

# CERN Test Beam Update and Schedule

- Talk prepared by **Horst Breuker** (PS/SPS Physics Coordinator)...
- ...and presented by Christoph Rembser

PS/SPS Physics Coordinator 2005 – 2007...

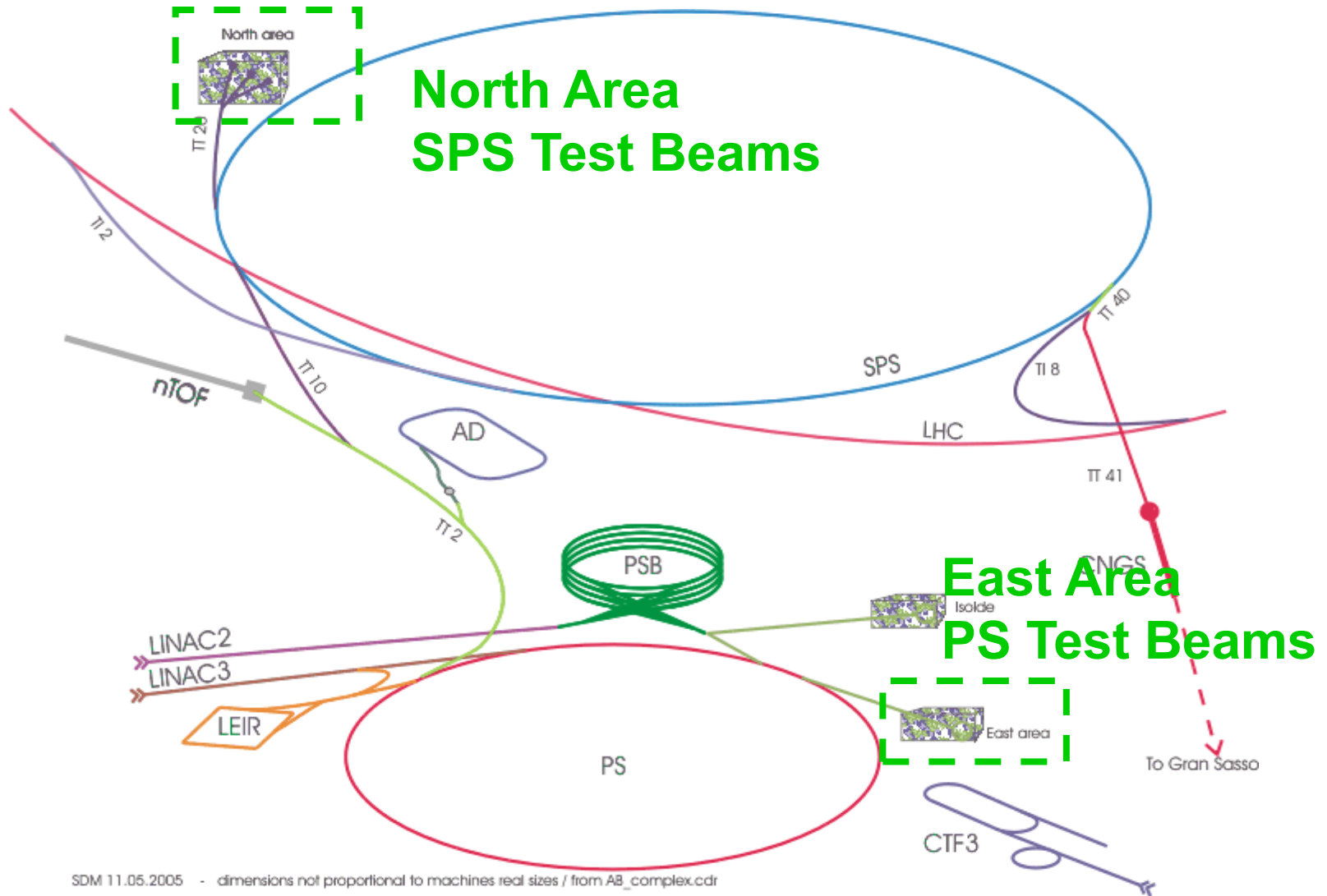
...and now



# CERN Test Beam Update and Schedule

- 2011 Users at PS Testbeams : ~ 20 Groups
- 2011 Users at SPS Testbeams : ~ 50 Groups
- 2011 Users at Irradiation Facility : ~ 15 Groups

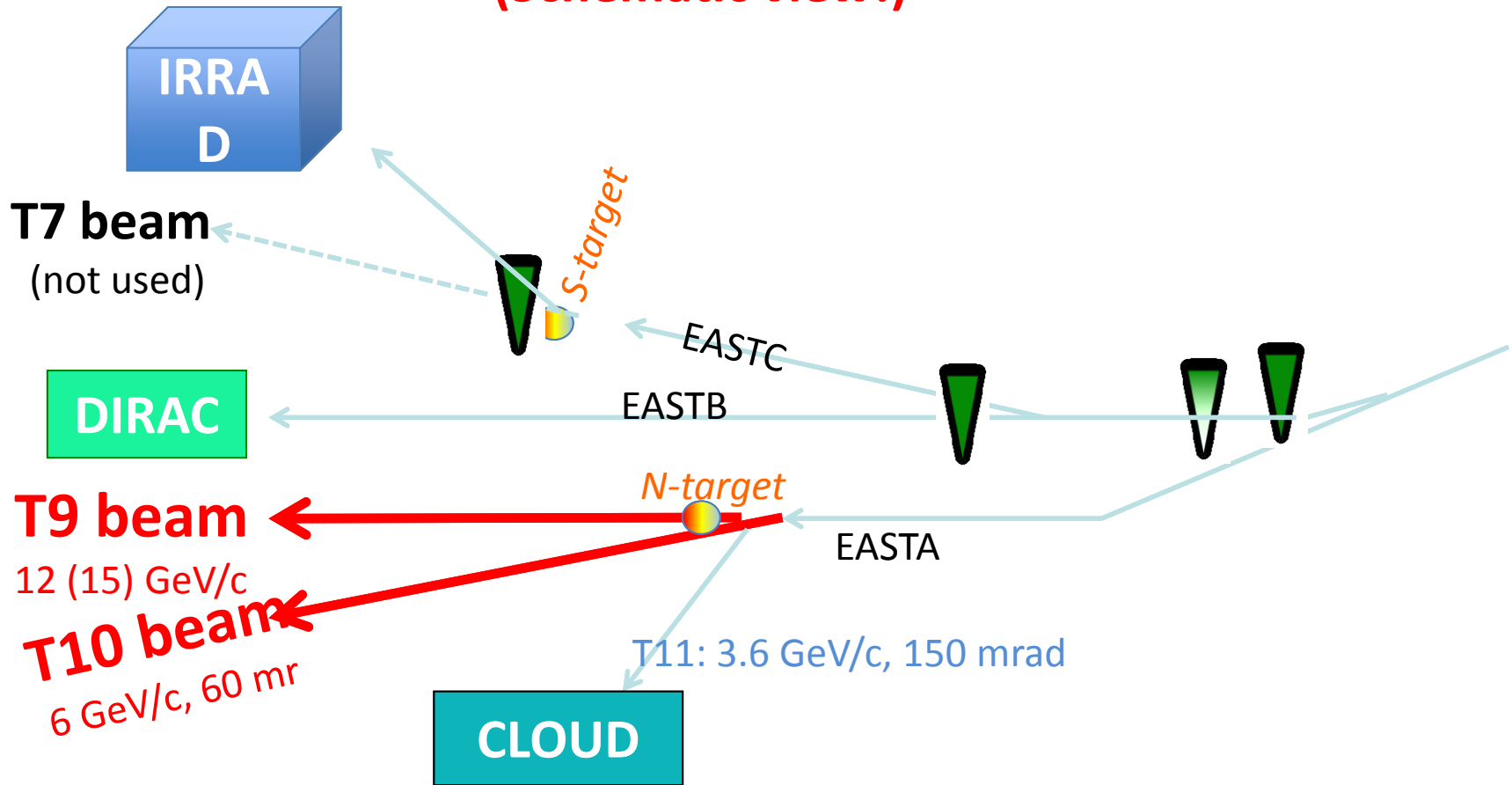
# Beam Facilities at CERN



SDM 11.05.2005 - dimensions not proportional to machines real sizes / from AB\_complex.cdr

# The East Area Beams

(Schematic view!)





Horst Breuker ALCPG11 22-03-11

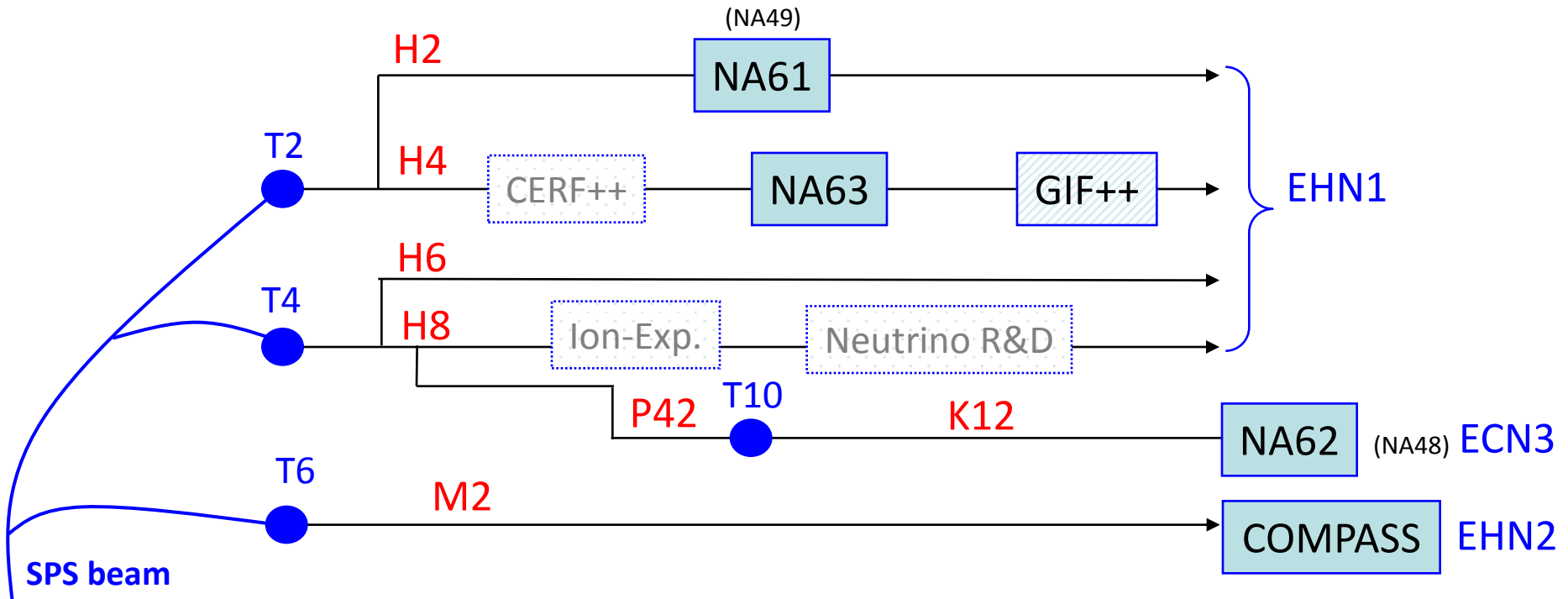
Line	Momentum range	Momentum resolution	Particles	Nominal Intensity ( *)	Intensity range (relative)	Remarks
T7	1-10 GeV/c ( $\pm$ )	0.4%	mixed	$0.3 - 1.0 \cdot 10^6$	$\sim 1.0 \cdot 10^{-3} - 5$	not used in 2011
T8	24 GeV/c	0.015%	protons	$5 - 20 \cdot 10^{10}$	from MCR	primary
T9	1-15 GeV/c ( $\pm$ )	0.6%	mixed	$0.3 - 1.0 \cdot 10^6$	$\sim 0.02 - 6$	
T10	1-7 GeV/c ( $\pm$ )	0.5%	mixed	$0.3 - 1.0 \cdot 10^6$	$\sim 0.02 - 4$	
T11	1-3.6 GeV/c ( $\pm$ )	$\sim 1\%$	mixed	$0.3 - 1.0 \cdot 10^6$	$\sim 0.02 - 5$	
Irrad1	24 GeV/c	0.015%	proton	$8 - 30 \cdot 10^{10}$	from MCR	primary
Irrad2	several MeV	unselected	neutrons			depends on T8

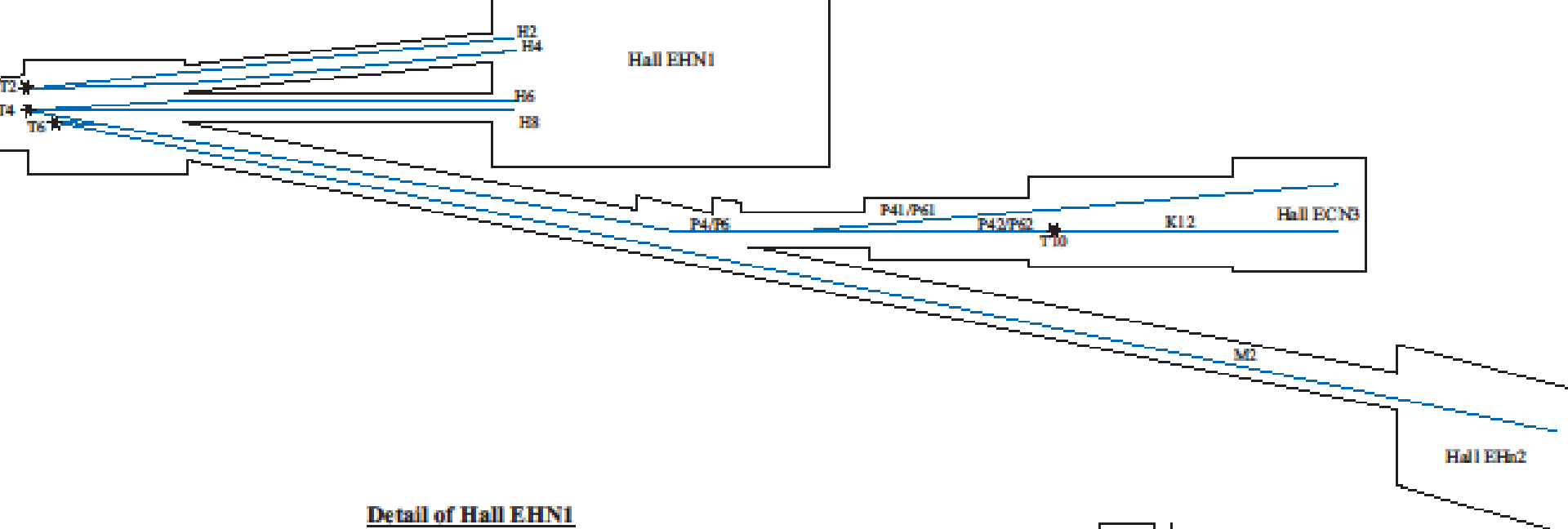
\*) Intensity is for 1% momentum bite, nominal target and  $2 \cdot 10^{11}$  ppp on target and intensity collimator(s) wide opened.

- Spill 400 ms (could be > 500 ms at 20 GeV/c)
- Some more intensity control exists for the primary beam (0.5-1.0) and via the target efficiency ( $\sim 0.02 - 1.0$ ).

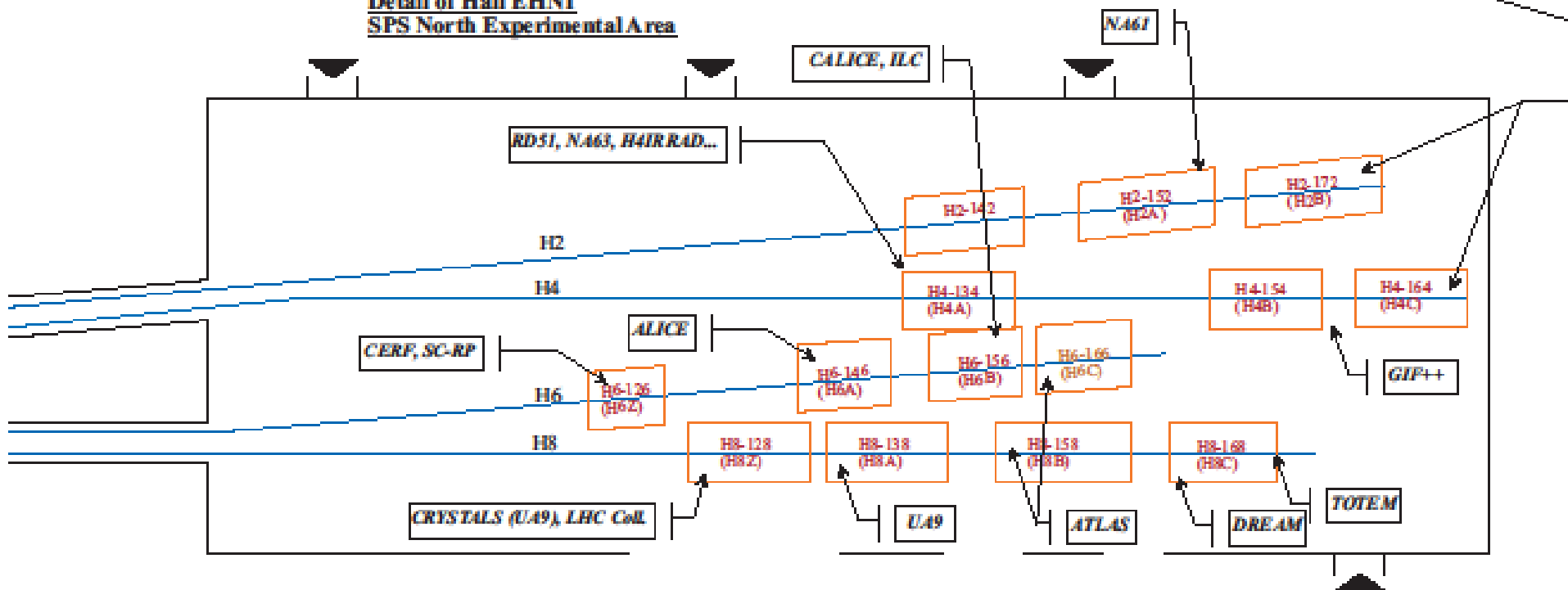
# The North Experimental Areas at the SPS

- The SPS proton beam (400 GeV/c) slowly extracted to North Area
- Directed towards the three North Area primary targets **T2**, **T4** and **T6**





**Detail of Hall EHN1  
SPS North Experimental Area**





# Performance of the EHN1 beams

Beam Line	$p_{\max}$ (GeV/c)	Intensity/pulse for $10^{12}$ ppp incident	Beam type
H2	400	$9 \cdot 10^7 \pi^+$ at 200 GeV/c $3 \cdot 10^7 \pi^-$ at 200 GeV/c $4 \cdot 10^6 e^\pm$ at 150 GeV/c $1 \cdot 10^5 \text{Pb}$ at 400 GeV/Z	High-energy hadron or electron beam for physics or tests *)  Heavy ion beam
H4	400	$9 \cdot 10^7 \pi^+$ at 200 GeV/c $3 \cdot 10^7 \pi^-$ at 200 GeV/c $4 \cdot 10^6 e^\pm$ at 150 GeV/c $> 10^7 p$ at 400 GeV/c $1 \cdot 10^5 \text{Pb}$ at 400 GeV/Z	High-energy hadron or electron beam for physics or tests,  Att. proton beam  Heavy ion beam
H6	200	$1 \cdot 10^8 \pi^+$ at 150 GeV/c $4 \cdot 10^7 \pi^-$ at 150 GeV/c	Medium energy hadron beam, also for tertiary test beams
H8	400	$1 \cdot 10^7 p$ at 400 GeV/c $2 \cdot 10^8 \pi^+$ at 200 GeV/c $7 \cdot 10^7 \pi^-$ at 200 GeV/c $1 \cdot 10^5 \text{Pb}$ at 400 GeV/Z	Att. proton beam High-energy hadron or electron beam for physics or tests, *) Heavy ion beam

# Performance of the EHN1 beams

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H4	400	9 $10^7$ $\pi^+$ at 200 GeV/c 3 $10^7$ $\pi^-$ at 200 GeV/c 4 $10^6$ $e^\pm$ at 150 GeV/c 1 $10^5$ Pb at 400 GeV/Z	High-energy hadron beam, also for tertiary test beams
H6	400	9 $10^7$ $\pi^+$ at 200 GeV/c 3 $10^7$ $\pi^-$ at 200 GeV/c 4 $10^6$ $e^\pm$ at 150 GeV/c 1 $10^5$ Pb at 400 GeV/Z	Att. proton beam High-energy hadron or electron beam for physics or tests, *) Heavy ion beam

A lot of people at CERN work hard to ensure excellent conditions for test beam users! E.g.

People: Liaison physicists for North Area (EHN1): I. Efthymiopoulos and E. Gschwendtner (H6), East Hall and EHN2, ECN3: L. Gaignon, CNGS: E. Gschwendtner - PH Division Safety Officer Ch. Griggs - CERN safety officers - PS/SPS coordinator: H. Breuker

# First PS User Schedule 2011

10	Irradiation 25		Irradiation 14 0		21	20	Irradiation 15	Irradiation 35		Irradiation 35		Irradiation 34						
10	DIRAC 25		DIRAC 0 35		DIRAC 35		DIRAC 35		DIRAC 35		DIRAC 34							
10	PERDaix 17	FACTOR 8	FACTOR 6	CryoBLM 80	15	CMS PLT 6	CMS PLT 6	PANDA 10	EMR 19	DFRAL_BKDG 10	25	13	COMPECAL 14	CMS PLT 7	13	CBM 7	FACTOR 14	IRCAL 14
10	ALICE TGEM 10	15	ALICE TOF 14	0	ALICE FARICH 15	ALICE TGEM 6	ALICE TGEM 9	ALICE TOF 14	ALICE PIDCCC 12	35	13	NA61 TB 14	ALICE TOF 8	ALICE TOF 6	ALICE PIDRICH 14	ALICE FOCAL 14		
	35		14 0		CLOUD 21		CLOUD 20		15	35	35	34						

# First SPS User Schedule 2011

	22	NA61 TR 10	0	CALICE SDHCAL 25		CMS PLT 10	CMS CALO 14	NA61 Protons 11	NA61-Protons 35	NA61 Protons 6	CMS SiBT 14	CREAM 9	CMS CALO 6	CMS CALO 10	NUCLEON 10	NA61 Ions+3weeks 14							
	H4IRRAD 22	CMS ECAL 10	H4IRRAD 0	ALICE 12	RD51 8	PHOTAG 9	H4IRRAD 11	CMS ECAL LHCb MMEGAS 9	RD51 6	NA63 Electrons 11	CALET 10	PANDA 7	SOIPIX 9	PEBS 12	FAIR 7	RD51 7	CMS ECAL 7	LHCf 7	14				
	SILC 7	NA62 STRAW 3	12	MONOPIX 9	ALICE SPD 0	CERF RD42 11	RD42 9	DEPFET RD42 8	AMMAGAS 12	ATLAS ALIBABA 7	ABCM RD42 7	AIDA TK 14	SILC ALFA APP 7	ATLAS BCM PPS 7	ATLAS ARICH 7	BELLE SuperB 7	ATLAS IBL 7	BELLE II SVD 7	MONOPIX 8	AMMAGAS 3	NA62 CEDARf GTK 10	MEDIPIX 7	14
	ATLAS IBL 22	LHCb ARPC 6	7	LHCb (CALICE) 0	16	COHERENT 6	TOTEM UA9 6	RD50 7	DREAM ARPC A3DSI 14	AMDT AsTGC 8	AMDT ARPC A3DSI 6	ARPC A3DSI 7	TOTEM UA9 7	UA9 8	CALICE 13	LHCb 16	CALICE 6	CALICE 13	DREAM 7	UA9 IONS 14			
	22	0	35				35		35				35			6	NA62 14			14			
	COMPASS 22	COMPASS 0	35				35		35				35			35		COMPASS 20		14			
CNGS 27	CNGS 35	CNGS 0	35				35		35				35			35		CNGS 34					

# Unofficial Schedule

- Information on 2011 schedule:
  - <http://spsschedule.web.cern.ch/SPSSchedule/pindex.html>
- Beams available (>2013 consulting crystal ball):
- **2011** : begin May to mid November
- **2012** : begin May to mid November
- **2013** : no beams at all at CERN
- **2014** : maybe PS beams restart
- **2015** : begin May to mid November