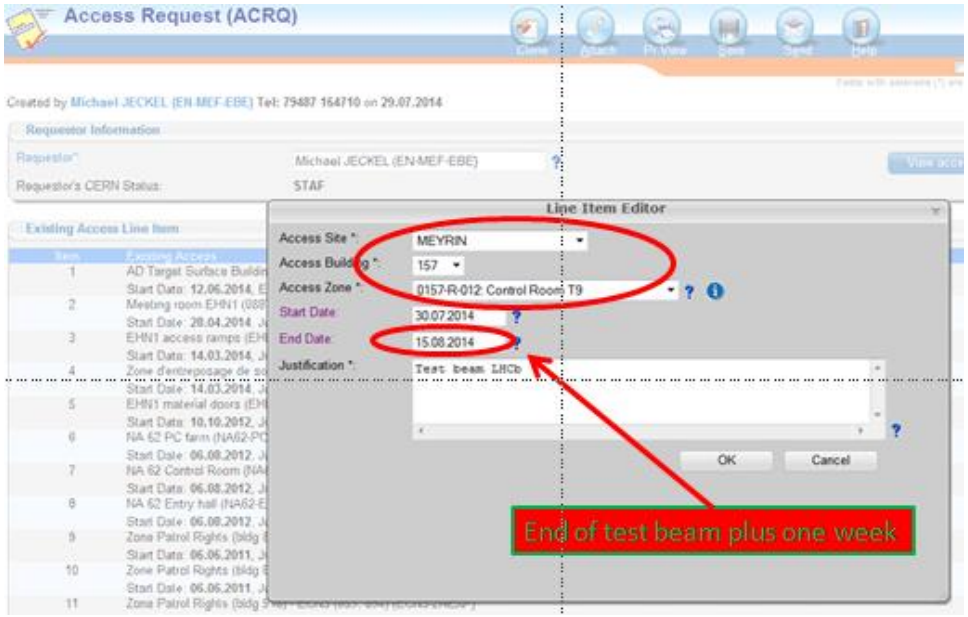
+ EDH Request
+ Validation of the card
(see next slides)

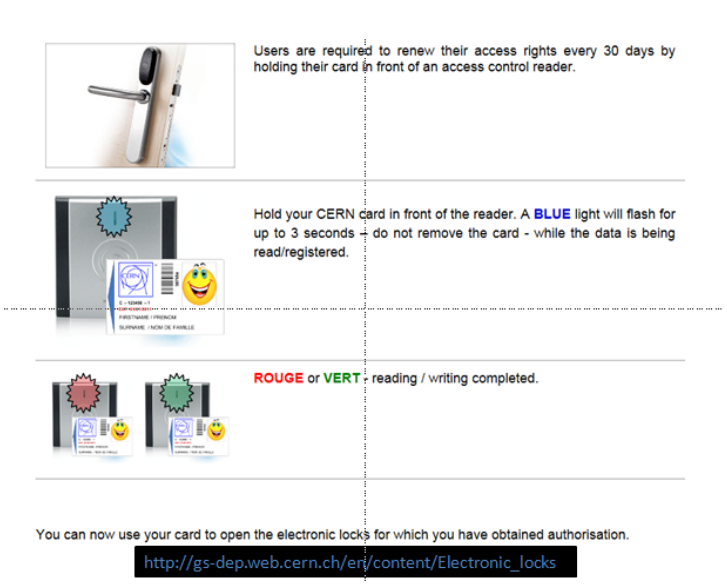
1. Valid CERN Dosimeter
2. CERN Badge + Validated Access to Counting/Control Room
3. Helmets and safety shoes for the experimental area

Experimental Area

ACCESS TO THE CONTROL/COUNTING ROOM: To Be requested VIA EDH by each user

https://edms.cern.ch/document/1421828/1





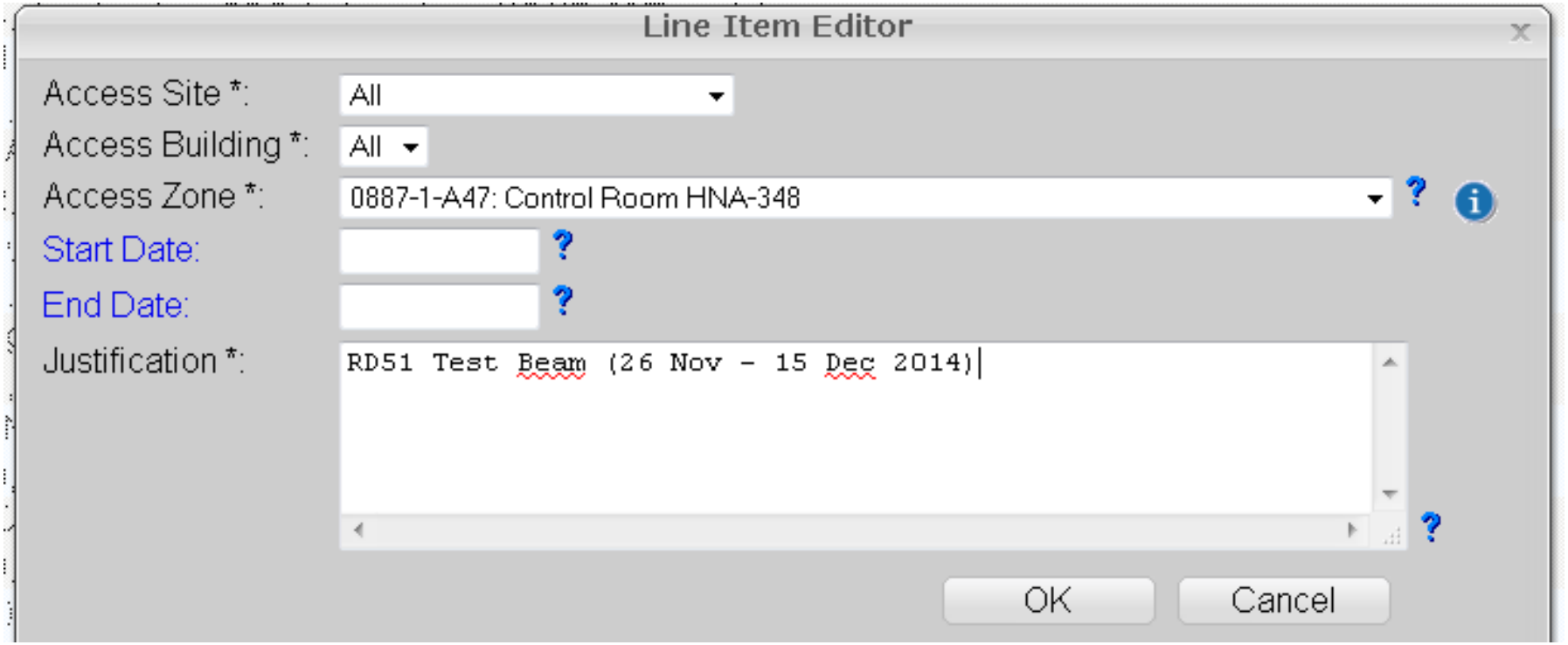
Online Reader to validate your access in: R1, R2, R3, EHN1

Ref. To previous link for more info

See next slide for the references to our Counting/Control Room

Our Counting/Control Room

SBA zone	Room number	User	Terminal	Phone	Barrack	Building / Office	Host Name
H4-134	887/R-K47	H4A	H4A	76282	HNA-348	887/1-A47	cwo-hna348-h4a



End Date: 1 week more suggested

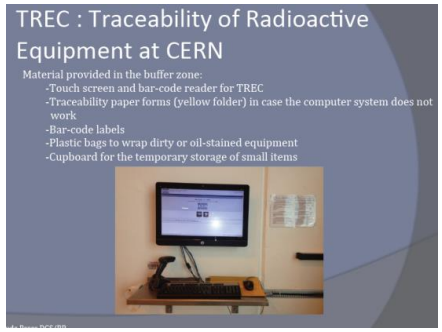
Material leaving the experimental area… just to keep in mind

any export of material from the CERN Experimental Area halls/buildings 157 (East Area), 193 (AD), 887 (EHN1), 888 (EHN2), 911 (ECN3) to an external destination must be:

registered in EDH using the Shipping Request form https://edh.cern.ch/Document/SHIP.

EDH Shipping Requests issued from the above mentioned areas (also for material declared as non-radioactive by the owner) are automatically forwarded to the relevant Radiation Protection Officer that will proceed with the compulsory radiological control before authorizing the transport.

Please note that this procedure also applies to material/goods belonging to external institutes as well as if the material is transported afterwards by the owner itself (e.g. CERN transport services not required in the EDH form).



We will take care of this but keep in mind that you cannot simply leave the area with your equipments without having RP check

New procedure, i.e. possible delay

https://sps-schedule.web.cern.ch/sps-schedule/RadioProtectionDocuments/BufferzoneEHN1-english.pdf

2015 rd51 Test beams

Request Deadline : Saturday 15th of November
(filled by us - nothing to do from your side)

Unless specific requests will be provided by rd51 collaborators, we will request:

3 periods of 2 beam-weeks each:

- Spring [May/June],
- Summer [July/August],
- Fall [October/November]

Explicit requests from rd51 users will be used as a support of rd51 2015 beam request

FYI

2015 DESY Test Beam

RD51 Equipments (no support in Desy) available if needed

Dear colleagues, we would like to update you on the test beam schedule for the DESY-II test beam facility in 2015. The DESY test beam will resume operation mid January (12th or19th of January) after a nine month shutdown due to the upgrade of PETRA-III.

With this mail we would like to inform you, that we are now talking applications for beam time from January till July 5th, 2015 If you are planning to make use of the DESY test beam in this period, please apply till

4 November 2014 and provide the following information to testbeam-coor@desy.de:

project name and short description, responsible Person, Participating Groups, number of requested weeks, preferred month(s), required infrastructure (beam telescope, magnetic field, gas, stages)

You can find information on the DESY-II test beam on http://testbeam.desy.de

The DESY-II Test Beam Coordinators

Ralf Diener, Norbert Meyners, Marcel Stanitzki