

Technical Board Meeting:

News, communications &
planning



November 7, 2017



Caroline Riedl



Communications

- Excused today: Franco, (Marcin)
- **TB composition:**
 - Confirmation of existing members
 - New member after retirement of Andrea Ferrero from TB
 - Available candidates known to the TC at this moment: Stephane Platchkov
- **Next TB meeting:** December 4, 2017 (*exceptionally Monday*)
Proposed agenda:
 - Short status report on changeover
 - Upgrades and new detectors beyond 2020, including
 - Report from DAQ++ workshop November 9/10 in Prague (organized by Igor)
- **TB meetings 2018, proposal**
(next page)

2018 TB meetings (proposal)

2018 Calendar

January		February		March		April		May		June		July		August		September		October		November		December	
1	Mo		1	Th		1	Th		1	Su		1	Fr		1	We		1	Mo		1	Th	
2	Tu		2	Fr		2	Fr		2	Mo		2	Sa		2	Th		2	Tu		2	Fr	
3	We		3	Sa		3	Sa		3	Tu	TB	3	Th		3	Fr		3	We		3	Sa	
4	Th		4	Su		4	Su		4	We		4	Fr		4	Mo		4	Tu	TB	4	Th	
5	Fr		5	Mo		5	Mo		5	Th		5	Tu	TB	5	Th		5	We		5	Fr	
6	Sa		6	Tu		6	Tu	DPG	6	Fr		6	We		6	Mo		6	Th		6	Sa	TB
7	Su		7	We		7	We	+	7	Sa		7	Mo		7	Tu	SPSC	7	Fr		7	Su	
8	Mo		8	Th		8	Th	APS	8	Su		8	Tu		8	Fr		8	Mo		8	Th	
9	Tu		9	Fr		9	Fr		9	Mo		9	We		9	Sa		9	Tu		9	Fr	
10	We		10	Sa		10	Sa		10	Tu	TB	10	Th		10	Su	Meson	10	Mo		10	Sa	
11	Th		11	Su		11	Su		11	We		11	Fr		11	Mo		11	Tu		11	Su	
12	Fr		12	Mo		12	Mo		12	Th		12	Tu		12	Fr		12	We		12	Mo	
13	Sa		13	Tu	TB	13	Tu		13	Fr		13	Mo		13	We		13	Th		13	Tu	
14	Su		14	We		14	We		14	Sa		14	Mo		14	Th		14	Fr		14	Su	
15	Mo		15	Th		15	Th		15	Su		15	Tu		15	Fr		15	We		15	Sa	
16	Tu		16	Fr		16	Fr		16	Mo		16	We		16	Sa		16	Mo		16	Tu	SPSC
17	We		17	Sa		17	Sa		17	Tu	DIS	17	Th		17	Su		17	Tu		17	Mo	
18	Th		18	Su		18	Su		18	We		18	Fr		18	Mo		18	We		18	Th	
19	Fr		19	Mo		19	Mo		19	Th	SPSC	19	Sa		19	Tu		19	Th		19	Su	
20	Sa		20	Tu	TB	20	Tu		20	Fr		20	Mo		20	We		20	Fr		20	Mo	
21	Su		21	We		21	We	IWHSS	21	Sa		21	Mo		21	Th		21	Fr		21	Su	
22	Mo		22	Th		22	Th		22	Su		22	Tu		22	Fr		22	Sa		22	Mo	
23	Tu	SPSC	23	Fr		23	Fr		23	Mo		23	We		23	Sa		23	Mo		23	Tu	
24	We		24	Sa		24	Sa		24	Tu		24	Th		24	Su		24	Mo		24	We	
25	Th		25	Su		25	Su		25	We		25	Fr		25	Mo		25	Tu		25	Th	
26	Fr		26	Mo		26	Mo		26	Th		26	Tu		26	We		26	Fr		26	Mo	
27	Sa		27	Tu		27	Tu		27	Fr		27	Mo		27	Th		27	Sa		27	Tu	
28	Su		28	We		28	We		28	Sa		28	Mo		28	Th		28	Fr		28	Su	
29	Mo		29	Th		29	Th		29	Su		29	Tu		29	Fr		29	Mo		29	Th	
30	Tu		30	Fr		30	Fr		30	Mo		30	We		30	Sa		30	Tu		30	Fr	
31	We		31	Sa		31	Sa		31	Th		31	Mo		31	Th		31	We		31	Fr	

	CM
	AM
	SPSC
	conference
	holiday

Proposals TB meetings 2018:

February 13 or 20

April 3 or 10

June 5

September 4

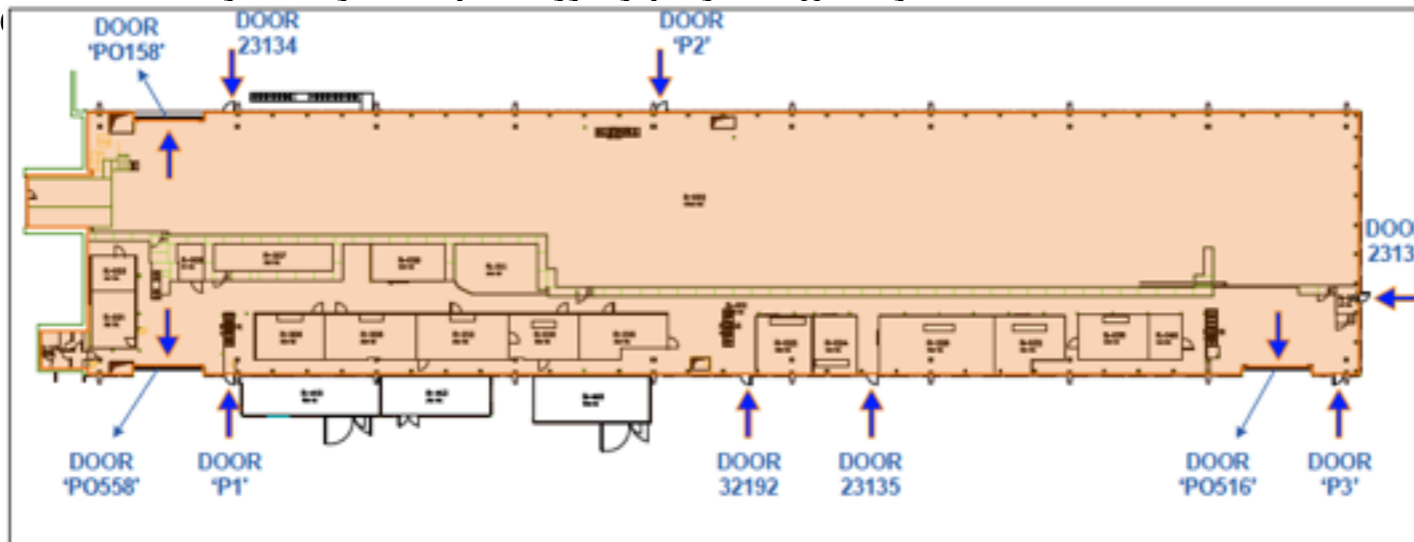
November 6

Easter: March 30 - April 2

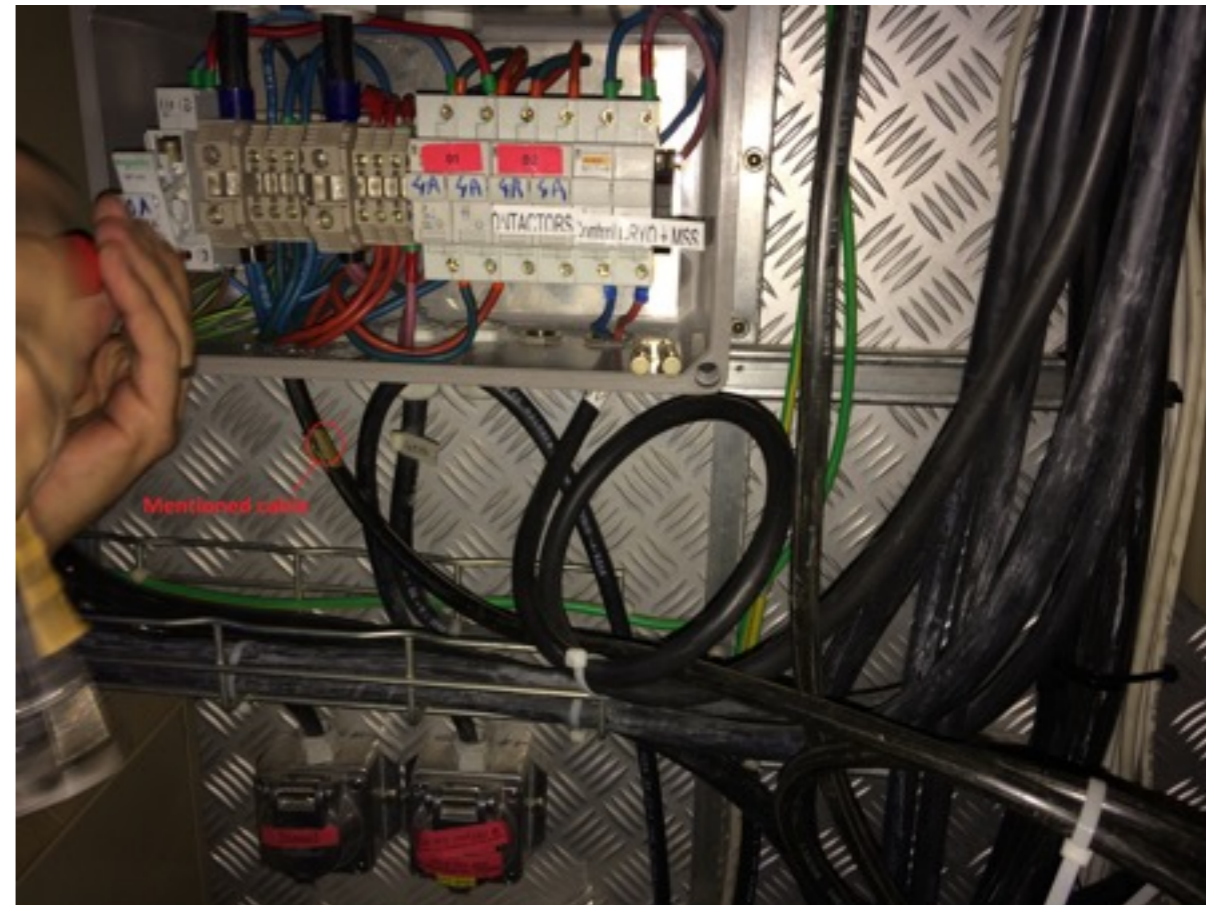
Pentecost: May 20/21

News from EHN2 (I)

- **SUSI access system:** no official news, but it seems th



- **Mobile phone coverage in 888:** additional cable will be pulled beginning of 2018...
- **3 polarized-target AULs:** tests by EN-EL on Oct 25 failed at first try because a cable from the silicon cooling PLC rack was connected to their system and caused the coils of their breakers to not operate.
 - Extremely high risk!
 - General rule: 48 V DC is not supplied to CERN users at CERN. EN-EL uses it as auxiliary power source related to safety equipment such as an AUG, AUL, Escape lighting etc.



News from EHN2 (II)

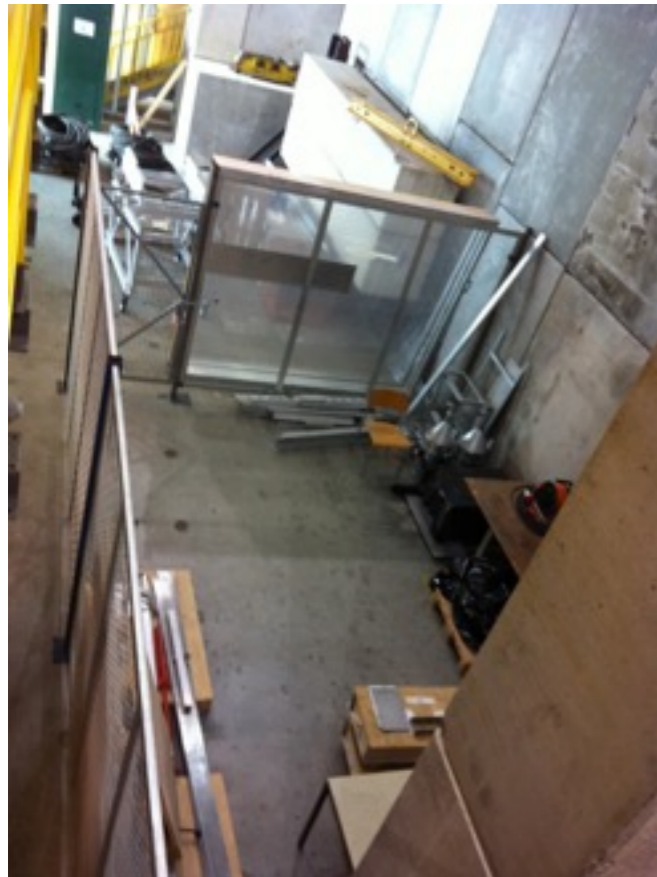
- **Water leak** September 30, fire brigade called.
- Pump fitting had gotten bad. At around this time, CERN heating was turned on. Pump had been noisy already in spring.
- Waiting for spare part (Bill Banister EN-CV-INJ), ordered



- **SM2:** with new 2017 power converter, multiple malfunctions during the 2017 run. SM2 did not ramp up again after our regular polarity switches (μ^+ / μ^-). Piquet had to be called each time.
- After intervention by CERN, no incidents since September 29. Report by Yves Gaillard (TE-EPC) at October 17 EATM https://indico.cern.ch/event/672201/contributions/2749837/attachments/1541885/2418444/EATM_17-10-2017_SM2_teething_problems.pdf :
 - The **polarity switch was not moving** without a FGC local reset by First Line team. Bad cabling of the OFF command within the MCB cubicle found and repaired.
 - The **power converter tripped** randomly with MCB Wrong Status Fault. This glitch was due to an transient opening of the water pressure sensor of the filter chokes. This contact opening was caused by the strong vibrations of the chokes.
- Tests for 4800A → 2018 (instead of 4000A → 2017): week of Nov. 27

New storage area close to 888

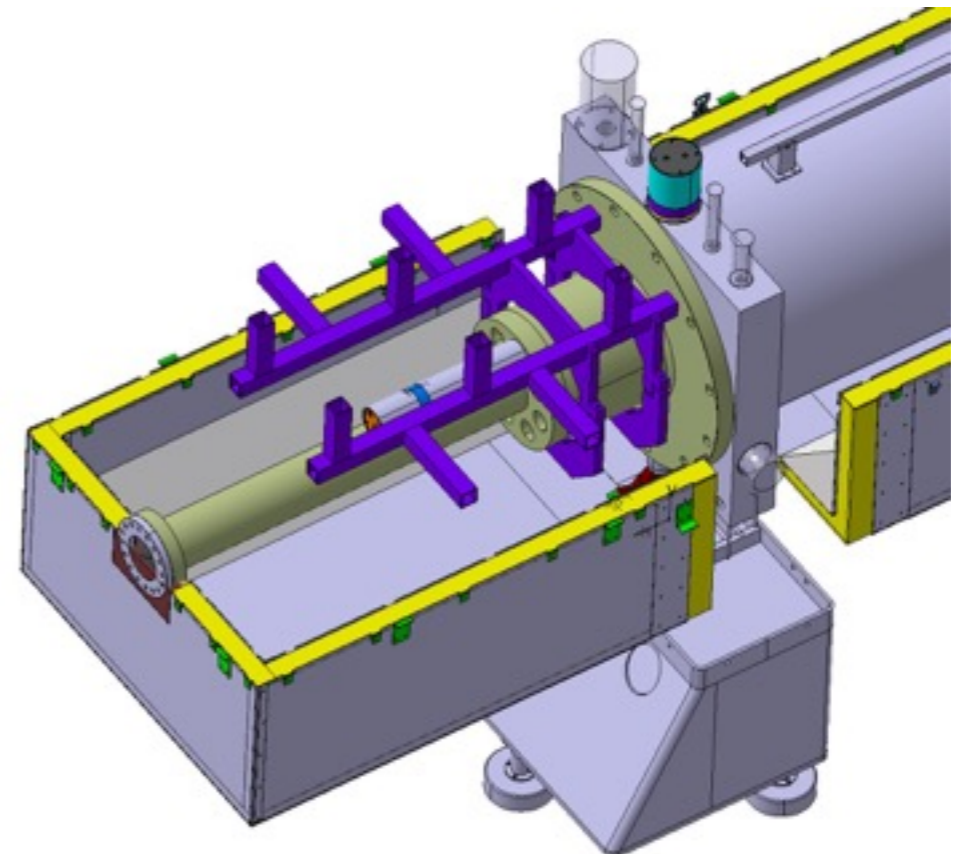
- Johannes has identified suitable company, getting cost estimates:
<http://www.locabri.com/en/modular-constructions/helping-you-choose>
- For a longer term storage for larger detectors, some costs might be involved for the group owning the equipment.
- He asks us to send our requests: what do you want to store, and how large is it?



- So far received:
 - Marcin Z.: FI55
 - Daniele: MWPCs & RW, 40-50m²
 - Illinois: DC5 boxes and auxiliary frames
 - **There must be more interested groups?**
- **A new radio protection buffer zone in 888 is planned before LS2.**
- Used to measure materials coming from the experimental area and the beam line tunnel before being transported out of 888.
- Some area has to be reserved, ECal0 cage is a popular candidate.

CEDAR update (for Marcin)

- Few minor updates since last TB meeting:
 - Mechanical design fixed
 - Optical system design in progress (Robert)
 - 2 Hamamatsu R11263-203 PMTs delivered to Wen-Chen & shipped to Warsaw.
Purpose: characterization.
- Planning meeting October 4 to detail schedule.
 - Serge Mathot from EN-MME-DI about thermal stabilization.
 - 2 new chillers to be purchased, 20k from COMPASS Czech group, remainder from CERN.
- Design of support for new thermal housing (Serge):



CEDAR planning as of early October (Marcin)

Task No.	Task name	Responsible Institution	Responsible Person	Scope	Needed input	Depends on task no.	Estimated duration	Estimated completion date
1	Discriminator development	WUT		Develop a 32-channel discriminator with programmable threshold and pulse width. Need to decide on threshold control.	Signal format for TDC, pulse requirements for TDC, desired transmission medium from PMT and to the TDC, datasheet of NINO chip, evaluation boards	2	3 months	12/31/17
2	PMT characterization	WUT		Test gain and TTS. Optimize HV divider to get best possible TTS and lowest gain fluctuation wrt. pulse rate changes.	PMTs from Hamamatsu		2-4 weeks	11/14/17
3	Design of PMT mounting			Design mechanical elements needed to properly support new PMT and associated electronics inside current ferrules.	PMT dimensions, desired Z-position of PMTs, mechanical outline of HV divider and amplifier boards. Decision on how we implement cooling	3,6,12		
4	Manufacturing of elements for PMT mounting			Manufacturing of mechanical parts	Design drawings ready	3		
5	Assembly of PMT housing			Replace old PMTs with the new ones, test that all is working fine (see signals, gain monitoring OK)		2,4,7,9		
6	Simulations of PMT optics			Determine optimum Z-position of the PMT to minimize effect of collection dip at channel boundaries.	XY scan of photocathode uniformity and collection efficiency	2		
7	Development of HV dividers	WUT		Design and manufacture boards with active HV dividers for the new PMTs.	Results of PMT characterization (HV divider studies)	2	1 month	12/15/17
8	Development of TDC	Munich		Modify current FPGA-based TDC for smaller time bin, characterize performance.	???			
9	Manufacturing of TDC	Munich		Make new boards	???	9		
10	Optical system for PMT gain monitoring	WUT		Design and test light delivery system for PMT gain monitoring. Determine optimum light pulse amplitude.			1 month	11/30/17
11	Studies related to readout of gain monitoring system	WUT		Determine optimum shaping and number of thresholds for estimation of amplitude of PMT response to the monitoring light pulses.	PMT characterization (gain at certain light level)	2	2-4 weeks	10/31/17
12	Thermal system design	CERN		Full design of new thermal system	???			
13	Thermal system - other activities	CERN		All other activities related to implementation of new thermal system	???	12		
14	Installation of extra equipment and cabling.			Installation of additional equipment and cabling in the beam area that may be needed to operate modified detectors.				
15	Disassembly of CEDAR 1			Disassembly of CEDAR 1 in clean room, dismantling of all necessary elements, preparation for installation of modified equipment.				
16	Assembly of CEDAR 1			Installation of modified equipment in CEDAR 1	Disassembled CEDAR 1			
17	Commissioning of CEDAR 1			Checks in clean room	Modified CEDAR 1			
18	Disassembly of CEDAR 2			Disassembly of CEDAR 2 in clean room, dismantling of all necessary elements, preparation for installation of modified equipment.				
19	Assembly of CEDAR 2			Installation of modified equipment in CEDAR 2	Disassembled CEDAR 2			
20	Commissioning of CEDAR 2			Checks in clean room	Modified CEDAR 2			
21	Integration with COMPASS slow control			Integration of discriminator control, thermal system and anything else into COMPASS slow control				
22	Integration with COMPASS DAQ			Integration of readout with COMPASS DAQ				
23	Tests with beam / initial data taking			Final commissioning	Everything ready			

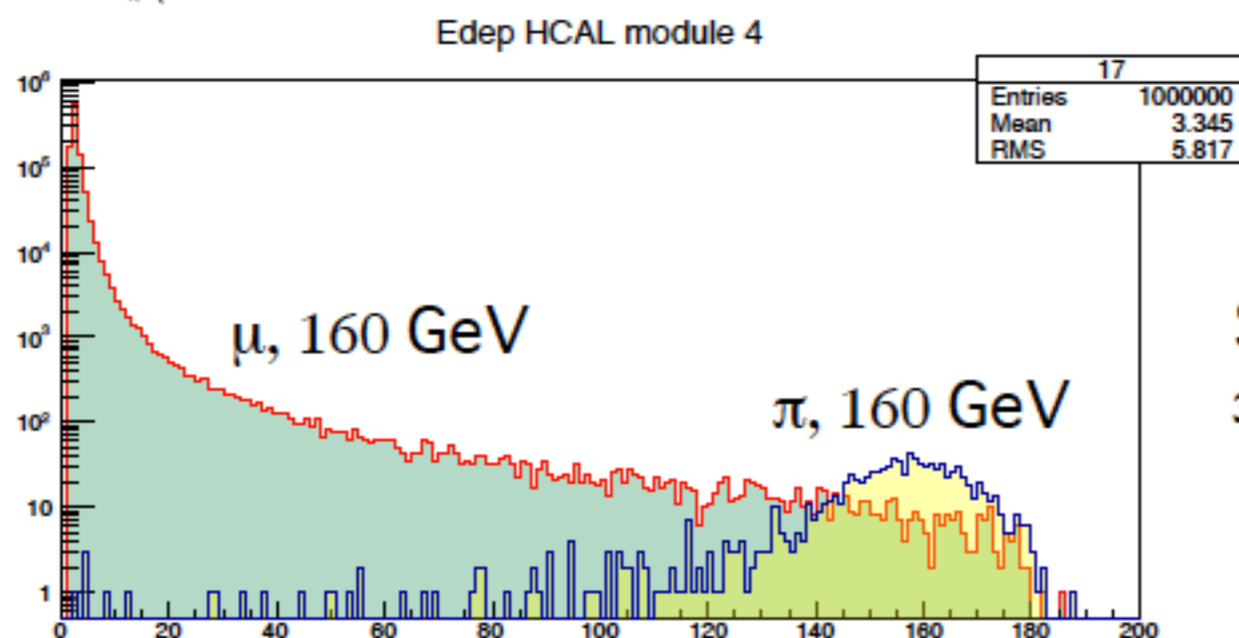
NA64 beam test Oct 21/22: pion contamination in M2 muon beam

NA64

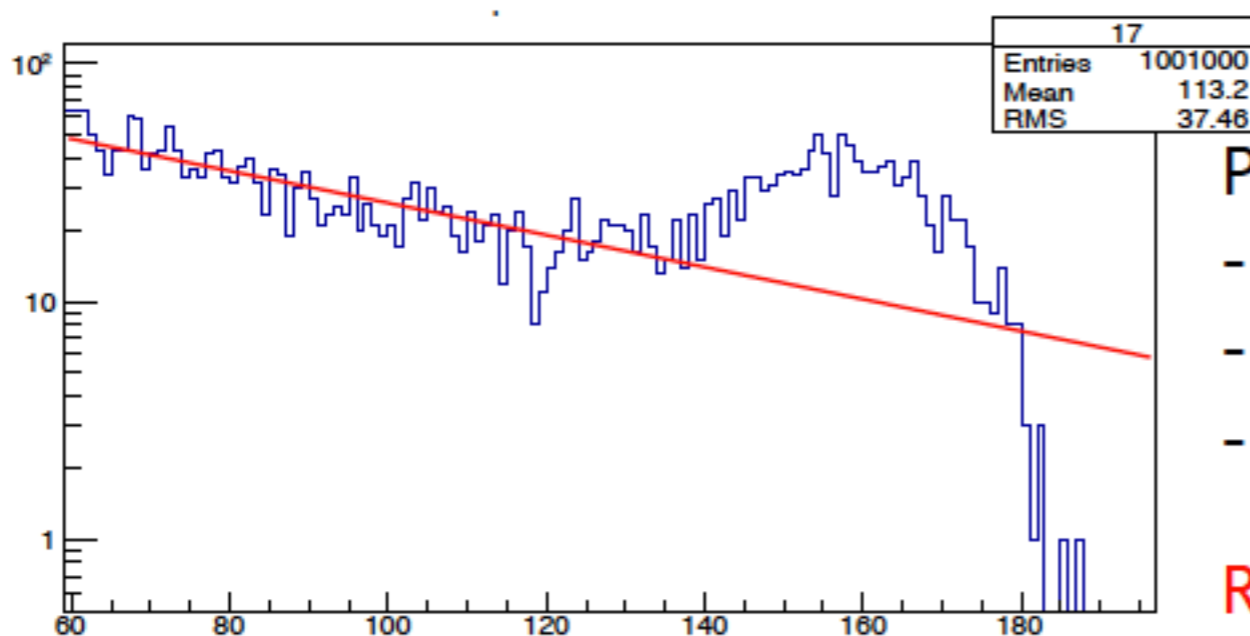


NA64 is designed to search for new, in particular Dark Sector physics in missing energy events. Broad research program with e^- , μ , π , K , and p beams at SPC (PBC'16/17)

see talk by S.N. Gninenko (INR, Moscow) at COMPASS weekly meeting Oct 20, 2017



Sensitivity (rough) estimate:
 $\pi/\mu \sim 6 \times 10^{-6} / (n_{\text{MOT}}/10^6)^{0.5}$



Plan:

- To empty H target
- Calibrate HCAL, π , 160 GeV
- Accumulate $\sim 5 \times 10^8$ MOT

Request: $\sim 1.5-2$ d for test

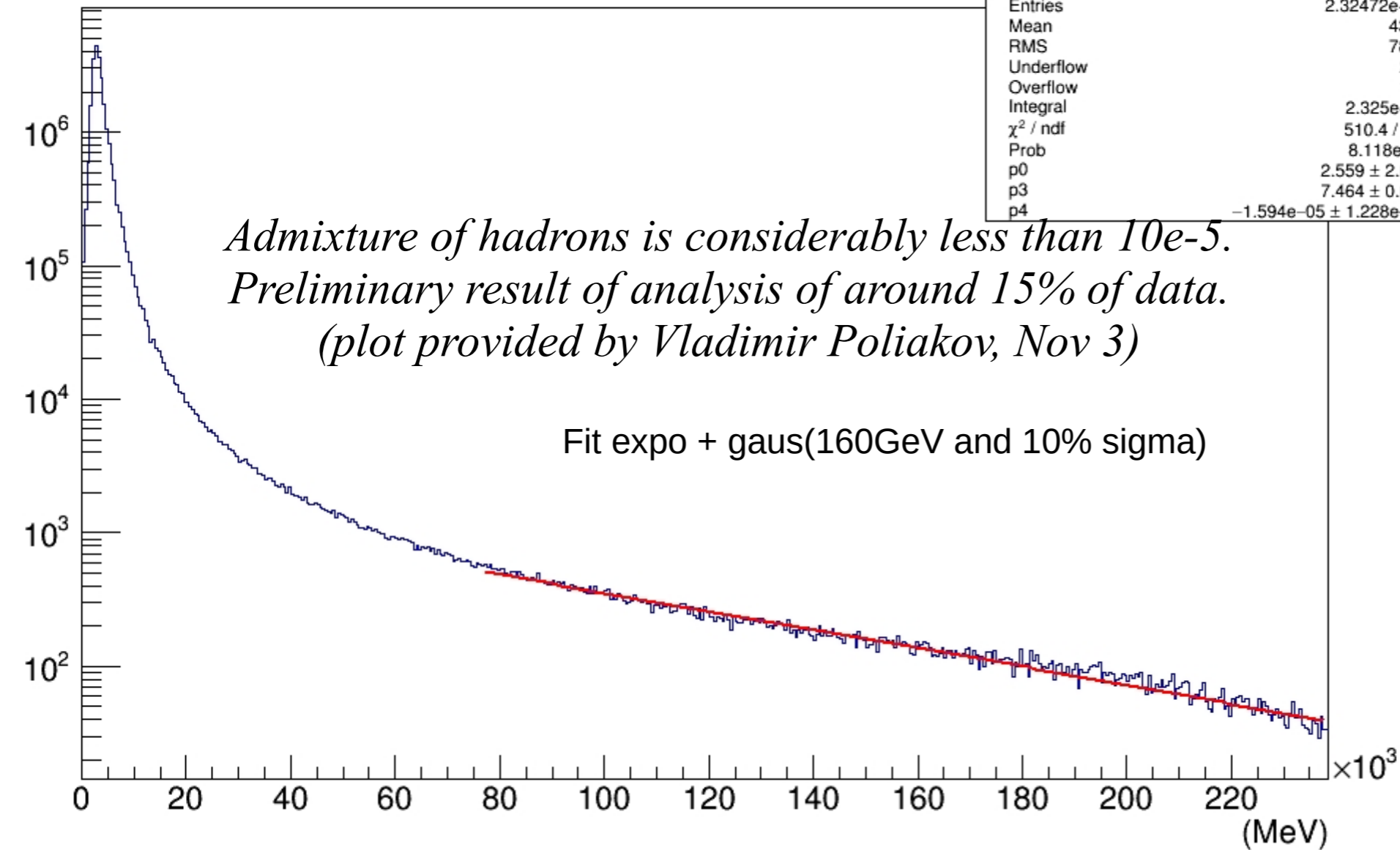
NA64 beam test Oct 21/22: pion contamination in M2 muon beam

SUM Energy for sel.chn

selEnergy	
Entries	2.32472e+07
Mean	4338
RMS	7832
Underflow	289
Overflow	182
Integral	2.325e+07
χ^2 / ndf	510.4 / 321
Prob	8.118e-11
p0	2.559 ± 2.068
p3	7.464 ± 0.015
p4	$-1.594e-05 \pm 1.228e-07$

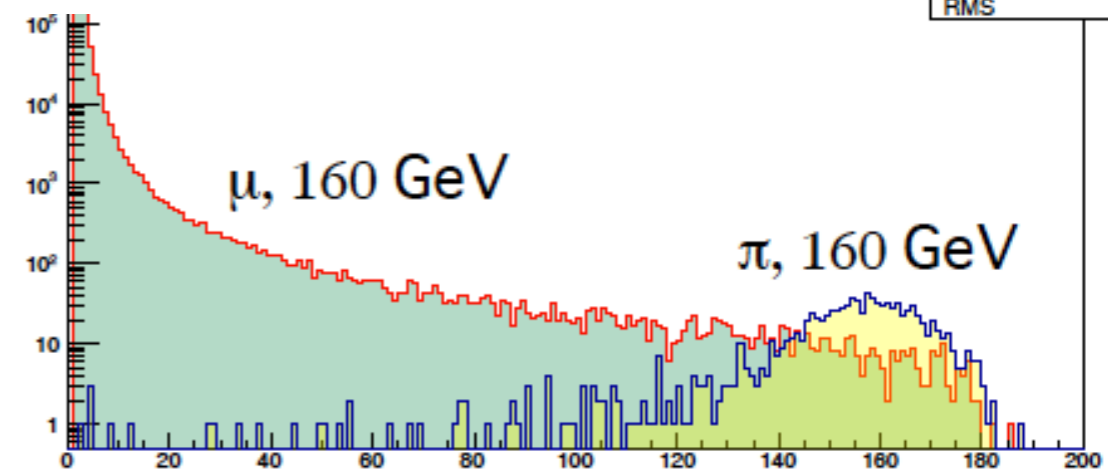
*Admixture of hadrons is considerably less than $10e-5$.
Preliminary result of analysis of around 15% of data.
(plot provided by Vladimir Poliakov, Nov 3)*


Fit expo + gaus(160GeV and 10% sigma)



Edep HCAL module 4

Entries	1000
Mean	3
RMS	5



09:00	→ 09:30	Communications and News Speaker: Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))	🕒 30m	✎
09:30	→ 09:45	Report from EATM Speaker: Annika Vauth (CERN)  2017-11-07_tb_EAT...	🕒 15m	✎
09:45	→ 10:15	Status of changeover Speaker: Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))	🕒 30m	✎
10:15	→ 10:30	Coffee break	🕒 15m	
10:30	→ 11:15	Target Speaker: Norihiro Doshita (Yamagata University (JP))	🕒 45m	✎
11:15	→ 11:25	Radiation monitoring 2018: introduction Speaker: Caroline Kathrin Riedl (Univ. Illinois at Urbana Champaign (US))	🕒 10m	✎
11:25	→ 12:00	Radio protection Speaker: Angelo Maggiora (Universita e INFN Torino (IT))	🕒 35m	✎
12:00	→ 13:30	Lunch	🕒 1h 30m	
13:30	→ 14:00	Round Table RICHwall repair, ...	🕒 30m	✎
14:00	→ 14:30	Status of DC4 Speaker: Alain Jean Magnon (Univ. Illinois at Urbana Champaign (US))	🕒 30m	✎
14:30	→ 14:45	FEE: test of new card on MWPC 2017 Speaker: Maxim Alexeev (Universita e INFN Torino (IT))	🕒 15m	✎
14:45	→ 15:50	A.o.B.	🕒 1h 5m	✎