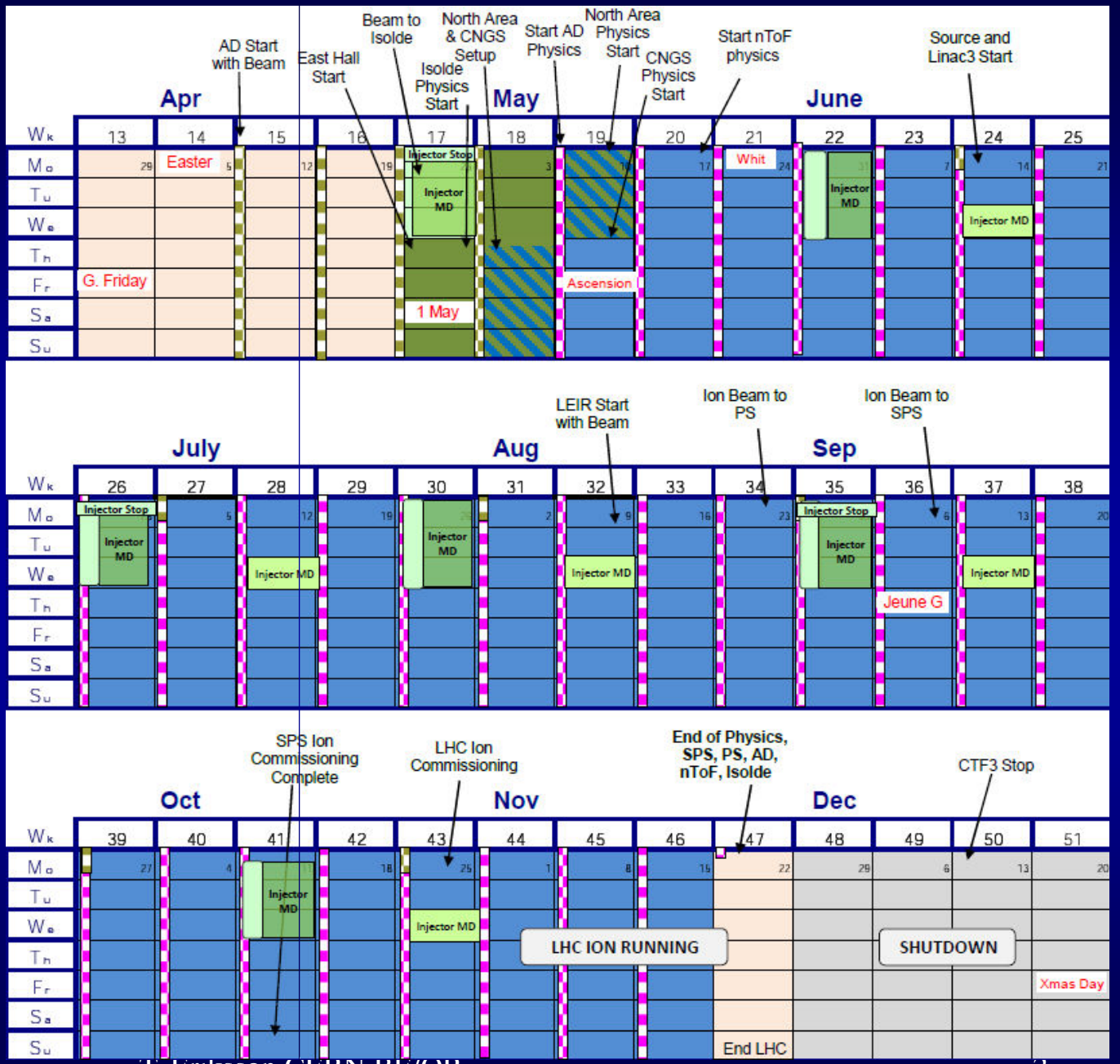
AD
Outlook for 2010

Key dates for 2010 run:

- 22/3 start of HW-tests
- 12/4 start s-u with beam
- 10/5 Start of physics

=>

- 28 weeks of physics scheduled (4600 h)



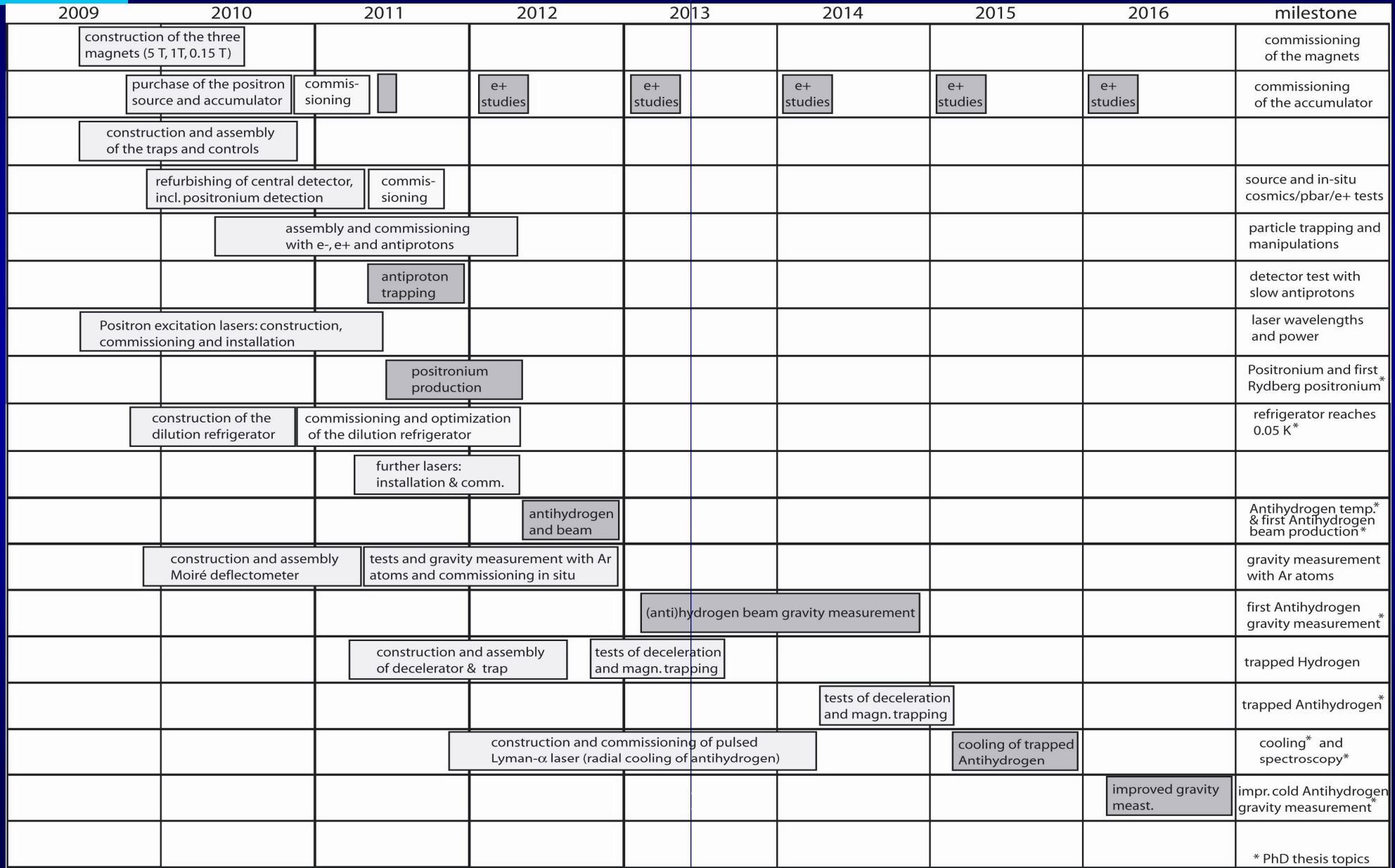
- Experimental requirements for 2010:
- ACE:
  - 2-3 * 24h periods mid-June
  - 1 week 24h/24 in October
  - Single bunch ejection at 500 MeV/c (no e-cooling)
- ALPHA, ATRAP: Single bunch ejection at 100 MeV/c
- ASACUSA: Single and 6:ple ejection at 100 MeV/c
- 3*8 h shifts
- AEGIS: No beam required in 2010

AEGIS (AD-6)

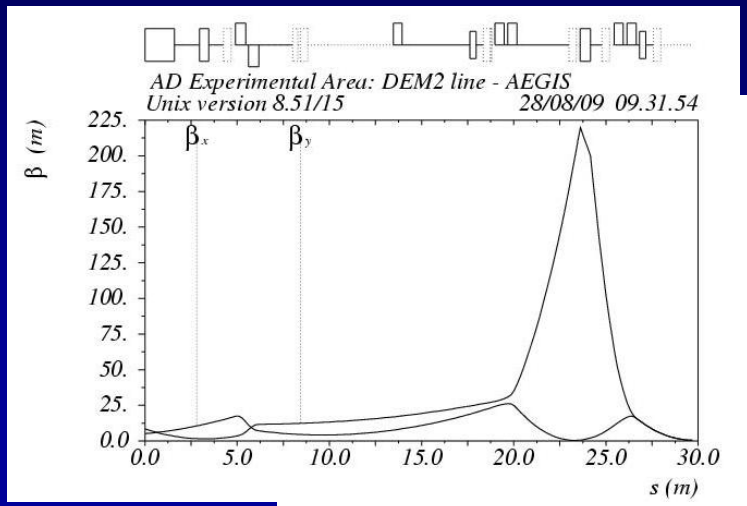
- Gravitational studies of Hbars produced in flight
- Sharing of the DEM-zone with ACE (cell irradiation)
- Fully approved in 2009
- Installation and commissioning in 2010
- First Pbar beams in 2011

  => one more user to share the available Pbars

AEGIS schedule

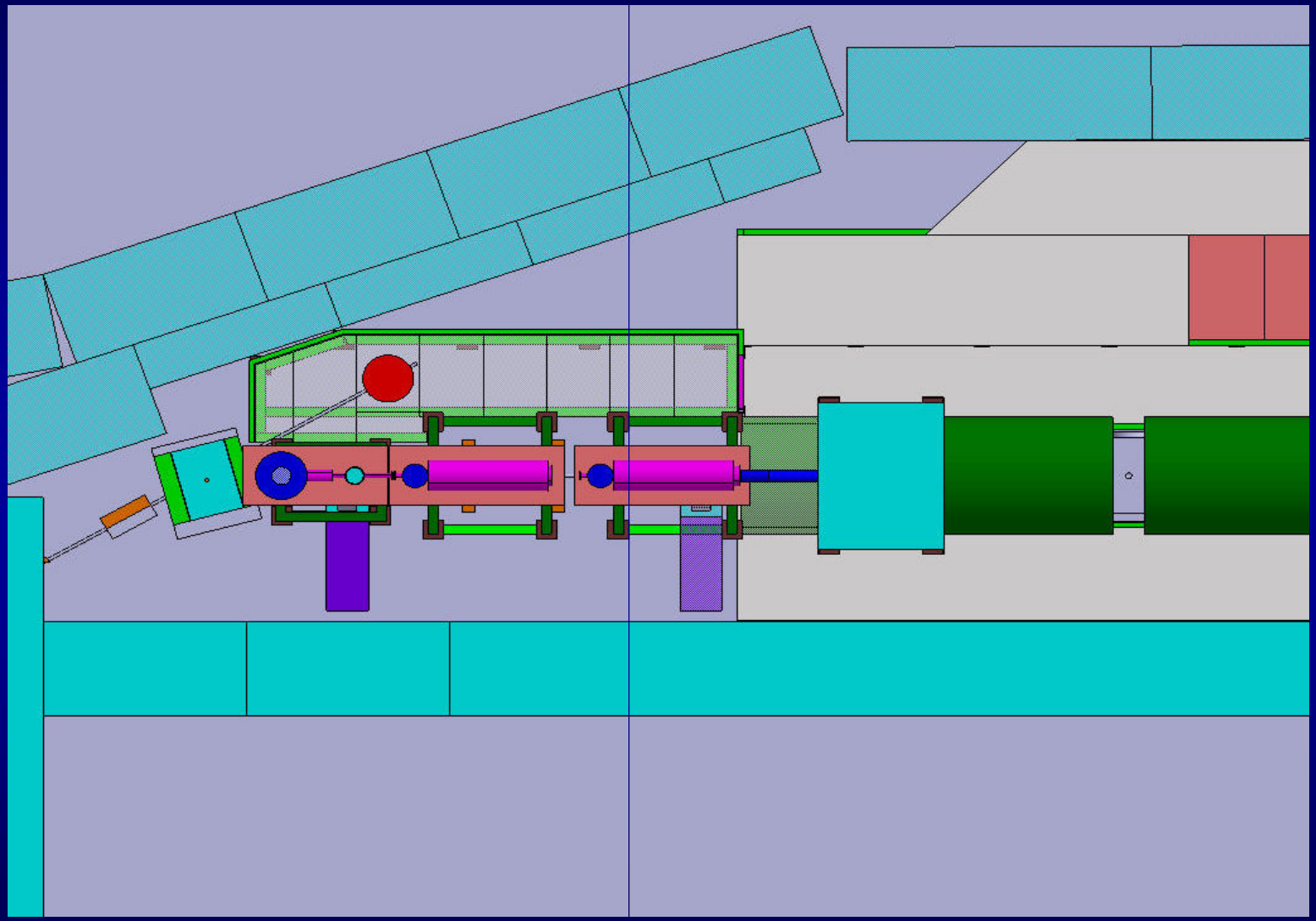


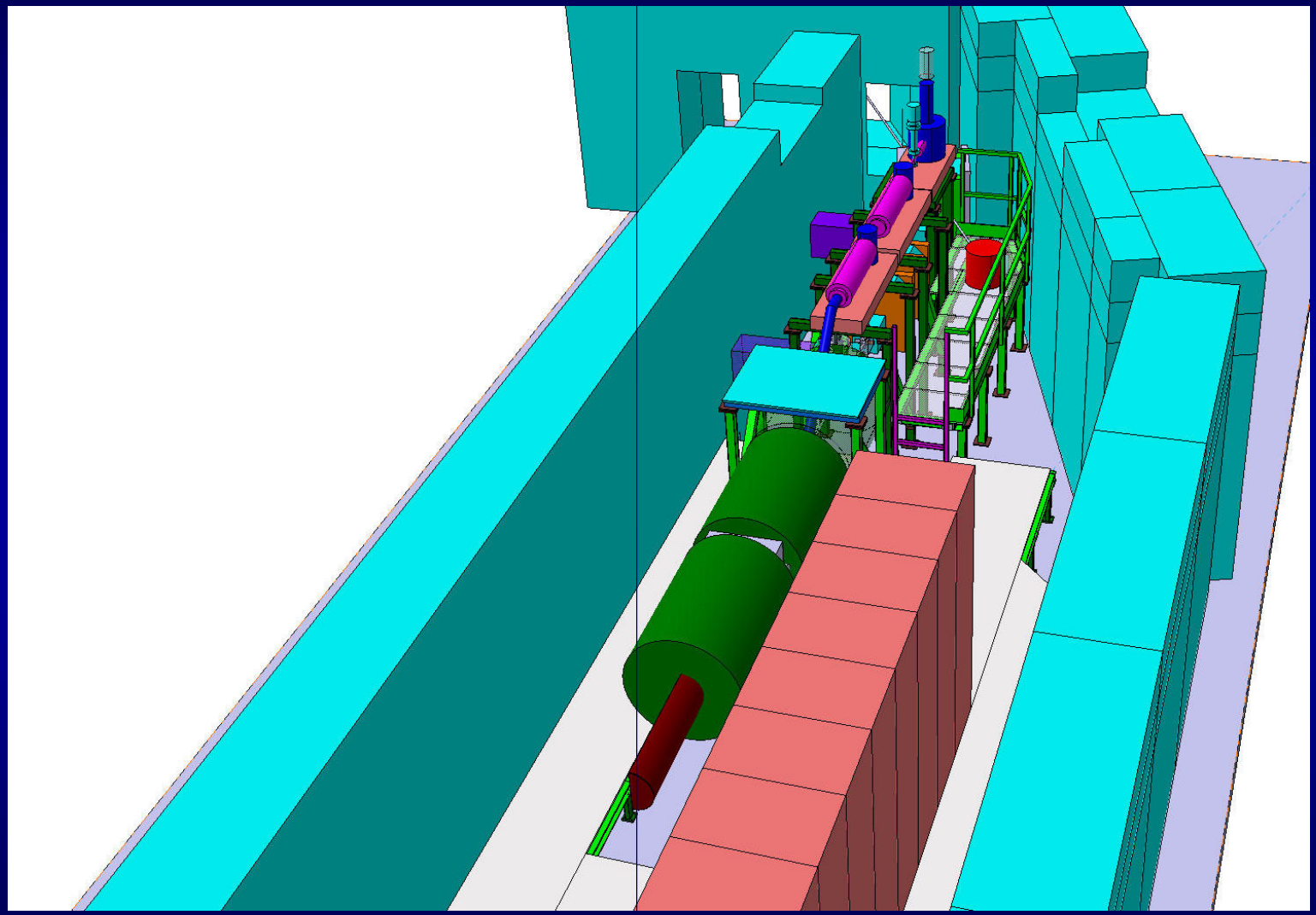
AEGIS beamline in AD and DEM zones



- AEGIS beamline equipment:
- Extension of beamline in DEM-zone used by ACE
- Upgrade of MWPC:s in all ejection lines: GEM detectors + new electronics

Magnets					
Element	*Type*	*Bl [Tm]*	*I [A]*	*Imax*	
DEM.DHV32	PSB Type 1	0.0081/0.0079	+-10	10	
DEM.BHZ35	MEA43	0.175	73	80	
DEM.DHV52	PSB Type 1	0.0081/0.0079	+-10	10	
Element	*Type*	*K1 [m-2]*	*GL [T]*	*I[A]*	*Imax*
DEM.QN40	QTR	0.2548	0.091	8.9	50
DEM.QN50	QTR	0.5550	0.1981	19.4	50
Power	**converters**				
Element	*Type*	*I nominal [A]*	*Imax [A]*		
DEM.DHZ32	LPSS 35V 24A	0	+-24		
DEM.DVT32	LPSS 35V 24A	0	+-24		
DEM.BHZ35	2*60V/100A	73	+-100		
DEM.QN40	LPSS 18V 50A	8.9	+-50		
DEM.QN50	LPSS 18V 50A	19.4	+-50		
DEM.DHZ52	LPSS 35V 24A	0	+-24		
DEM.DVT52	LPSS 35V 24A	0	+-24		
MWPC/GEM	**detectors**				
DEM.MWPC33					
DEM.MWPC37					
DEM.MWPC54					
Vacuum	**equipment**				





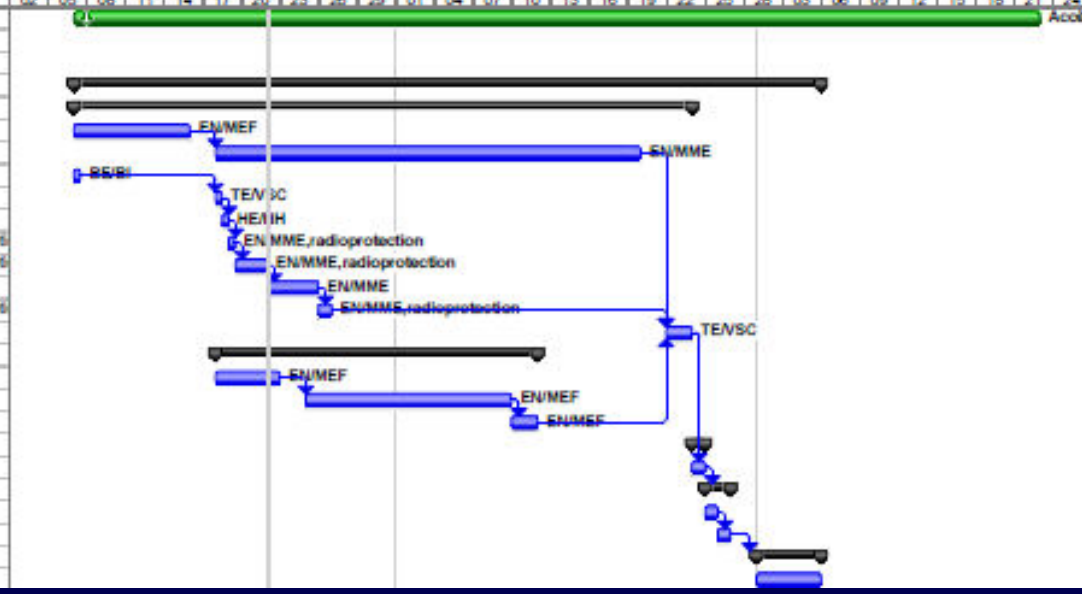
Beamline schedule

• Final layout/optics	1 Sept 09
• Final mechanical design + drawings	1 Nov 09
• Vacuum chamber fabrication	1/11/2009 -1/3/2010
• Magnet refurbishing/tests	=>1/3/2010
• Power converter refurbish/purchase	2009/2010
• MWPC/GEM tests	=>1/11/2009
• Installation:	shutdown 09/10
– MWPC electronics (started Aug .09)	+ during 2010 run
– MWPC chambers	
– Vacuum chambers/equipment	
– Magnets	
– Power converters/cabling/controls	

- Progress:
- Shutdown 2010, phase 1:
  - Finish all installation work inside AD ring enclosure before startup
- During 2010 run, phase 2:
  - Installation in DEM-zone (access ok)
  - Equipment tests

AD/DEM expt AEGIS

ID	Task Name	Duration	Start	Finish	Resource Names
1	Accès ring AD	53 days	Thu 07/01/10	Mon 22/03/10	
2					
3					
4	**Coté machine**	**42 days**	**Thu 07/01/10**	**Fri 05/03/10**	
5	**Chambres a vide**	**34 days**	**Thu 07/01/10**	**Tue 23/02/10**	
6	Etude design chambres	7 days	Thu 07/01/10	Fri 15/01/10	EN/MEF
7	fabrication chambre traversante (dans blindage)	25 days	Mon 18/01/10	Fri 19/02/10	EN/MME
8	Deconnection des 2 GEM	0.5 days	Thu 07/01/10	Thu 07/01/10	BE/BI
9	Mise a la PA et deconnecter la chambre pour sciage	0.5 days	Mon 18/01/10	Mon 18/01/10	TE/VSC
10	Mettre les 2 GEM hors faisceau	0.5 days	Mon 18/01/10	Mon 18/01/10	HE/HH
11	sciage de la 1ere partie de la chambre sur place	0.5 days	Tue 19/01/10	Tue 19/01/10	EN/MME,radioprotecti
12	sciage du soufflet (lieu a definir suivant débit de dose)	2.5 days	Tue 19/01/10	Thu 21/01/10	EN/MME,radioprotecti
13	Nettoyage soufflet	2 days	Fri 22/01/10	Mon 25/01/10	EN/MME
14	soudage du soufflet sur chambre dans la machine	1 day	Tue 26/01/10	Tue 26/01/10	EN/MME,radioprotecti
15	installation chambre traversante	2 days	Mon 22/02/10	Tue 23/02/10	TE/VSC
16	**Supports**	**19 days**	**Mon 18/01/10**	**Thu 11/02/10**	
17	Etude design supports DHV et chambre traversante	5 days	Mon 18/01/10	Fri 22/01/10	EN/MEF
18	fabrication des 2 supports	12 days	Mon 25/01/10	Tue 09/02/10	EN/MEF
19	installation des 2 supports	2 days	Wed 10/02/10	Thu 11/02/10	EN/MEF
20	**Aimant**	**1 day**	**Wed 24/02/10**	**Wed 24/02/10**	
21	installation aimant correcteur DHV	1 day	Wed 24/02/10	Wed 24/02/10	
22	**GEM**	**2 days**	**Thu 25/02/10**	**Fri 26/02/10**	
23	installation du GEM coté exp	1 day	Thu 25/02/10	Thu 25/02/10	
24	Alignement du GEM	1 day	Fri 26/02/10	Fri 26/02/10	
25	**Vacuum**	**5 days**	**Mon 01/03/10**	**Fri 05/03/10**	
26	Test de fuite	5 days	Mon 01/03/10	Fri 05/03/10	



- Removal of 20T concrete pillar supporting ATRAP2 positron accumulator zone
- Replaced by metallic structure to make space for AEGIS equipment
- It went well…….

ELENA

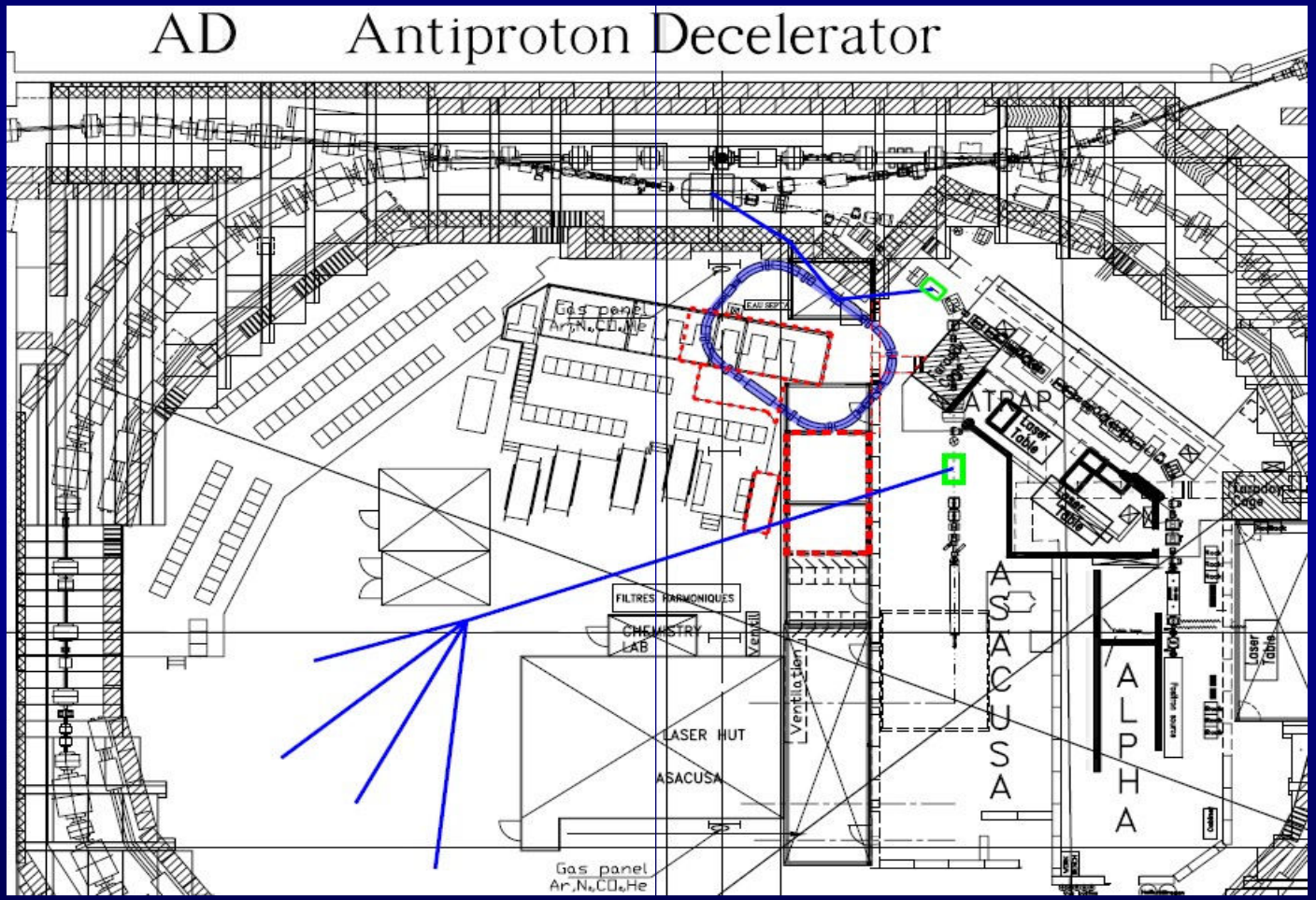
- **SPSC request:**

- We have already identified 2 points which will require some attention, namely:
- - a better quantification of the gains for the experiments, with some real practical examples for each of them ;
- - the implications of an improved AD on the experimental area in order to be able to host more experiments.

ELENA location

- Building 193
- Building 181
- New building
- Conclusion

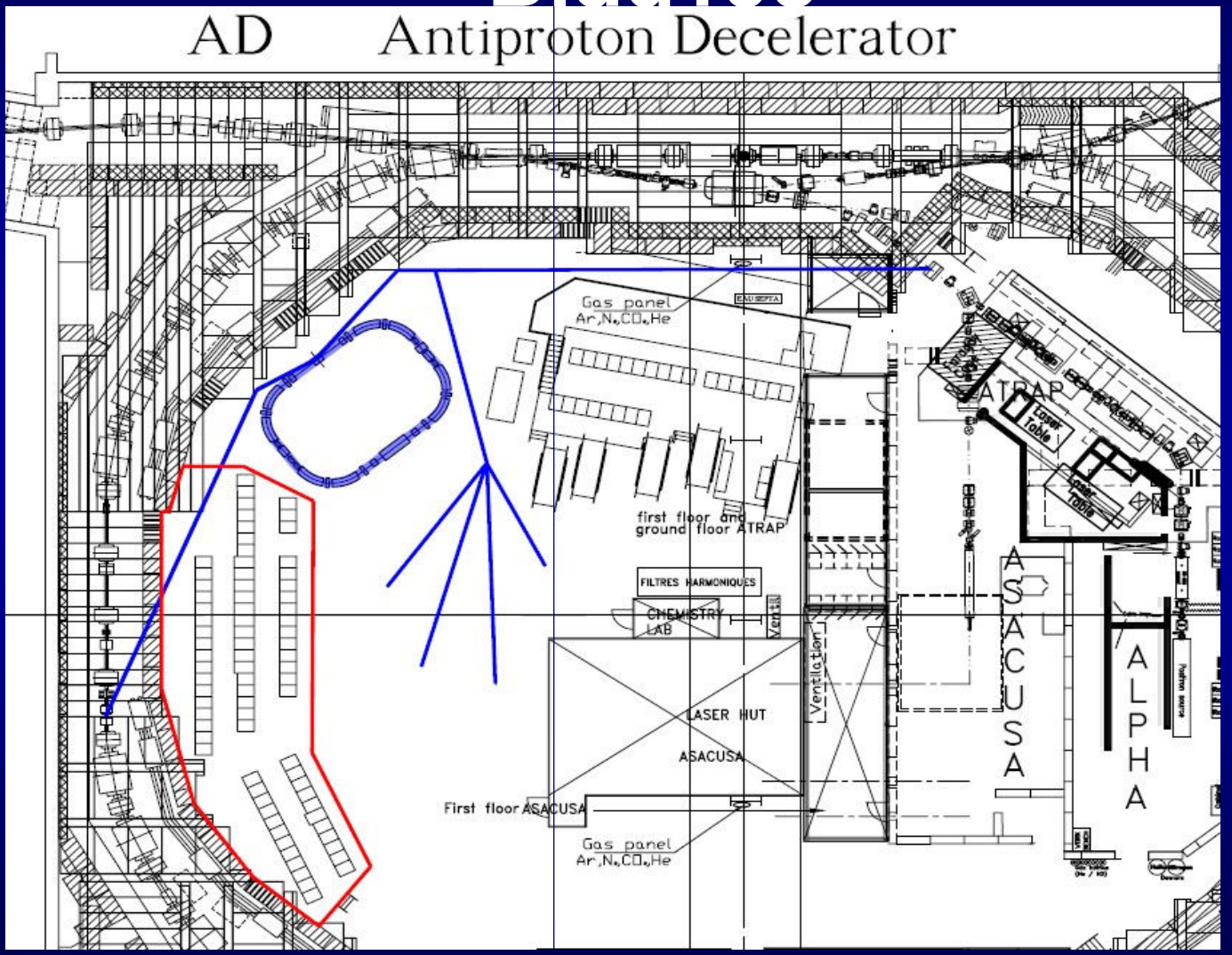
ELENA location 1: Initial place



ELENA location 1: Initial place

- + Short transfer lines
- + Few new magnets
- + Lowest cost
- + No AD ring modifications
- + No change for the present experimental zone (low and high energies possible)
- + New experimental zone at low energy obtained with some difficulty (transfer line + shielding under user barrack, access)
- o Modification of ASACUSA experimental zone
- - Tight space (no upgrade possible, difficulties for ELENA installation and access)
- - 4 kicker modules instead of 2 to move
- - Difficult to modify shielding
- - Perturbations to 4 users during installation

ELENA location 2: New place in Bldg193

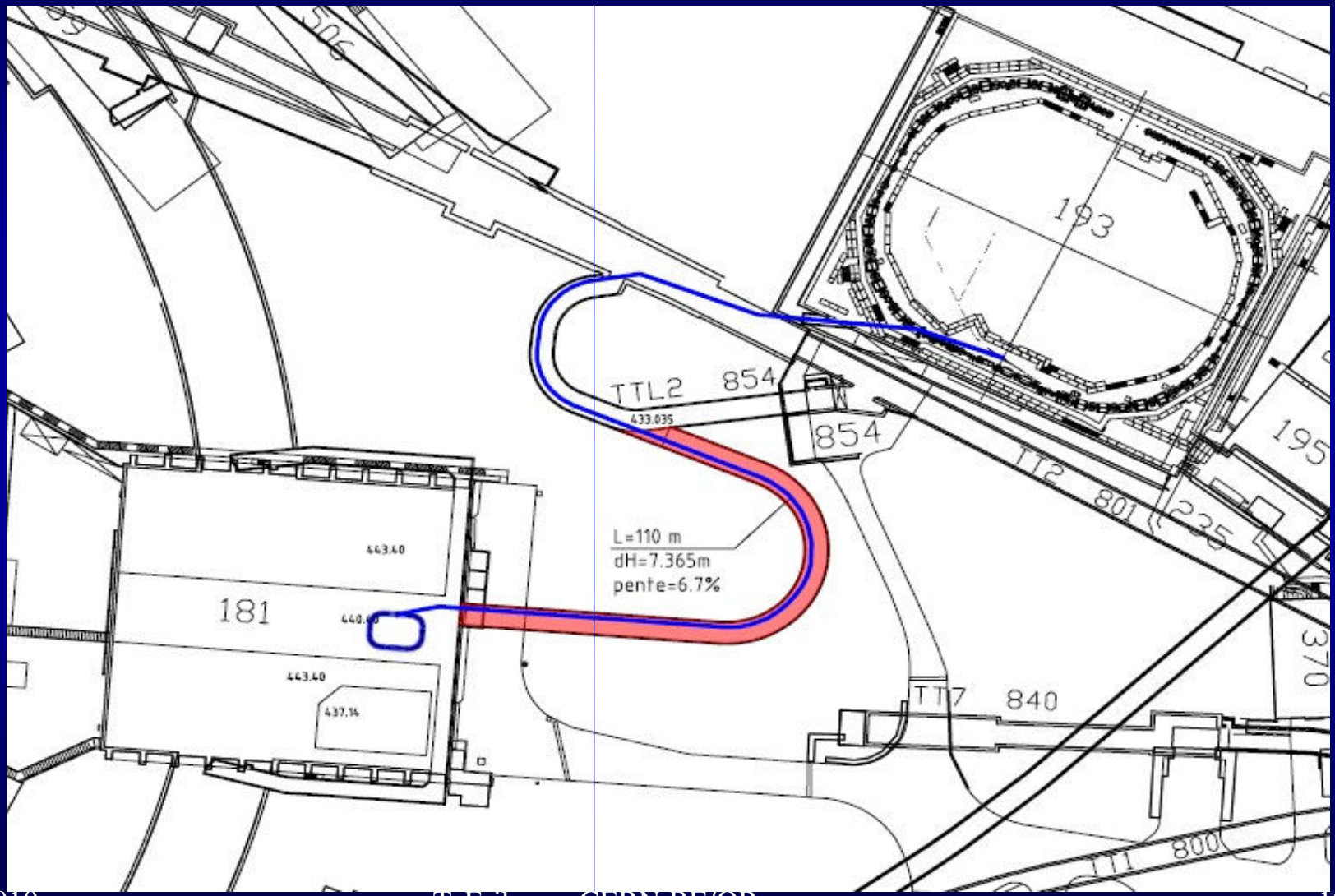


ELENA location 2: New place in Bldg193

- + Plenty of space (future upgrade possible)
- + Easy access (no particular re-arrangement in AD hall needed)
- + No perturbation to existing ejection lines and shielding
- + New experimental zone at low energy possible
- + No change for the present experimental zone (low and high energies possible)
- + Simple transfer line to new zone

- - Move racks, new cabling – cost?
- - New low energy septum magnet (+kicker?)
- - Long 100keV transfer line (stability?)

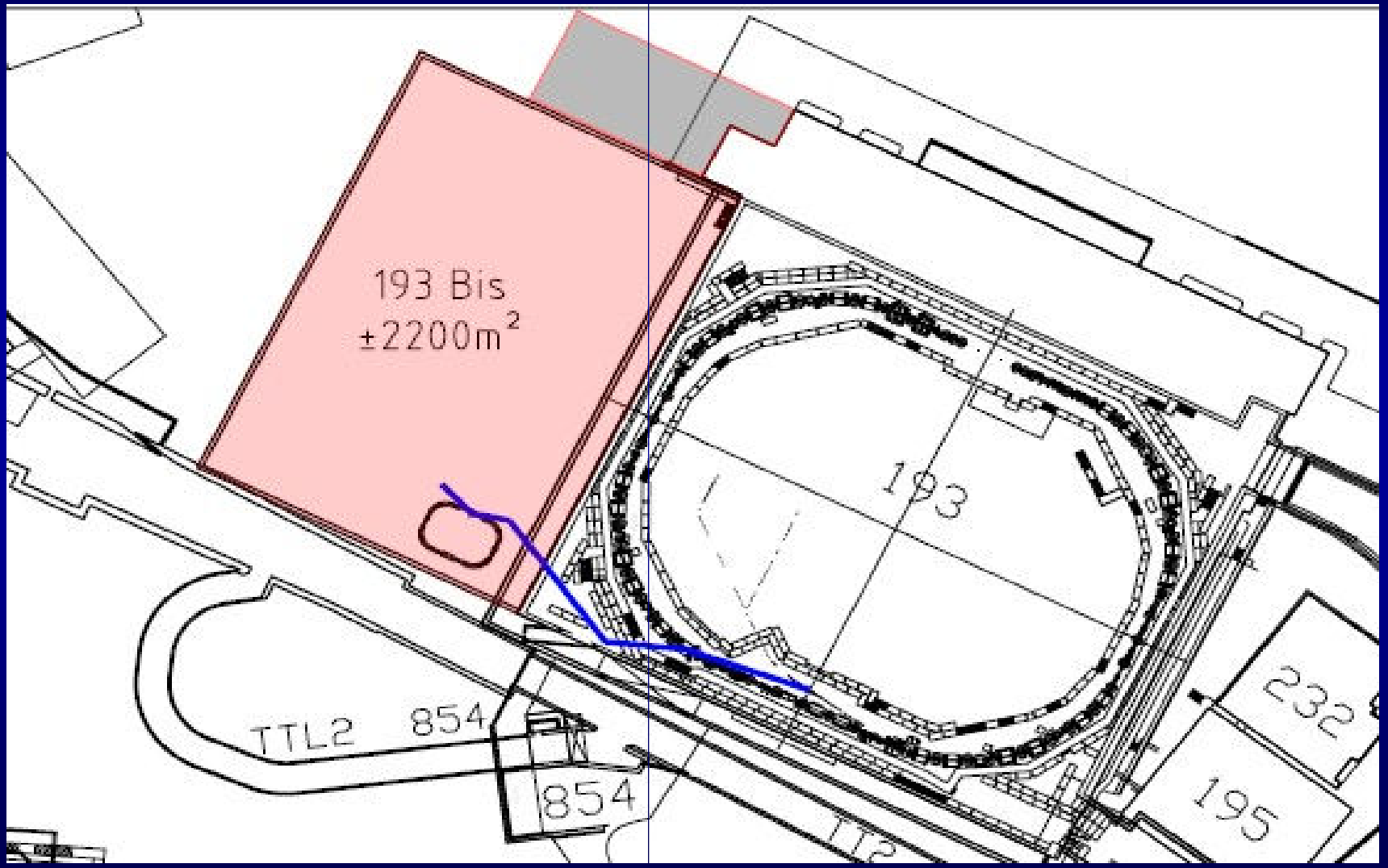
ELENA location 3: Building 181



ELENA location 3: Building 181

- + Space for future upgrade and a new e+ source (1000m2 or more, max. 2600m2)
- + Keep high energy experiments in Bldg 193 and low energy experiments in new location
- + No modifications in AD ring
- + Several new experimental zones at low energy possible
- + No perturbation to existing experiments during ELENA construction and commissioning
- - Very long 5MeV beam line, expensive
- - Civil engineering work (>100m long new tunnel, max. 10% slope) – expensive (cost of about 8-10 MCHF)
- - Long downtime for moving and restarting experiments (+6 months?)
- - Bldg 181 presently used for other activities (LHC magnet assembly press, workshops, clean room)

ELENA location 4: New Building



ELENA location 4: New Building

- + Plenty of space for future upgrade and for a new e+ source (better layout, 2200 m2)
- + Keep high energy experiments in Bldg 193 and low energy experiments in new location
- + Short new 5MeV extraction beam line
- + No modifications in AD ring
- + Several new experimental zones at low energy possible
- + No perturbation to existing experiments during ELENA construction and commissioning
- - New expensive building (cost of about 15-20 MCHF and delay of the project by about 1.5 years)
- - Long downtime for moving and restarting experiments (+6 months?)

Conclusion

- + Plenty of space (future upgrade possible)
- + New experimental zone at low energy possible with a very simple transfer line
- + Easy access (no particular re-arrangement in AD hall needed)
- + No perturbation to existing ejection lines and shielding
- + No change of the present experimental zone (low and high energies possible)

- Many advantages, small number of disadvantages show that location 2 is very attractive and very elegant place to put ELENA.

ELENA location 2: New place in Bldg193