Physics requirements in the experimental areas in 2009 and beyond – Users requests and planning

- Users Schedule for 2009 for Testbeams and Fixed Target Experiments
- Beyond 2009 : Questionnaire sent to FT Experiments
- Ask for Requests independent of Status of Approval by the Research Board
- Expect better Knowledge after May 11/13 Workshop
- Number of Beam Requests is increasing !

2009

PS Experiments :

- DIRAC (T8)
- CLOUD (T11)
- nTOF (restart after 4 years)
- ATRAP, ASACUSA, ACE, ALPHA

PS Testbeams :

- Irradiation (T7) (expect 30 – 50 users)
- 17 Usergroups (T9 and T10)

27-Feb-2009

2009 PS Fixed Target Programme

Version 1.0

Colour code: green = PS/SPS-exp ; purple = LHC-exp ; dark blue = Outside exp ; yellow = not allocatable or Machine Development

		P1	P2	P3	P4	P5	P6
		35 30 Apr 4 Jun	35 4 Jun 9 Jul	35 9 Jul 13 Aug	35 13 Aug 17 Sep	35 17 Sep 22 Oct	32 22 Oct 23 Nov
T7	Setup 7	Irradiation 35	35	30	5	Irradiation 35	Irradiation 35	Irradiation 32
T8	Setup 7	DIRAC 35	DIRAC 35	DIRAC 35	DIRAC 35	DIRAC 35	DIRAC 32
T9	Setup 7	T2K-ECAL 35	T2K ECAL 14	CALICE RPC 17	4	2	COMPASS CALO 14	MICE EMR 14	AD3	5	AD3 TRACKER 12	ATLAS GOSSIP 13	10	10	NA62 16	VIPIX 9	NA62 15	PBES 17
T10	Setup 7	ALICE PMD 10	ALICE FARICH 10	CALICE MMEGAS 15	ALICE TOF 14	ALICE VHMPID 13	CMS BCM 8	ALICE TOF 15	RD51 CALICE 15	5	35	5	CALICE MMEGAS 15	ALICE VHMPID 7	ALICE TOF 8	ALICE TOF 7	ALICE HPTD 16	ALICE VHMPID 9
T11	Setup 7	35	18	CLOUD 17	CLOUD 36	34	CLOUD 35	CLOUD 32

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2009

SPS Experiments :

COMPASS (M2)
NA61 (SHINE) (H2)
NA62 (rare Kaon decay) (P0)
NA63 (crystal) (H4)
OPERA (CNGS)
ICARUS (CNGS)

SPS Testbeams :

33 Usergroups (H2, H4, H6, H8)

27-Feb-2009

2009 SPS Fixed Target Programme

Version 1.0

Colour code: green = SPS-exp ; purple = LHC-exp ; dark blue = Outside exp ; yellow = not allocatable or Machine Development

	P1	P2	P3	P4	P5	P6
	35 30 Apr 4 Jun	35 4 Jun 9 Jul	35 9 Jul 13 Aug	35 13 Aug 17 Sep	35 17 Sep 22 Oct	32 22 Oct 23 Nov
T2 -H2	EA 3 CMS CASTOR 12 CREAM 7 NA61 TR 5 2	CMS HCAL 8 WCALO 11 CMS Upgrade 10 CMS HCAL 4	CMS HCAL 10 7 NA61 18	NA61 35	NA61 11 CREAM 7 NA61 17	NA61 24 NUCLEON 8
T2 -H4	CERF 0 6 CMS ECAL 10 NA63 7 SITRD 7 SITRD 11 RD51 15 CMS ECAL 6	CMS ECAL 6 DREAM 16 CALICE RPC 7 CMSHAD CALO 6	COMPASS CALO 9 CALET 7 INSURAD 14 CMS ECAL 5	CMS ECAL 5 NA63 20 UA9 10	RD51 10 CMS ECAL 9 LHCf 13	
T4 -H6	EA 3 CMS BCM 7 MonoPix 7 3 ATLAS MMEGAS 7 ATLAS BCM 7 RD42 7 ATLAS Diamonds 7 ATLAS LUCID 14	ATLAS MMEGAS 8 EUDET 14 DEPFET 6 LCFI 7	Hytrign PILC 6 SiLC 12 ATLAS FP420 7 ATLAS Diamonds 8 2	ATLAS BCM 7 RD42 7 ATLAS LUCID 13 ATLAS FP420 8	ATLAS 3DSi-SBV 14 MonoPix 8 ATLAS MMEGAS 7 3	
T4 -H8	EA 3 ATLAS 3DSi 17 3 4 ATLAS TilCAL Upgrade 10 ATLAS Gossip 7 3 ATLAS MDT-Roma 13 2	ATLAS STRAW 13 3 UA9 12 ATLAS RP 7	ATLAS RP-MDT-MPI 13 3 AMS 19	AMS 28 3 RP 4 ATLAS RP 7 3 UA9 22		
T4 -P0	EA 3 8 NA62 16 28 NA62 7 NA62 7 28	35	30 NA62 5 NA62 10 22			
T6 -M2	EA 3 COMPASS 24	COMPASS 35	COMPASS 35	COMPASS 35	COMPASS 35	COMPASS 32
CNGS	EA 3 CNGS 24	CNGS 35	CNGS 35	CNGS 35	CNGS 35	CNGS 32

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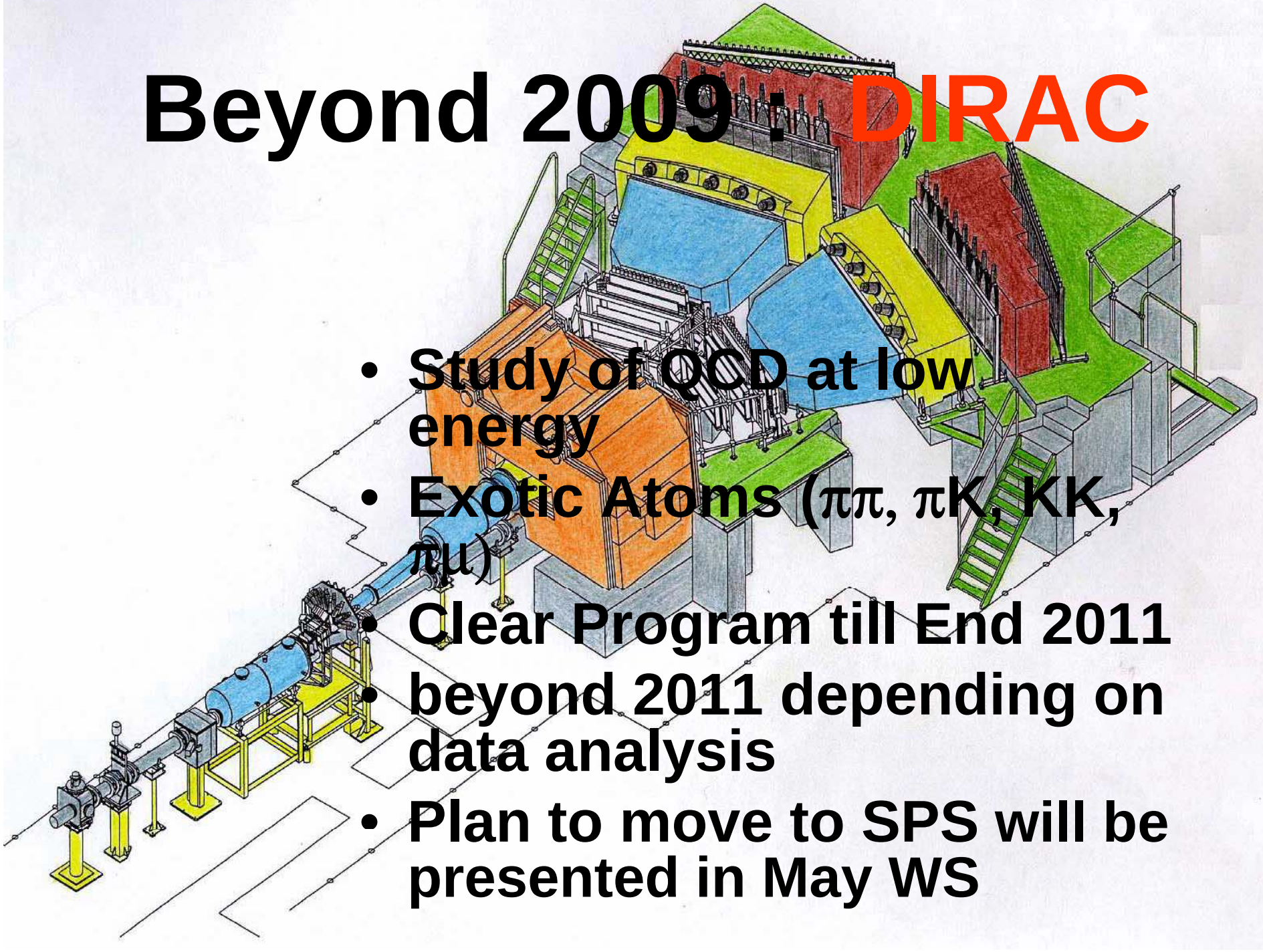
Comments:

- H4: CMS-Ecal asked for more time...

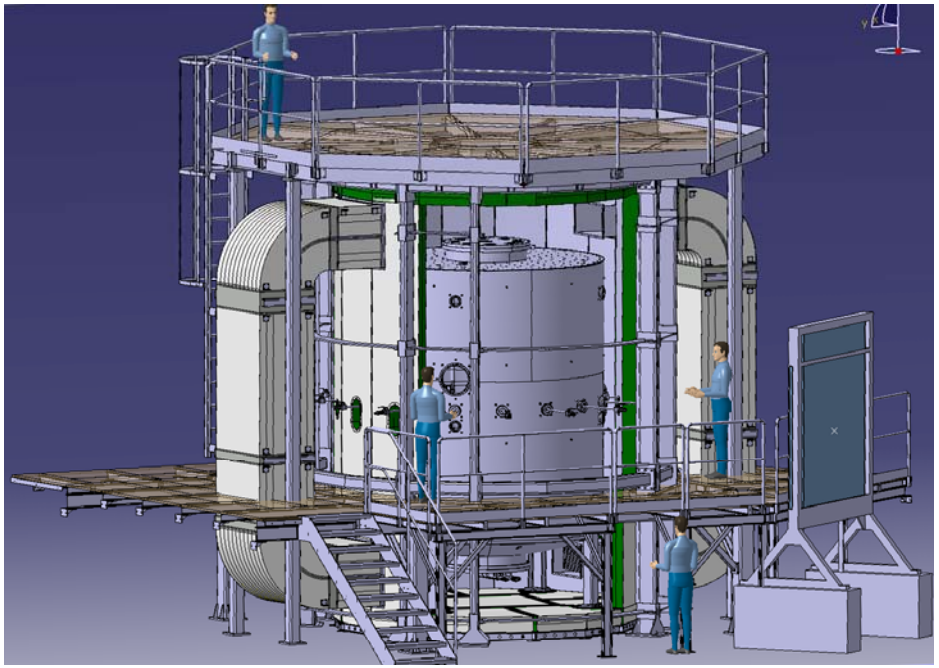
Beyond 2009 : DIRAC



- Study of QCD at low energy
- Exotic Atoms ($\pi\pi$, πK, KK, $\pi\mu$)
- Clear Program till End 2011
- beyond 2011 depending on data analysis
- Plan to move to SPS will be presented in May WS

Beyond 2009 : CLOUD

- Study influence on Climate by Cosmic Rays
- Start-Up this year; then proceed with Mark II and Mark III
- Clear plan to run till end 2014



Beyond 2009 : nTOF

- n_TOF – Ph2 Proposal 2005, Restart in 2009
- 4 Requests were approved (Resources, Safety ?)
- Target Commissioning and Beam Caracterization

  0.245 x 10^19 Protons (2009)
- Fe + Ni Nucleosynthesis (Early Universe, Nuclear Tech.)

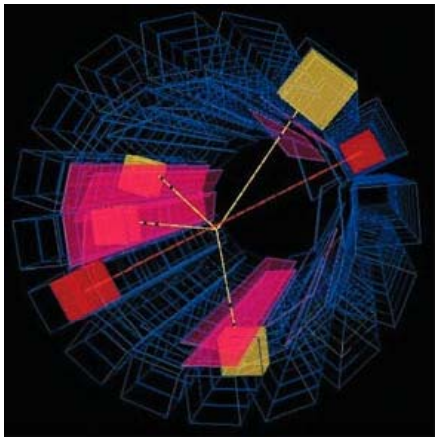
  1.8 x 10^19 Protons (2009) nTOF13
- Neutron Neutron Interaction

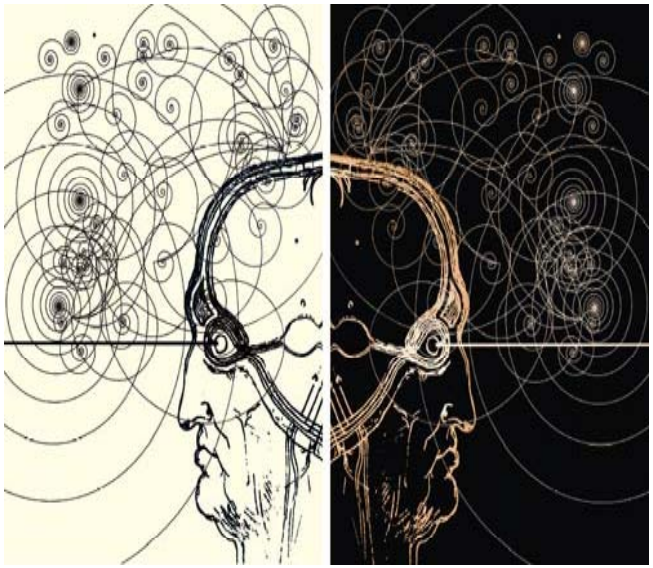
  0.2 x 10^19 Protons (on hold)
- Angular Distribution of n induced Fission of Actinides

  0.15 x 10^19 Protons nTOF14

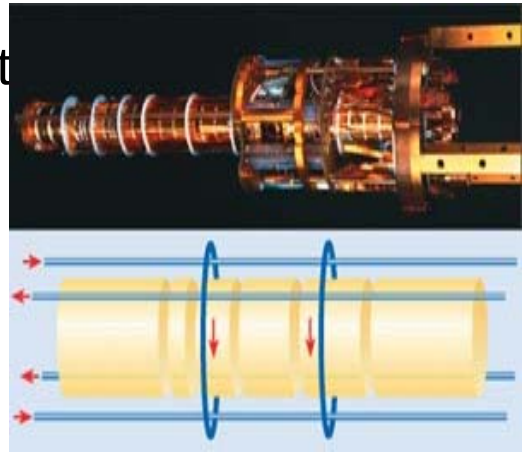
Discussion on what can be achieved is ongoing !

Beyond 2009 : Antiproton Program at AD





- RB Minutes 186 th Meeting 5-12-2008 :
- Clear end-point of program in 2017
- New Exp. AEGIS approved as AD-6 (grav. const
- Subtract time for ACE (2 weeks / year) and split equally among the other experiments
- Antihydrogen Spectroscopy + many other topics
- will take about 5 years
- Remember : antiprotonic helium spectroscopy took about 15 years (ASACUSA)



Beyond 2009 : COMPASS

Program :

this year : mainly Hadrons + ~ 6 weeks high Intensity Muons

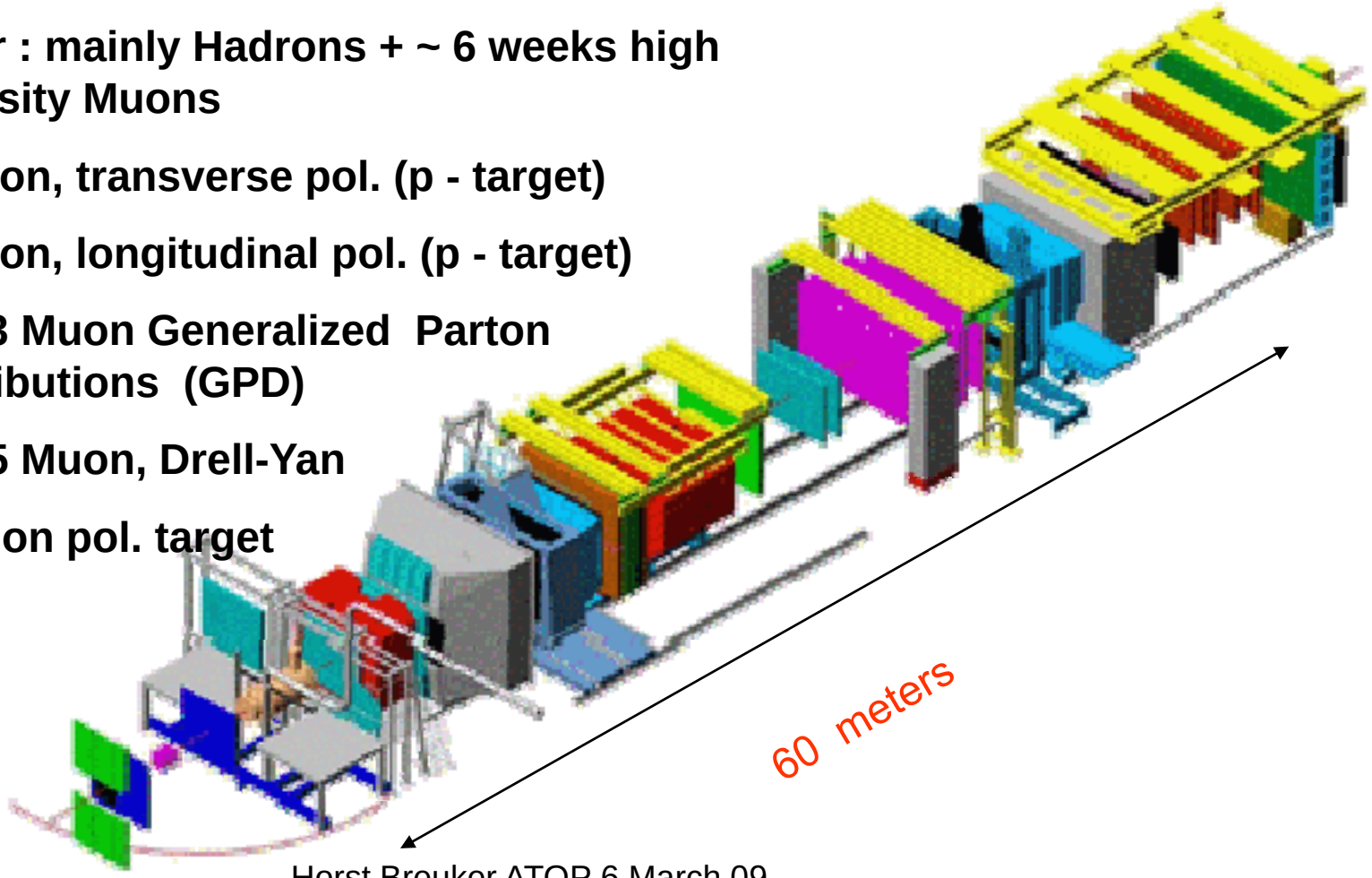
2010 Muon, transverse pol. (p - target)

2011 Muon, longitudinal pol. (p - target)

2012 / 13 Muon Generalized Parton Distributions (GPD)

2014 / 15 Muon, Drell-Yan

on pol. target



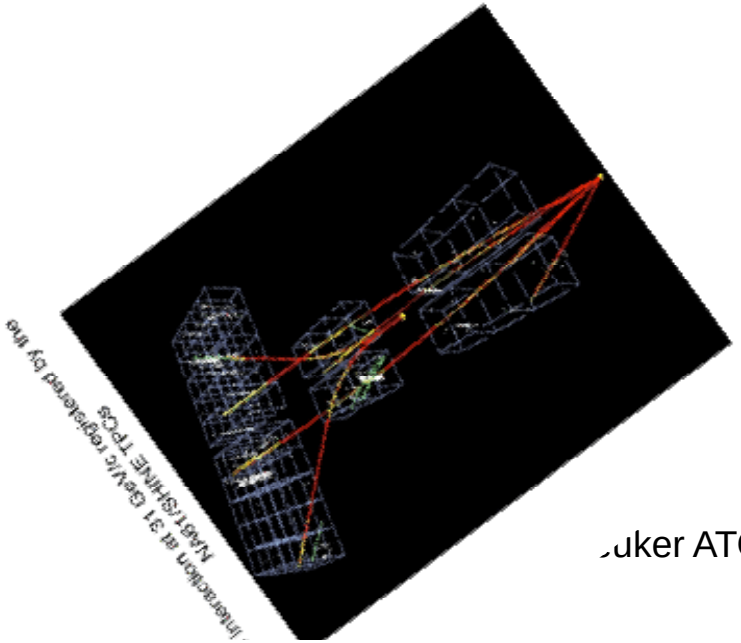
Beyond 2009 NA61 SHINE

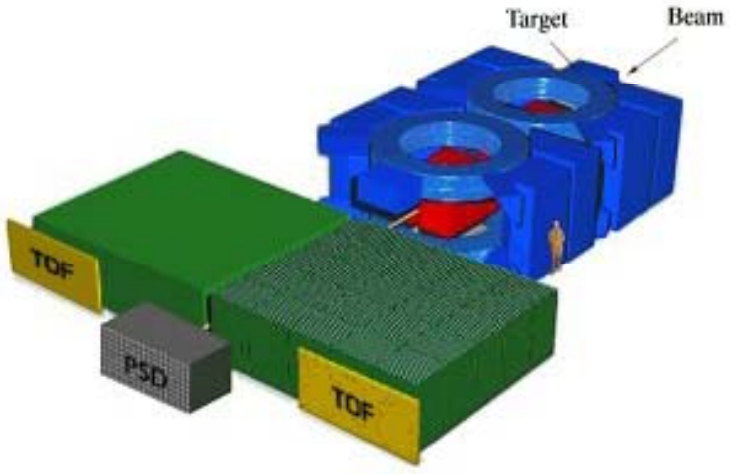
- SPS Heavy Ion and Neutrino Exp.

(study how to create fragmented Ions from Pb Target Int.)

- Study Onset of Deconfinement (-> QGP)
- Study Feasibility of Ion Beams (+ Sensitivity of Exp.)

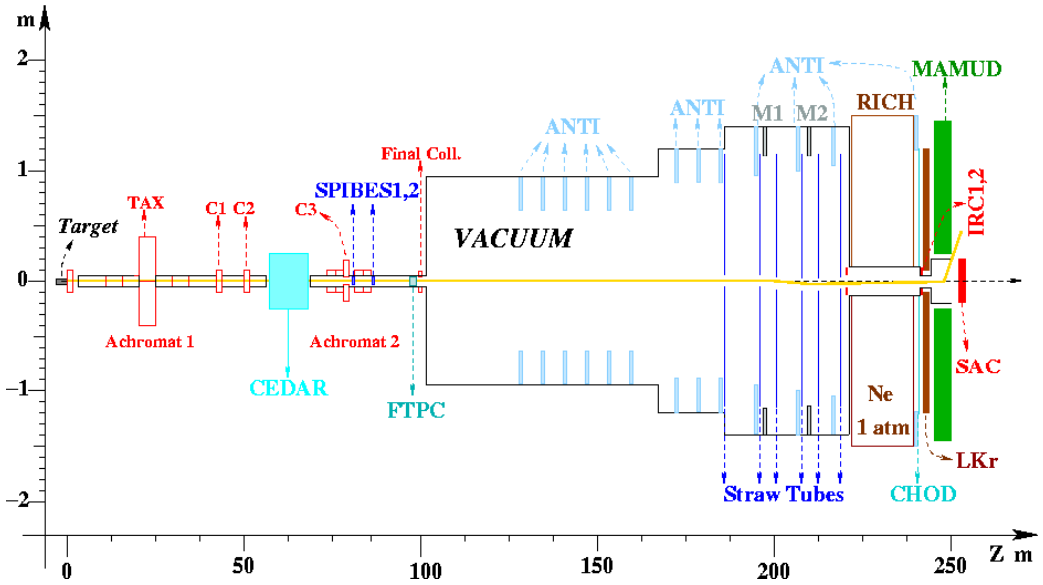
  π, p, Calcium, Sulphur, Indium Beams, various Targets
- 2009 – 2013 p p, p Pb, Nucleus Nucleus (start 2012 ?)





Beyond 2009 NA62

- Rare Kaon Decays as Test of Standard Model (complementary to LHC) K+ -> π+ ν ν(bar)
- Approved 2007, now RD and Construction, Physics from ~ 2012 onwards
- Need 2 years to achieve Signal/BG of 10 : 1



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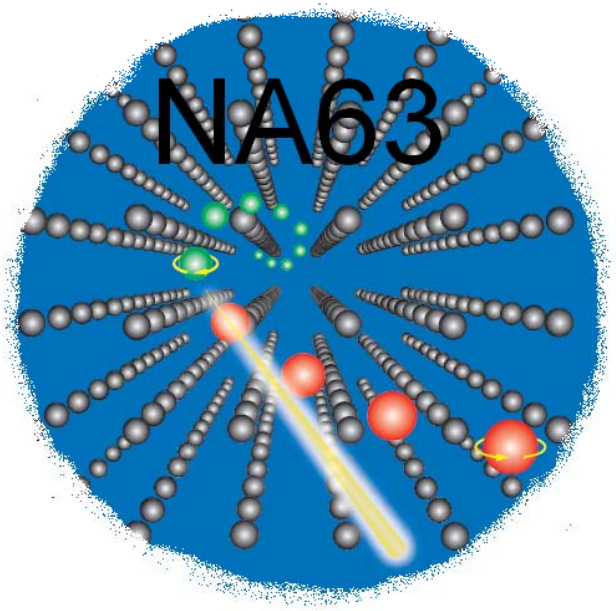
Beyond 2009



- **pi-zero lifetime (Primakoff)**
- **4 weeks / year over 3 years**
- **positron production from diamond crystals**
- **2 weeks (2010 and 2011)**
- **with 160 GeV/u Pb Ion Beam**
- **Bremsstrahlung Spectra from Heavy Nuclei (beyond 2012)**

Beyond 2009 :

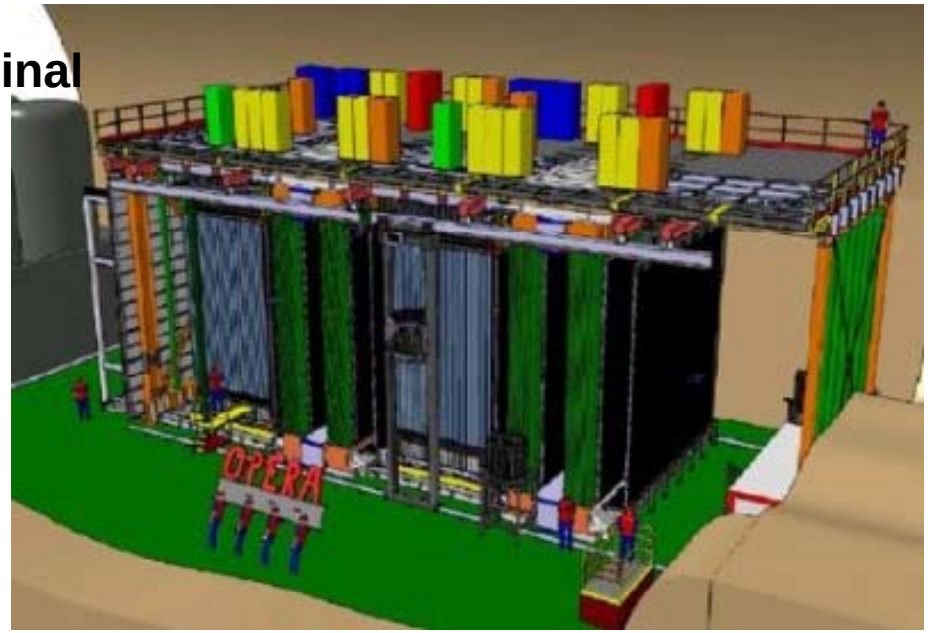
Approved on basis of proposal :

4.5 x 10^19 pot x 5 years;

2008 run was success with 1.8 x 10^19 pot;

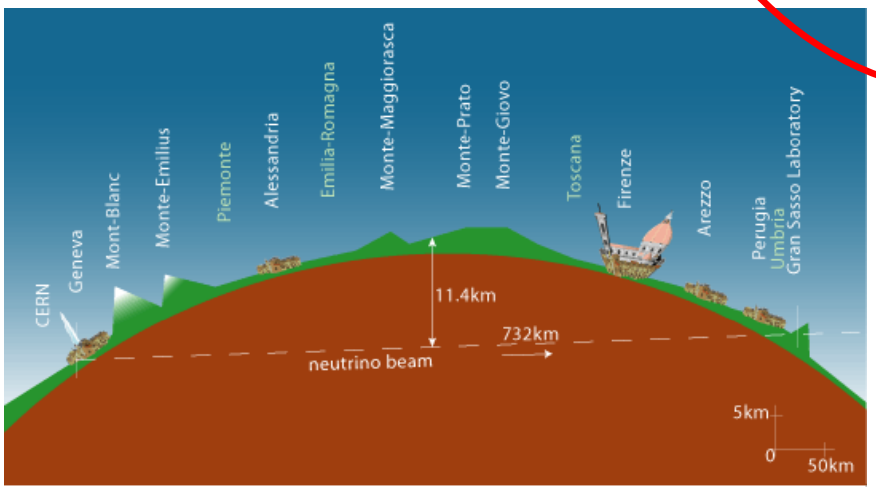
Minimum is to run up to End 2011

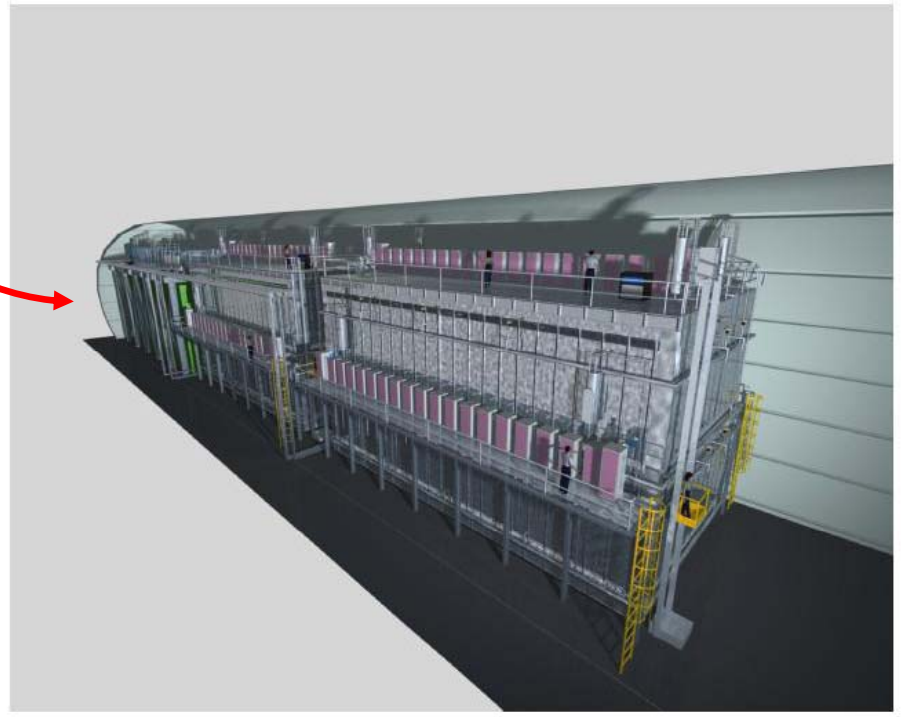
Strong Request to provide Nominal integrated Intensity / year



Beyond 2009 :

Picture shows the proposed 3000 ton Detector;
Run this year with 600 ton Section





Conclusions

- We have an established Program up to about 2015
- We will learn more at the May 11 / 13 Workshop “New Opportunities in the Physics Landscape at CERN”