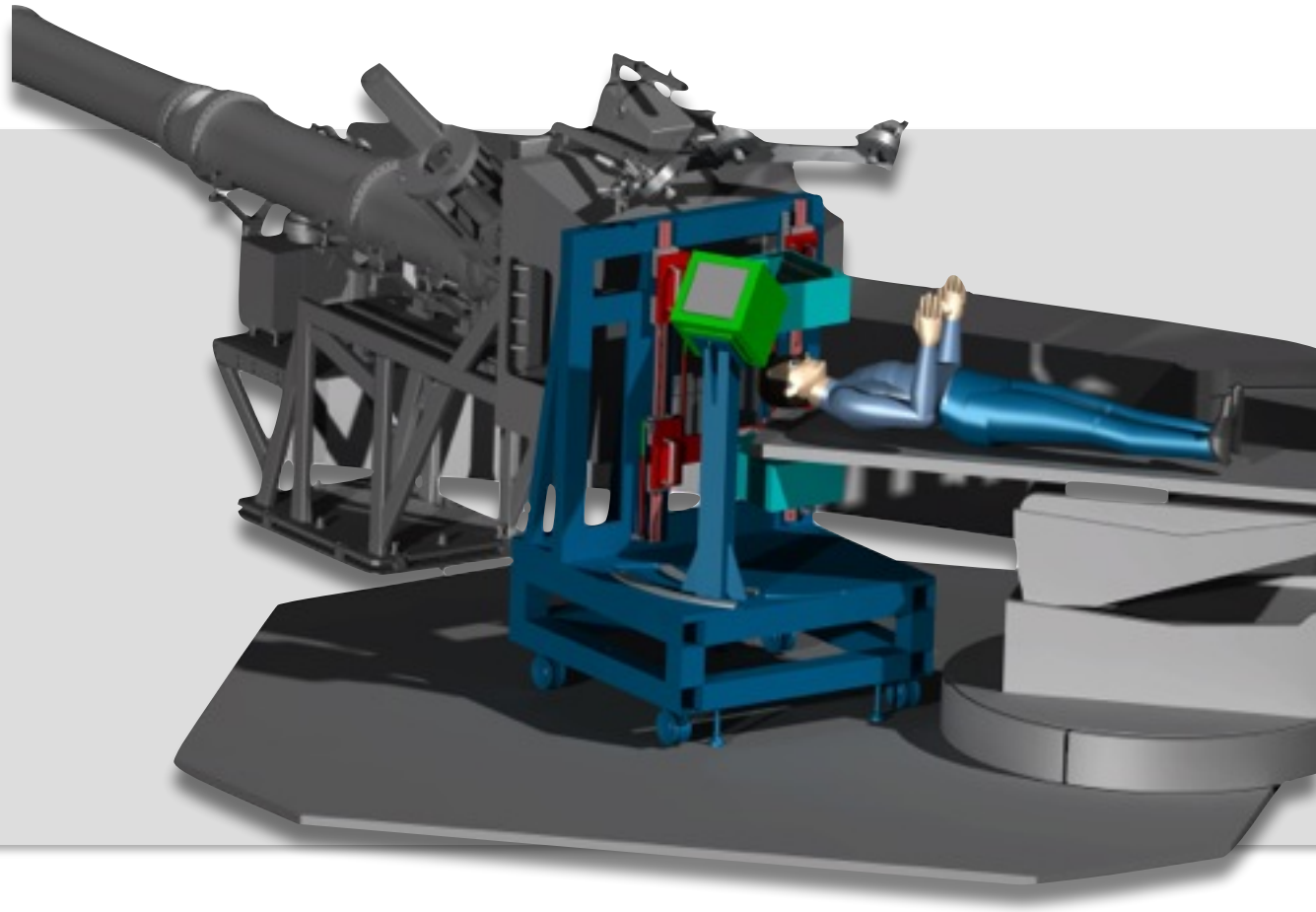
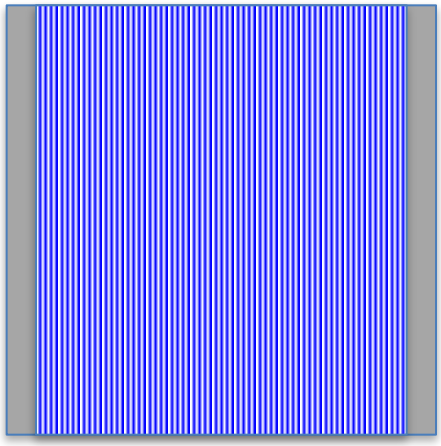
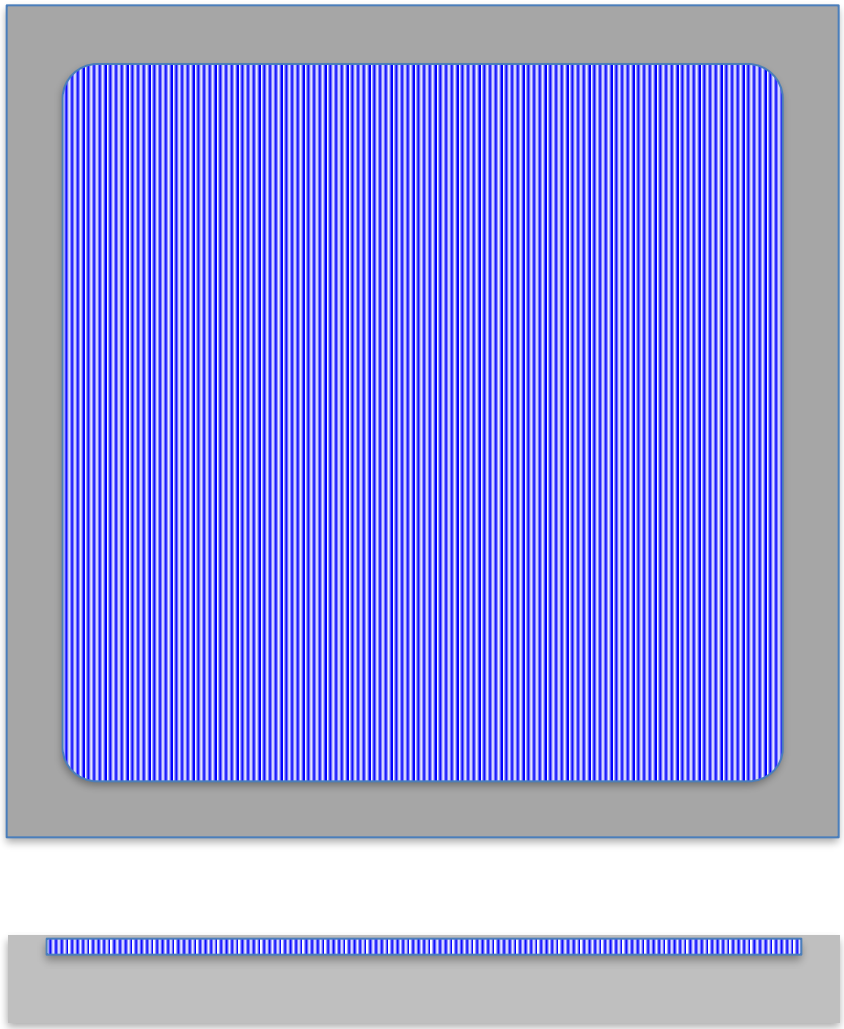
DOSE PROFILER



Adalberto e Michela - ROMA

TRACKER: layer





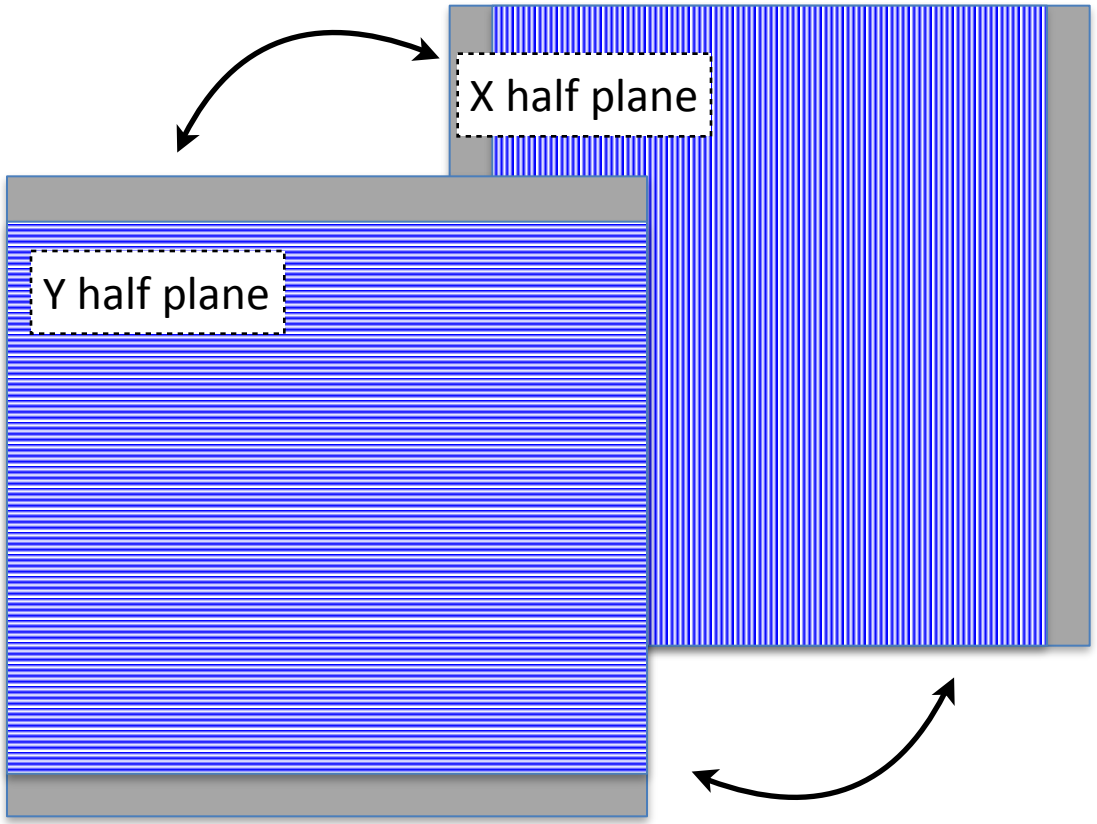
- 210x210 external
- 192x192 internal

- 384 BCF12 fibers: 0.5 mm x 0.5 mm
- single cladding (Saint Gobains)

We have fibers now!!

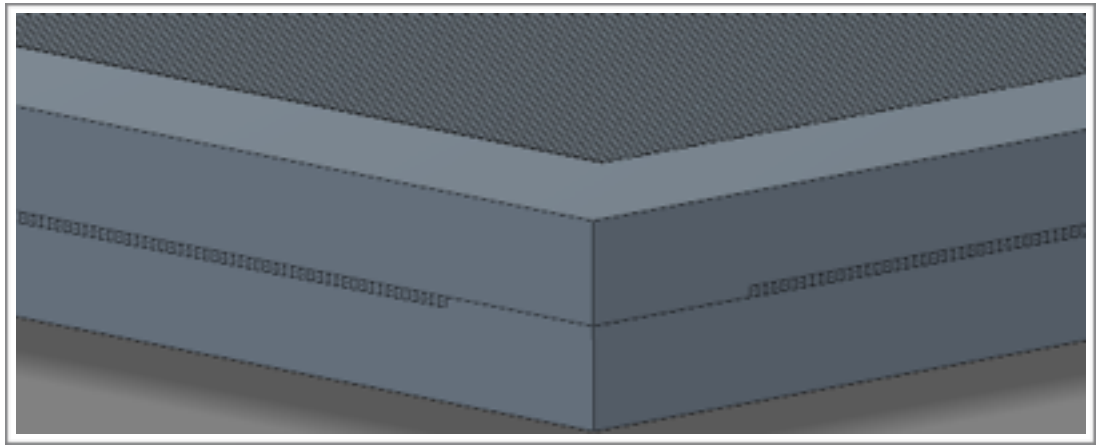
AlcaPlus 6.35 mm

TRACKER: plane



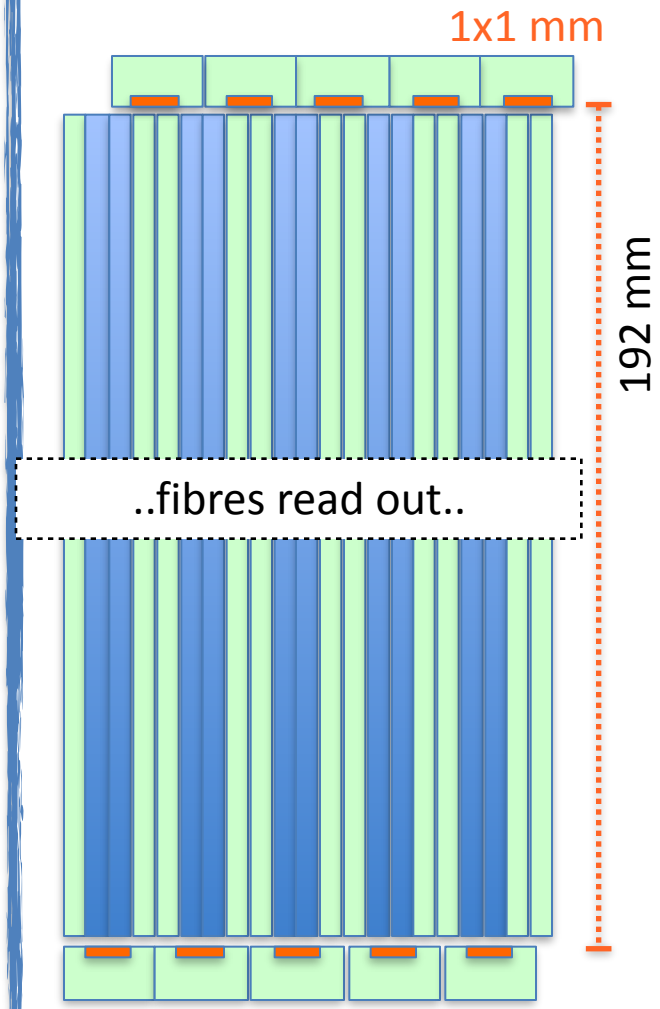
- 6 planes

SBAI (Magi)+ROMA1



TRACKER: planes' readout

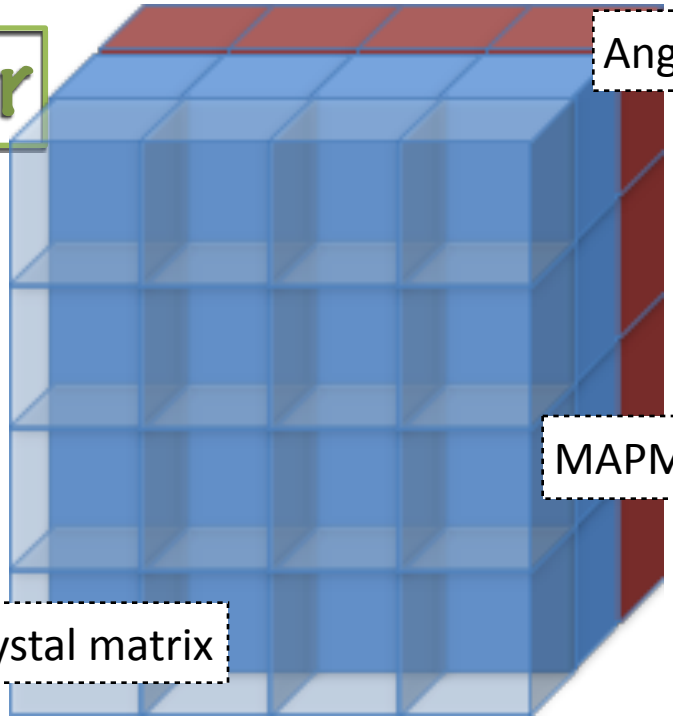
see adb's talk



- new MPPC (SiPM) => higher efficiency (35%)/noise ratio
  (two 1mmx1mm pieces now at Milan)
- 20x20 pixel (50μmx50μm) => for one fiber 10x10 pixel

  <u>For a m.i.p.:</u> 2MeV/cm = 20000 ph/cm = 1000 ph/fiber
  => 1000 x 4% x 35% ~ 17 p.e./fiber/m.i.p.

Calorimeter

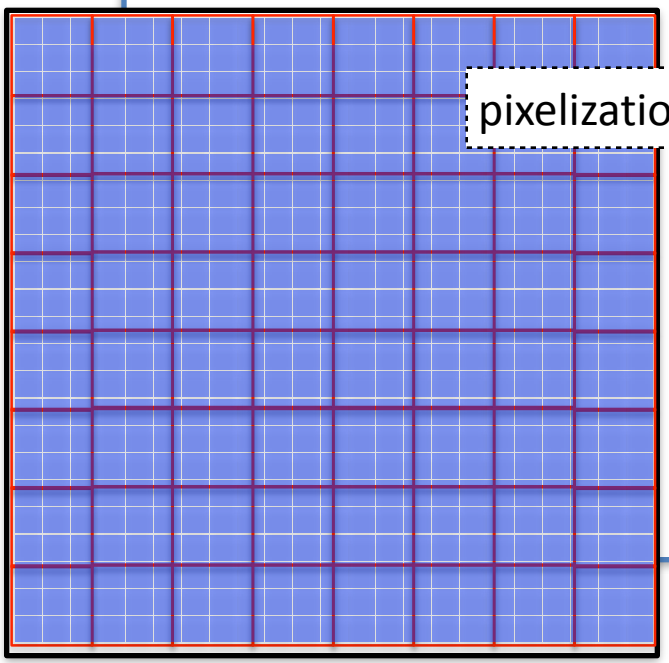


LYSO matrices from ??:

- Hilger "oldPISA"
- Epic "Cina"
- Hamamatsu "PET"

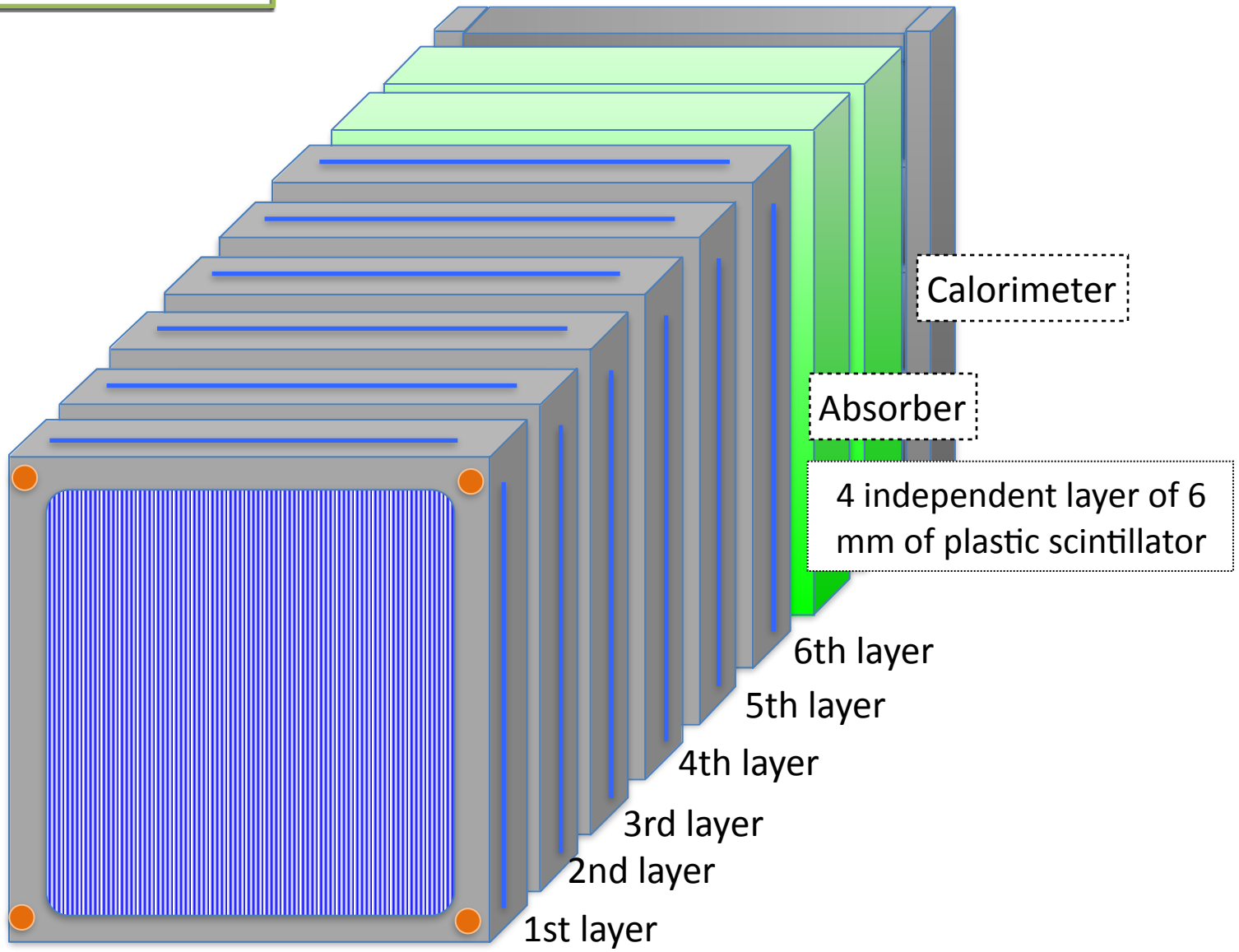
16 MAPMT H8500:

- already purchased
- partially tested

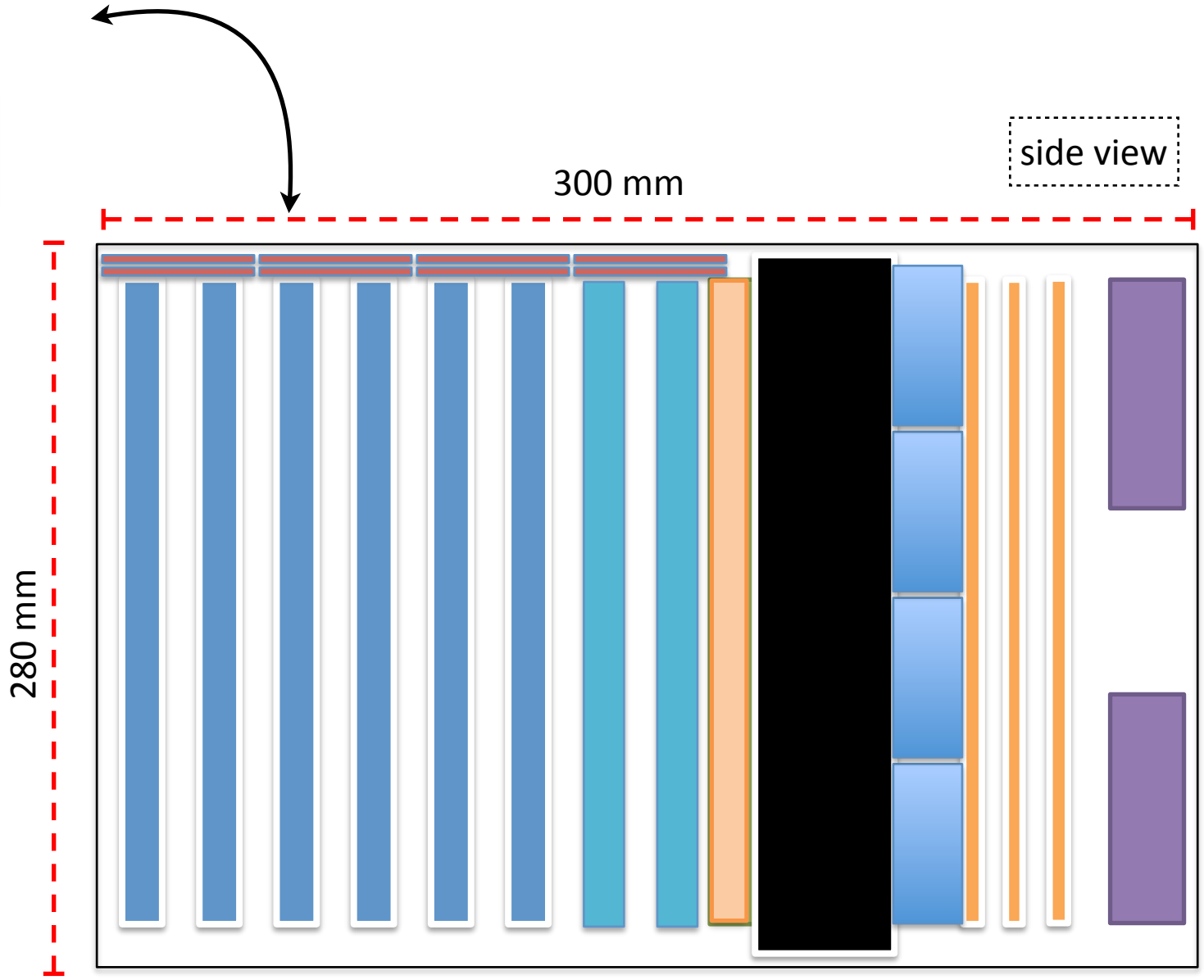


- 8 x 8 pixels PMT
- 23 x 23 pixels crystals

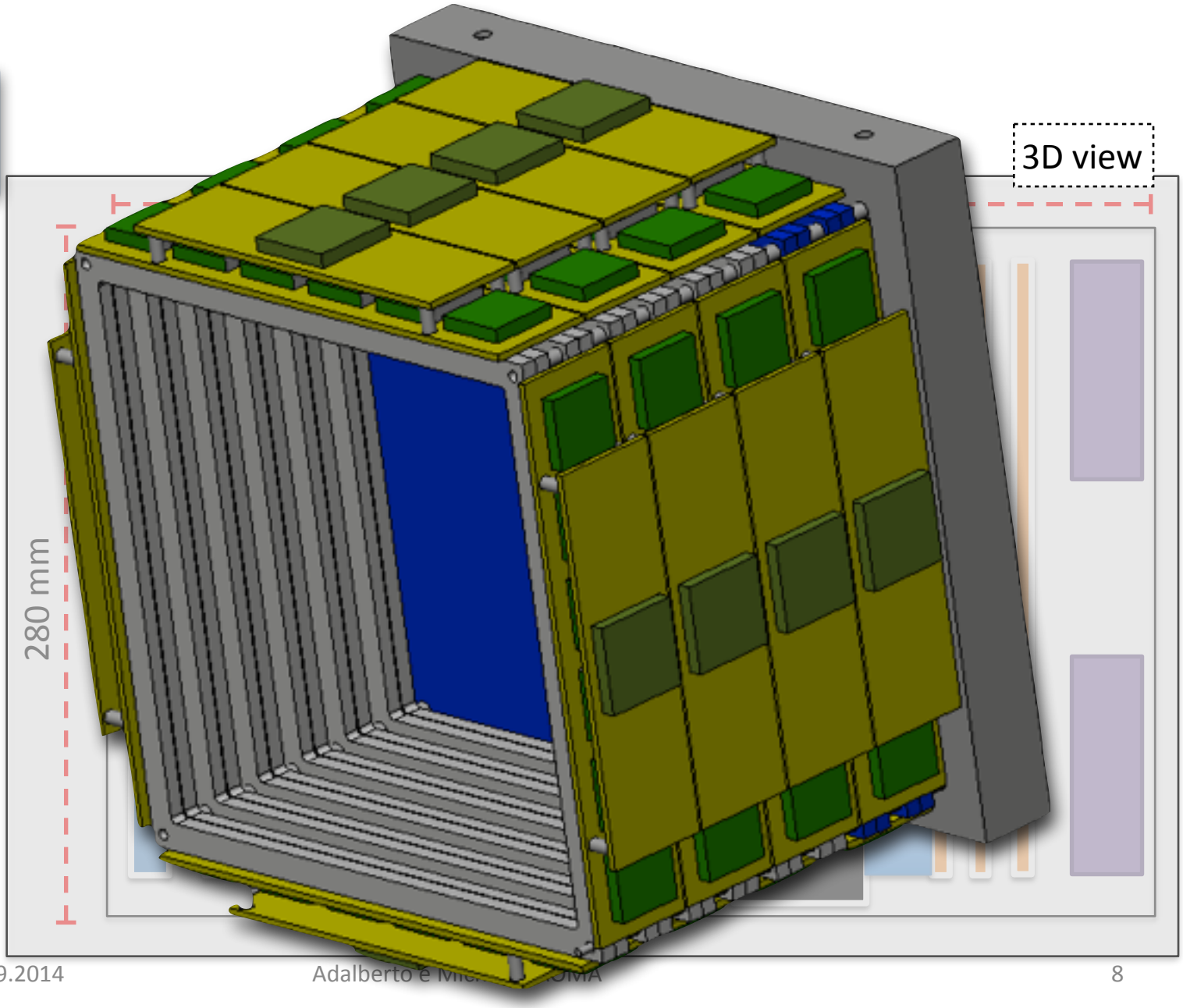
Profiler assembling:



Profiler:

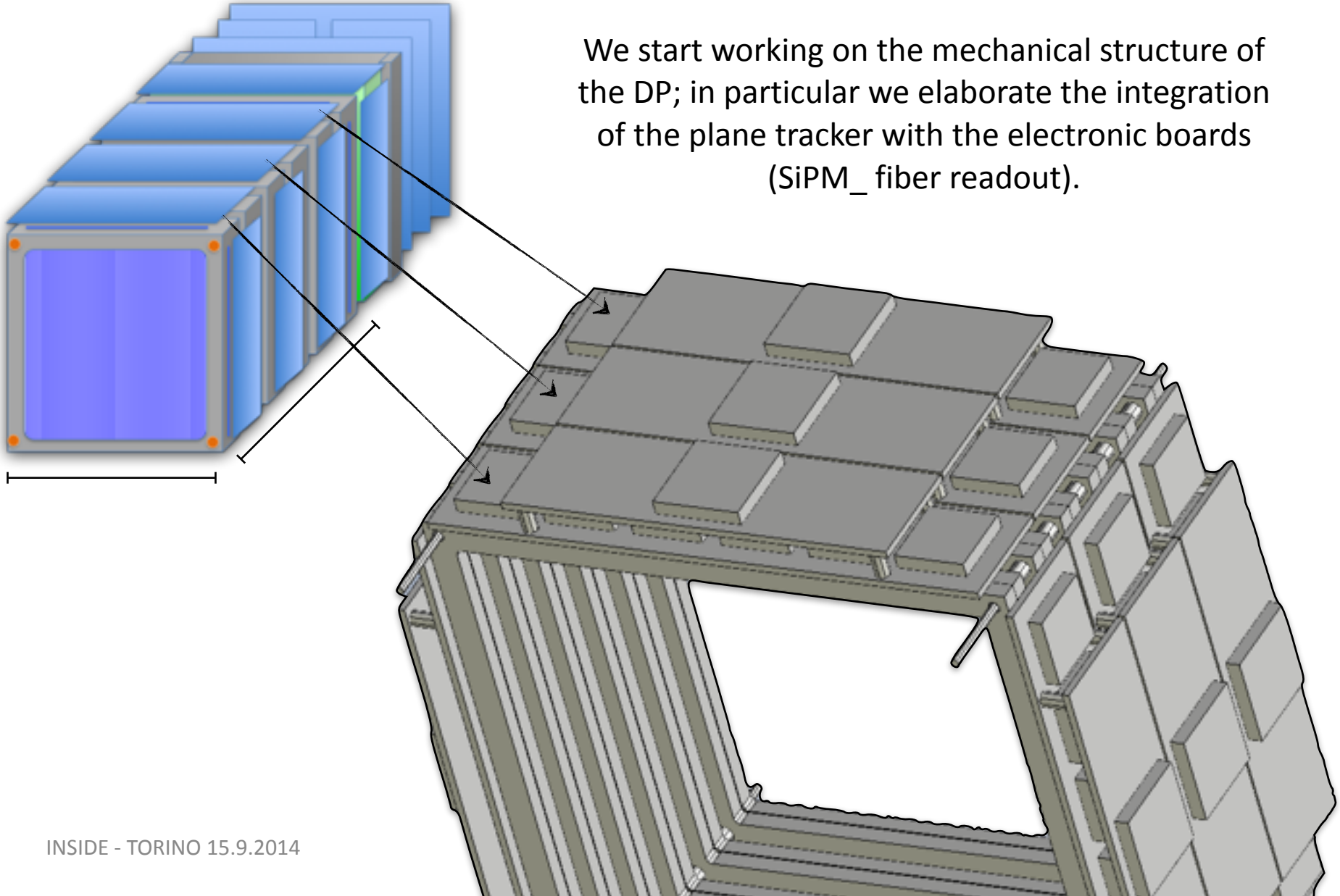


Profiler:



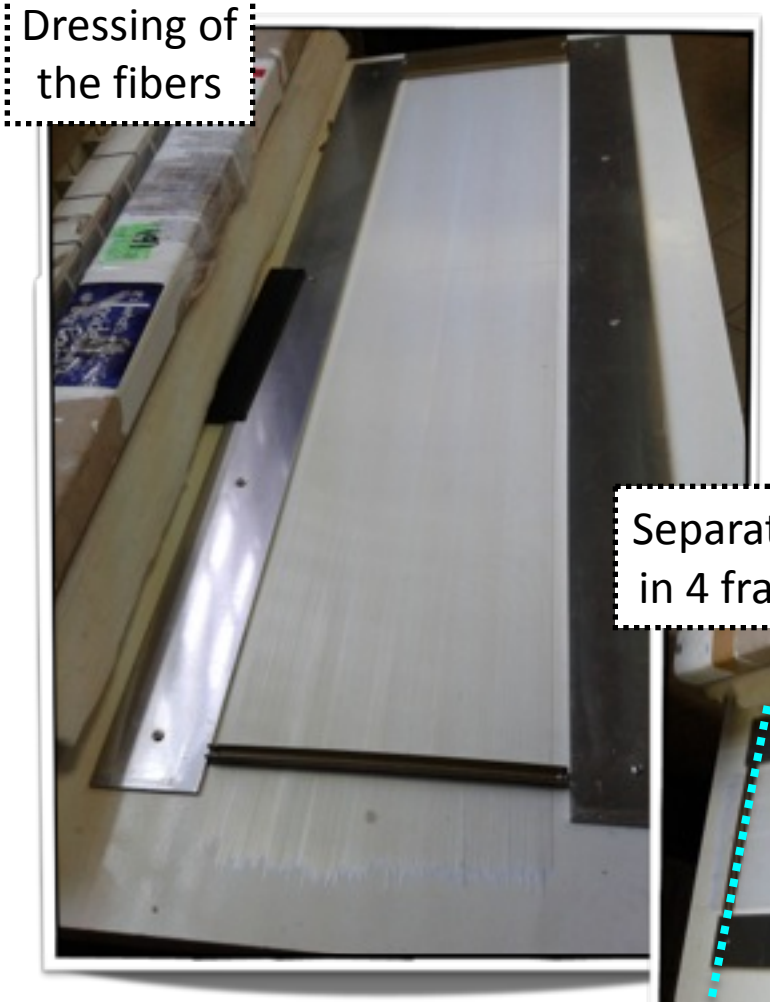
DP: STRUTTURA MECCANICA del TRACKER

We start working on the mechanical structure of the DP; in particular we elaborate the integration of the plane tracker with the electronic boards (SiPM_ fiber readout).



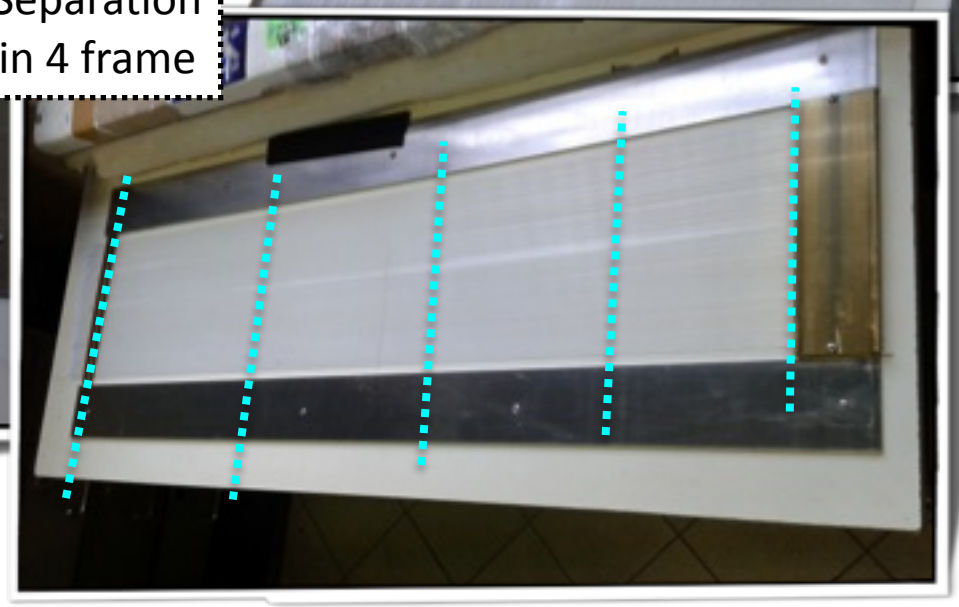
STRUTTURA MECCANICA

Dressing of the fibers

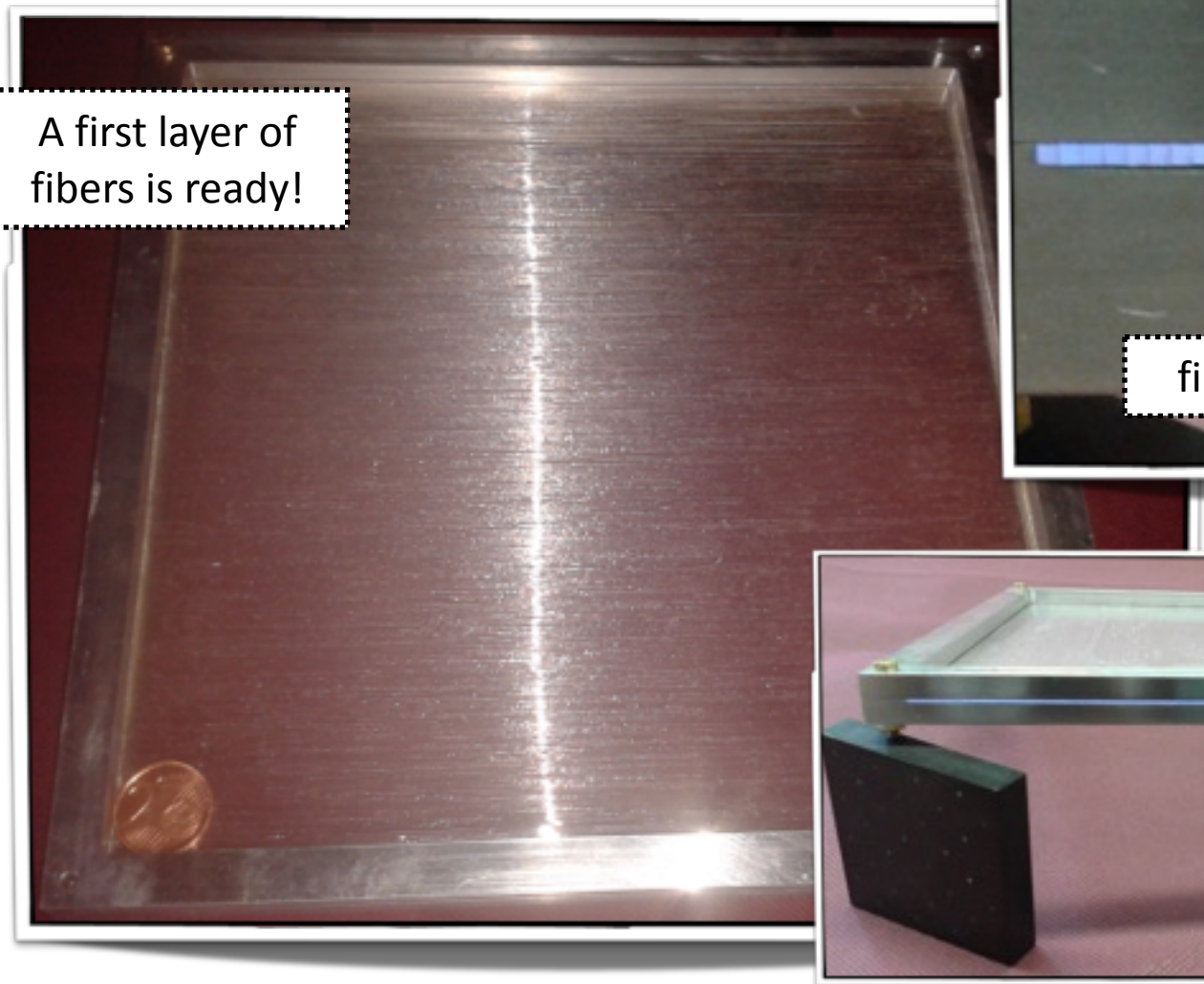


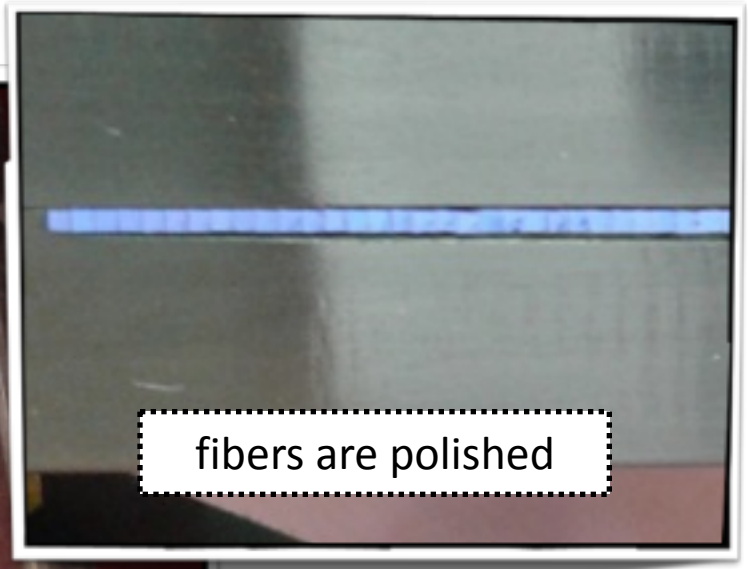
Dressing of the fibers

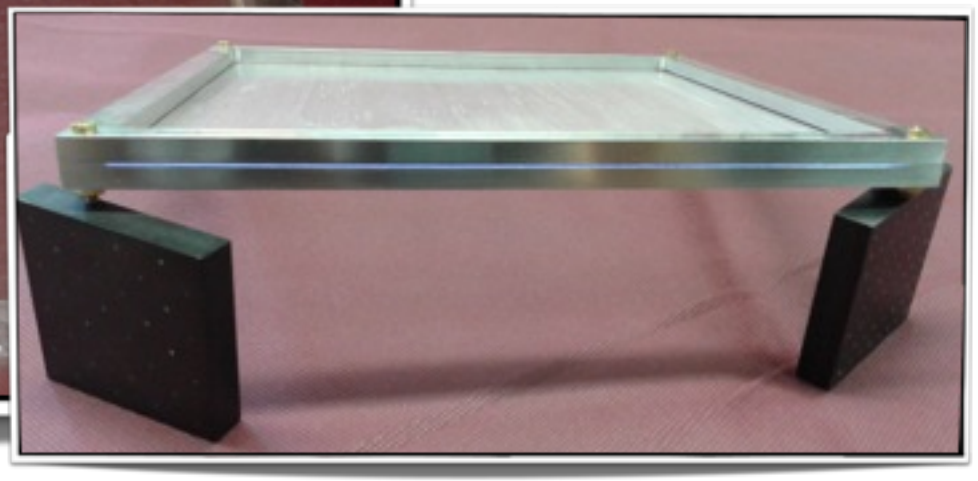
Separation in 4 frame



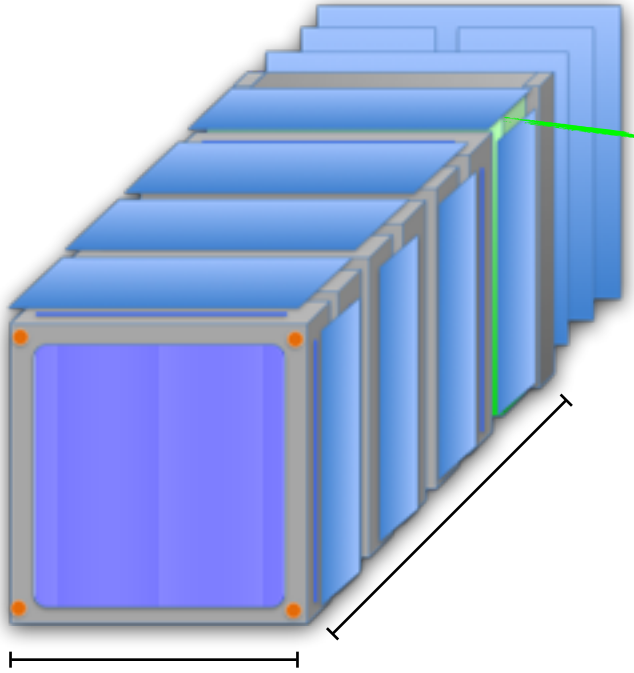
DP: STRUTTURA MECCANICA del TRACKER



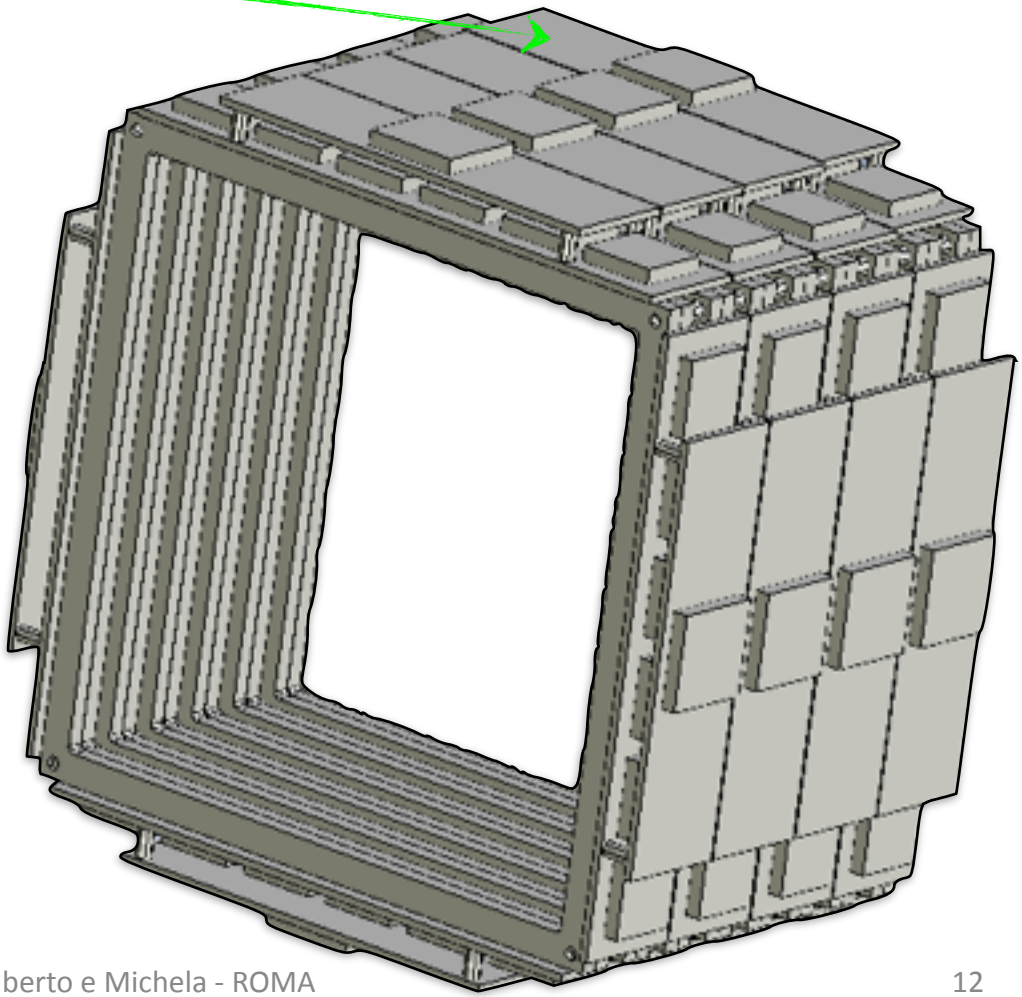




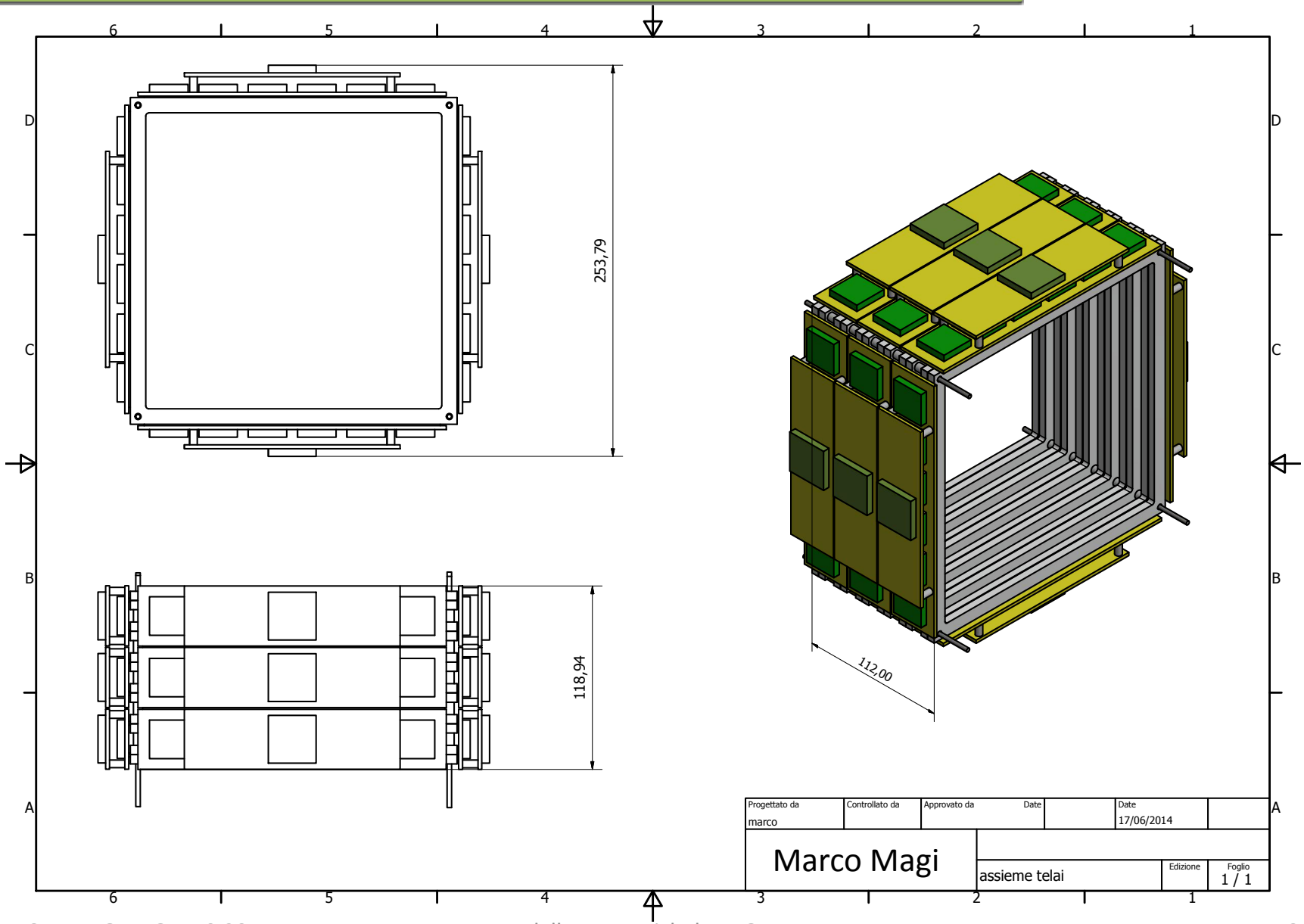
DP: STRUTTURA MECCANICA del TRACKER



The scintillator layer are read out with the same SiPM electronics of the tracker layers.

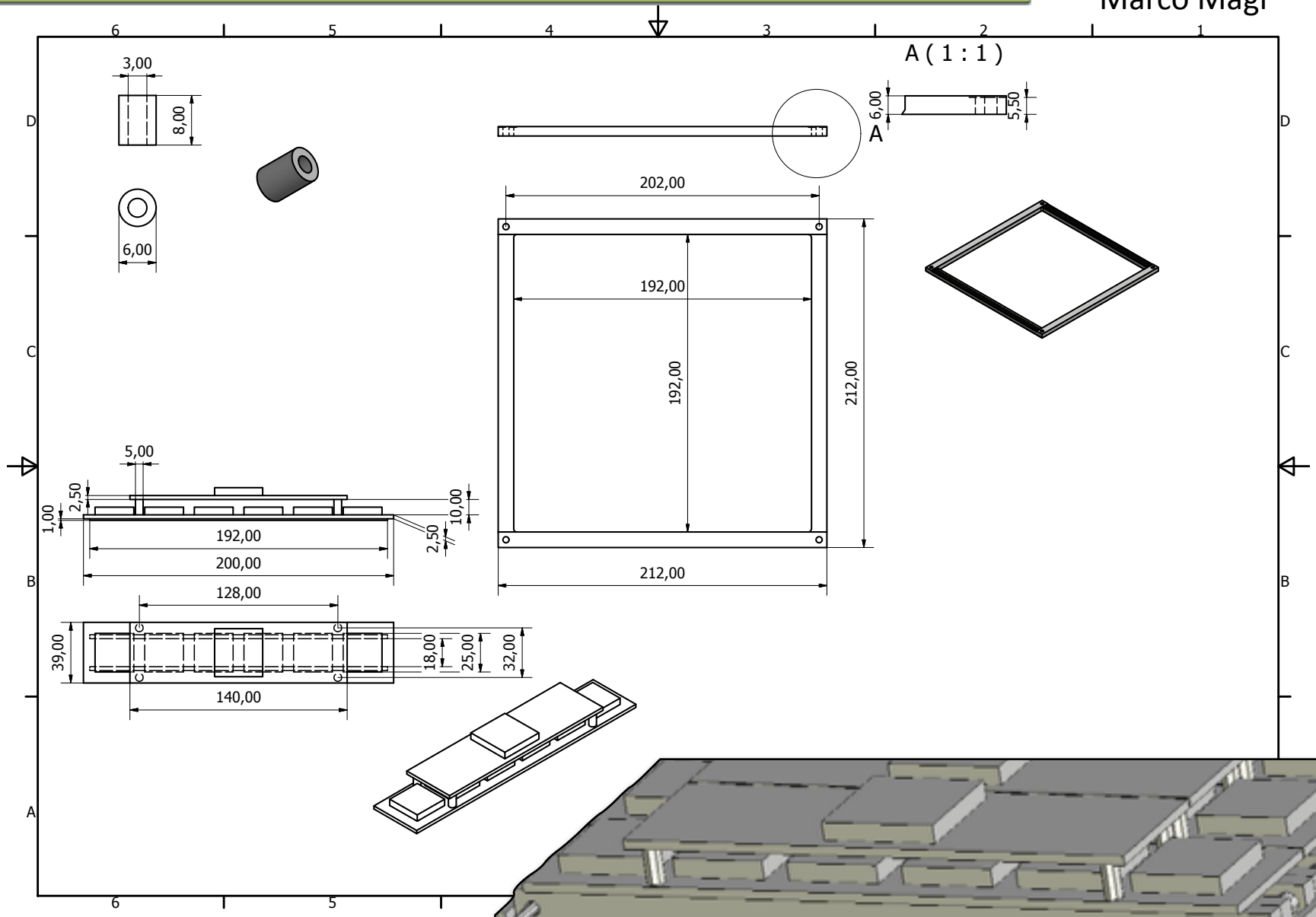


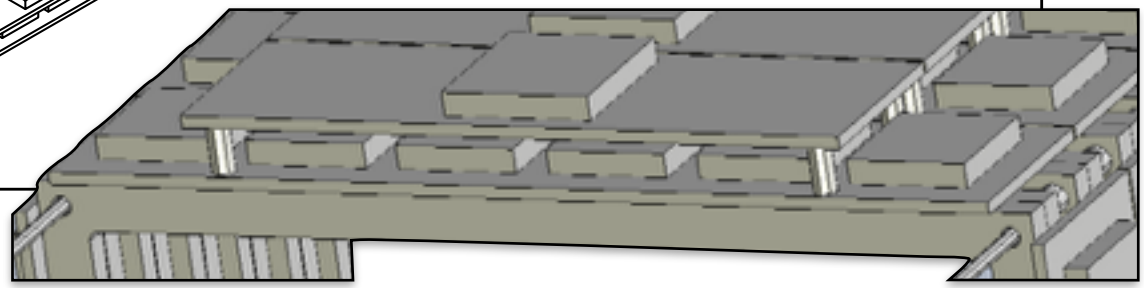
DP: STRUTTURA MECCANICA del TRACKER



DP: STRUTTURA MECCANICA del TRACKER

Marco Magi





Time Schedule

from MILANO March 2014

2013

- profiler **layout optimization** with MC
- reconstruction algorithm development

2014

- fibers test
- electronics and DAQ design
- one plane module assembly => M.Magi

Milan is working to the test board
LNF start working effectively from June!

up to now we are here!!

- other planes assembly and tests .. before Christmas!
- stand alone mechanics
- electronics production
- calorimeter realization

2015

- profiler assembly (mechanics, electronics, DAQ &TRG)
- **integration HW & SW**
- global device test & characterization

INSIDE @ CNAO

INSIDE

Categoria	INSIDE
Tipo di Documento	Specifiche Tec
Oggetto	Componenti
Numero/Revisione	1/0

Redatto da	G.M.Bisogni, M.Marafini, V.Patera, A.Sciubba, G.Sportelli,R.Wheadon
Contatto mail	giuseppina.bisogni@pi.infn.it vincenzo.patera@lnf.infn.it
Richiesto da	collaborazione INSIDE

Destinatari

Nome	**Int./Ext**
Serra, Arianna	Ext.
Gerardi, Franco	Ext.
?	

Modifiche

Indice	**Data**	**Variazioni**
INS_Elec-001	5/10/2014	Prima stesura

INDICE

1. SCOPO

Il presente documento ha lo scopo di fornire:

- lo schema a blocchi logico;
- gli schemi delle connessioni elettriche;

per permettere l'accesso e l'esecuzione delle prove nei locali del CNAO.

2. CODIFICA IMPIEGATA

Per la comprensione degli schemi a blocchi successivi, in tabella sono riportati gli ID degli elementi impiegati e una loro breve descrizione.

LEGENDA:

C_XXXX = connessioni a sistema globale
P_XXXX = connessioni a sottosistema PET
P1_XXXX = connessioni a rivelatore PET1 del sottosistema PET
P2_XXXX = connessioni a rivelatore PET2 del sottosistema PET
DP_XXXX = connessioni a sottosistema Dose Profiler

IN

Categoria	
Tipo di Documento	
Oggetto	
Numero/Revisione	

Redatto da	
Contatto mail	
Richiesto da	

Destinatari

Nome
Serra, Arianna
Gerardi, Franco
?

Modifiche

Indice	**Data**
INS_Elec-001	5/10/20

ID	Descrizione	Note
P1	Rivelatore PET 1	P1
P2	Rivelatore PET 2	P2
DP	Dose Profiler	DP
C_D0001	PC acquisizione dati	
P_D0002	Mainboard acquisizione dati	
P_D0003	Clock/Reset Control Box rivelatori	
C_W0001	Multipresa alimentazione sistema di acquisizione	Multipresa con magnetotermico
P_W0002	Interruttore principale sistema di acquisizione	
P_W0003	Relay di controllo mainboard acquisizione dati	
P_W0004	Multipresa alim. mainboard acquisizione dati	
P_W0005	Controller relays	
P_W0006	Alimentatore bassa tensione	5 V, < 15 A
P_W0007	Alimentatore bassa tensione	12 V, < 10 A
P_W0008	Alimentatore alta tensione	80 V, < 0.25 A
P_W0009	Alimentatore bassa tensione	4 V, < 0.8 A
P_W0010	Alimentatore bassa tensione	3 V, < 1.5 A
P1_W0011	Alimentatore bassa tensione switching doppio	5 V, 12 V, < 1 kW
P2_W0011	Alimentatore bassa tensione switching doppio	5 V, 12 V, < 1 kW
P_W0012	Multipresa alimentazione rivelatori	Multipresa con magnetotermico
P_W0013	Interruttore principale rivelatori	
P_W0014	Relay di controllo alimentazione alte tensioni rivelatori	
P_W0016	Alimentatore bassa tensione Clk/reset manager	6V, <2 A
DP_W0015	Alimentatore bassa tensione	+5V@20A -5V@20A -24V@5A
DP_W0016	Crate CAEN NV8020A	-1200V@0.005A
C_SL0001	Cavi USB interfaccia utente	Tastiera, mouse, etc.
C_SL0002	Cavi Ethernet	Connessi alla LAN, < 2 3 cavi
C_SL0003	Cavo HDMI monitor	< 2 m
P_SL0004	Cavi USB dati e configurazione FPGA	< 2 m
P_SL0005	Cavo Ethernet per streaming dati	< 2 m
P1_SL0006	Cavo Ethernet per streaming dati	< 10 m
P1_SL0007	Cavi coassiali distribuzione clock e reset	< 10 m
P2_SL0008	Cavo Ethernet per streaming dati	< 10 m
P2_SL0009	Cavi coassiali distribuzione clock e reset	< 10 m
DP_SL0010	Cavo bridge Ethernet per dose profiler	< 10 m
P_SL0011	Cavo alimentazione doppio mainboard	5 V, < 15 A
P_SL0012	Cavo alimentazione doppio mainboard	12 V, < 10 A
P_SL0013	Cavo doppio controllo relay (W0003)	< 2 m
P_SL0014	Cavo USB controllo relays	< 2 m
P_SL0015	Cavo HV doppio coassiale	80 V < 0.25 A
P_SL0016	Cavo alimentazione doppio	4 V, < 0.8 A
P_SL0017	Cavo alimentazione doppio	3 V, < 1.5 A
P1_SL0018	Cavo alimentazione triplo	5 V, 12 V, < 500 W
P2_SL0018	Cavo alimentazione triplo	5 V, 12 V, < 500 W
P_SL0019	Cavo doppio controllo relay (W0014)	< 5 m
DP_SL0020	Cavo alimentazione quadruplo	+5 V @20A -5 V@20A -24V@5A < 10 m
DP_SL0021	Cavo alta tensione triplo	2linee -1200V@0.005A <10 m
DP_SL0022	Cavo piatto twisted per controlli	< 10 m

nei locali del CNAO.

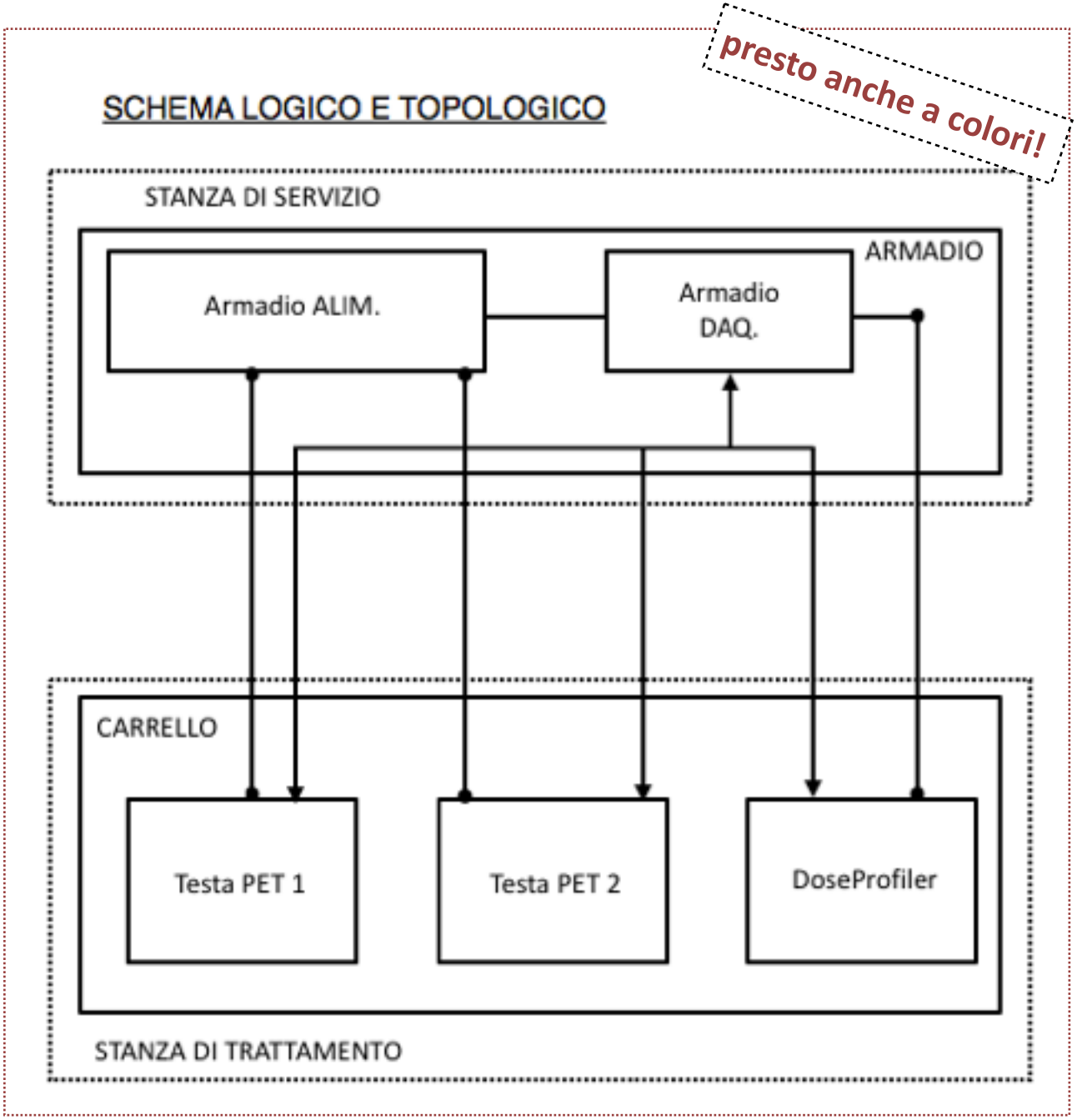
ssivi, in tabella sono
ve descrizione.

sistema PET
sistema PET
er

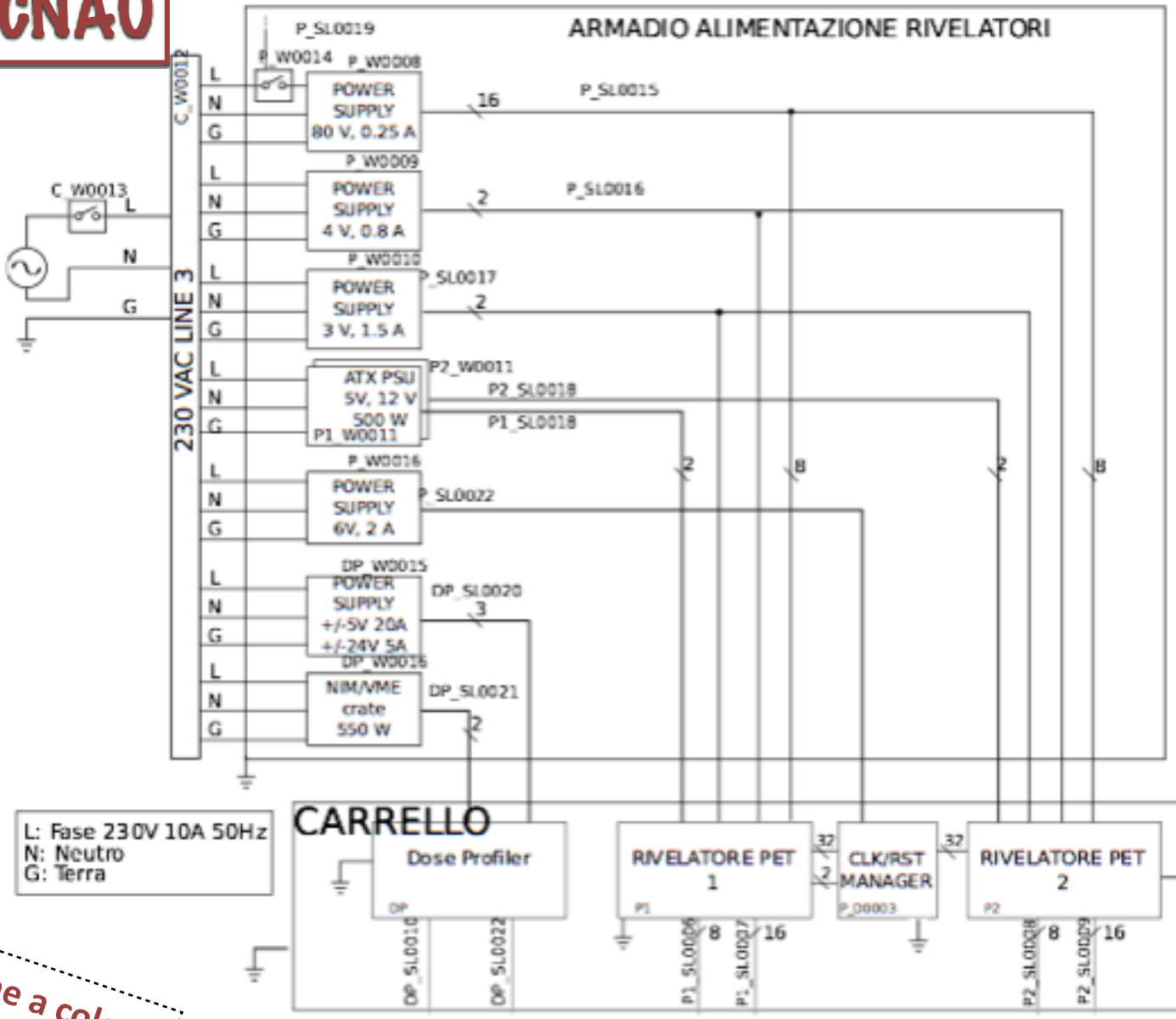
3

INSIDE @ CNAO

- Space definition and logic connections of each components;
- The objects in the main room are crucial to the treatment procedure;

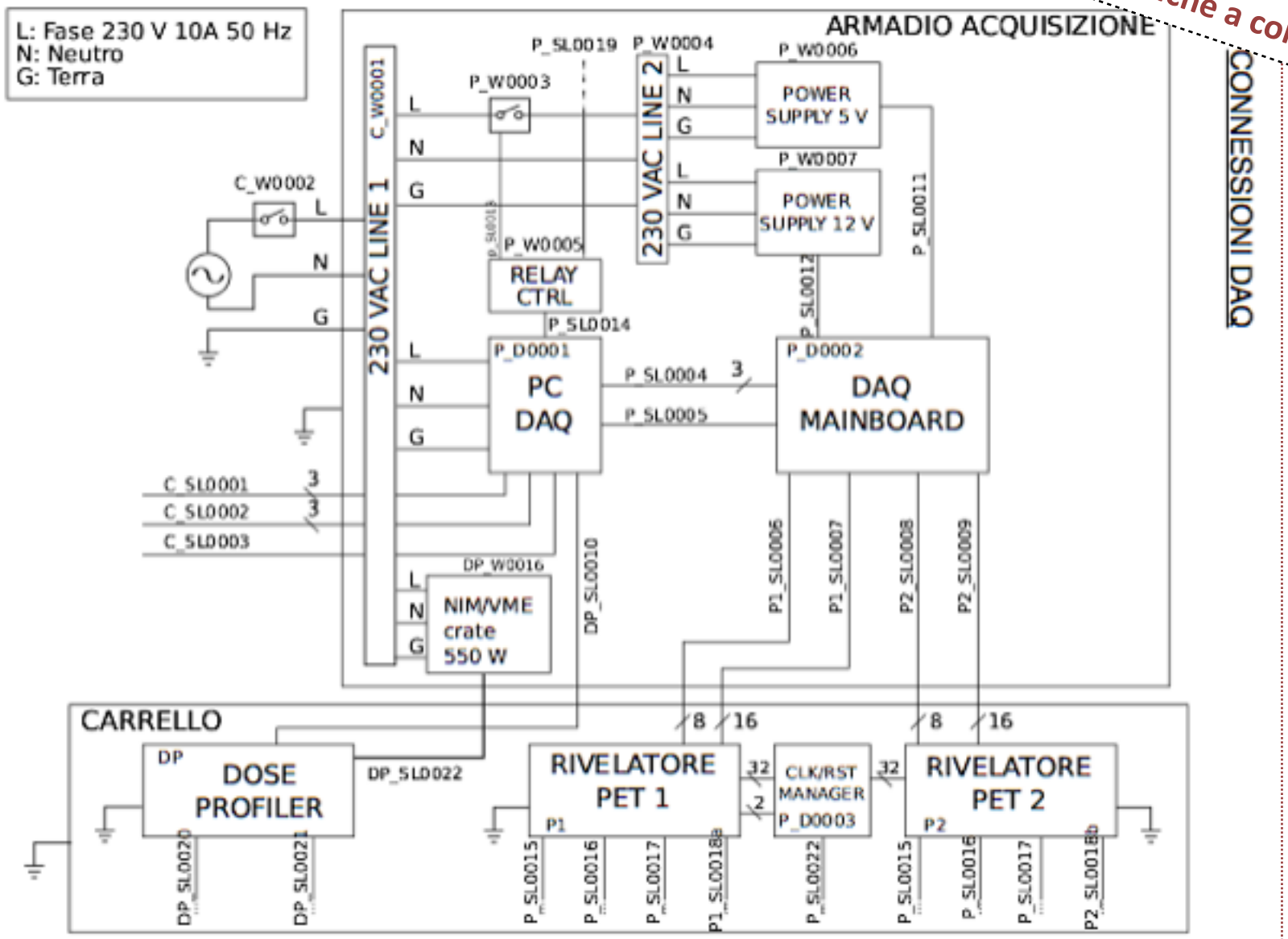


INSIDE @ CNAO


ARMADIO ALIMENTAZIONE RIVELATORI
CONNESSIONI ALIMENTAZIONE
230 VAC LINE 3
C_W0013
P_SL0019
P_W0014
P_W0008
POWER SUPPLY 80 V, 0.25 A
P_SL0015
P_W0009
POWER SUPPLY 4 V, 0.8 A
P_SL0016
P_W0010
POWER SUPPLY 3 V, 1.5 A
P_SL0017
P2_W0011
ATX PSU 5V, 12 V 500 W
P1_W0011
P2_SL0018
P1_SL0018
P_W0016
POWER SUPPLY 6V, 2 A
P_SL0022
DP_W0015
POWER SUPPLY +/-5V 20A +/-24V 5A
DP_SL0020
DP_W0016
NIM/VME crate 550 W
DP_SL0021
L: Fase 230V 10A 50Hz
N: Neutro
G: Terra
CARRELLO
Dose Profiler
RIVELATORE PET 1
CLK/RST MANAGER
RIVELATORE PET 2
presto anche a colori!

INS

presto anche a colori!



Time Schedule

from last meeting at CNAO

2014

- first review of the document
- definition of mechanics support: track!
- electronics layout

2015

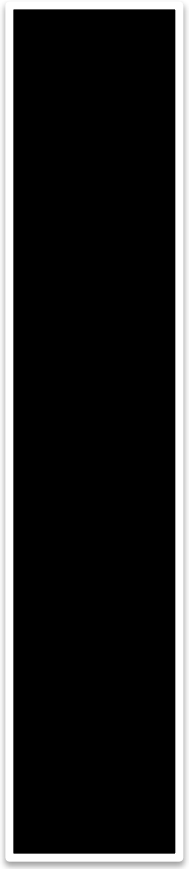
- final electronics layout
- definition of the procedure of test

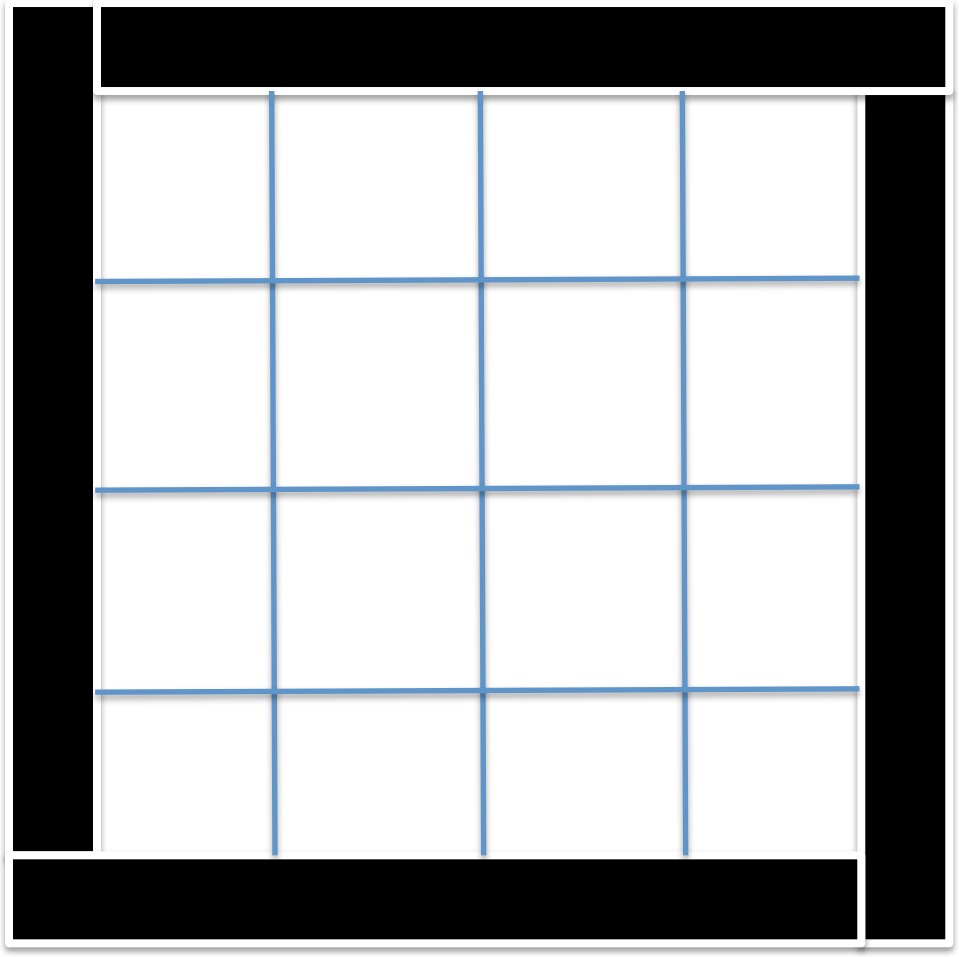
2016

- first test on phantom

backup

CALO MECHANICAL STRUCTURE:





CALO MECHANICAL STRUCTURE: