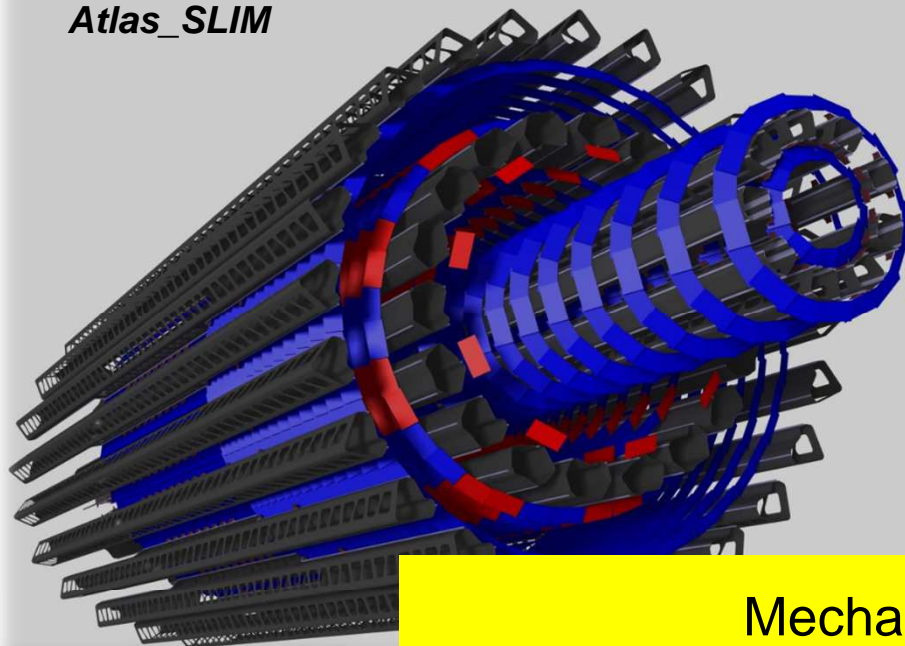


Atlas_SLIM



CTA



Mechanical Group
Highlights in 2015... and outlooks

Neutrinos



**Space
experiments**



Current projects...

ATLAS (SLIM for Pixel Upgrade, and IBL “post studies”)

DAMPE (Flight model assembled and qualified for launch...and launched!!)

CTA (108 modules assembled for Camera Proto + cooling design)

AIDA, BabyMIND (50 X-Y modules produced!)

Mu3e, Na61 (Tests beam at CERN, fiber strip developments ongoing...)

POLAR (Flight model and its spare have been qualified for launch)

ICARUS (Design of a tool for WA104 cryostat welding at CERN)

...and new commitments!

ATLAS (SLIM for PIXEL, 2023 ?)

PANGU, HERD (R&D in astrophysics...around 2020)?

TASD + baby MIND (AIDA), Mu3e (Neutrinos, towards 2017...)

CTA (Camera proto delivery in 2016) ... and next camera(s)?

BIG THANKS FOR THE GOOD JOB

Workshop & Clean rooms

Coralie
Laurent
Maarten
Maxime



Design & Engineering



Laurent and Maarten in overlap with Workshop activities
Sébastien (Engineer on ATLAS),
Franck (Head of Mechanical Group)

Note that **Maarten** is leaving
in 2016 (July)
Maxime position not renewed!!

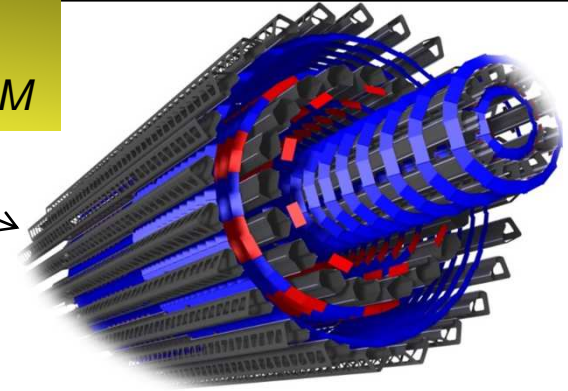
... without forgetting **Catherine, Liliane, Nathalie, Yann** and our “**Central**”
workshops...

PIXEL project (Atlas UPGRADE)
Design, Simulations, Prototyping for SLIM

People involved in 2015...

Sébastien, Maarten, Coralie and Franck (small fraction)

about 690mm
outer radius

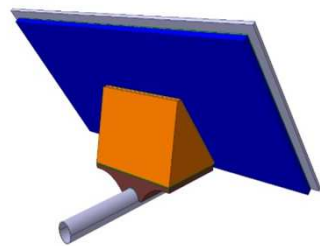


2x2 module "lines"
attached to one "longeron"

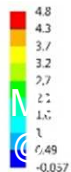
Longeron
(2m long)

Adaptive design for 5 layers (PIXELS)

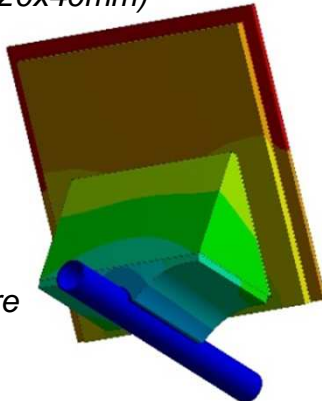
- Good stability and thermal performances
- High degree of modularity
- 20 % to 30 % module saving (wrt barrel layout)



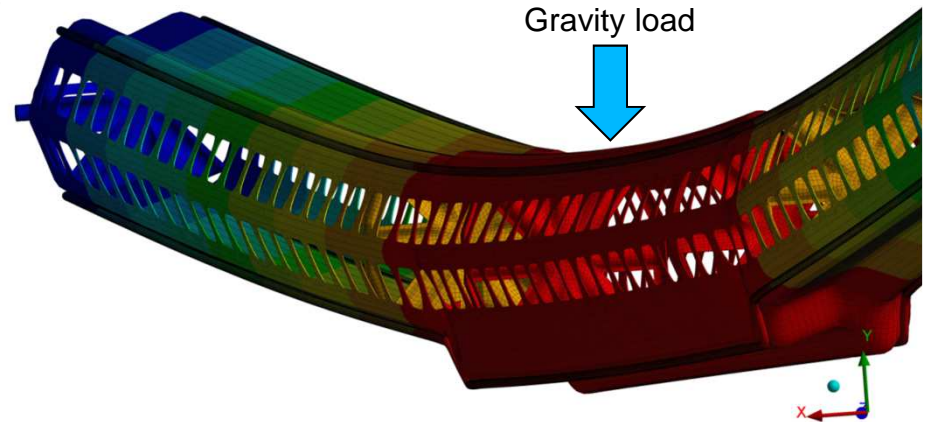
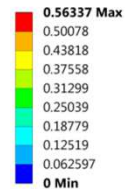
Tilted cell
(20x40mm)



Temperature
gradient



M: Static Structural
Total Deformation
Type: Total Deformation
Unit: mm
Time: 1
Custom
12/16/2015 2:38 PM



Gravity load

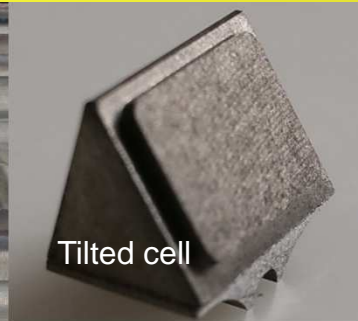
Design and simulation works leading to PROTOTYPING



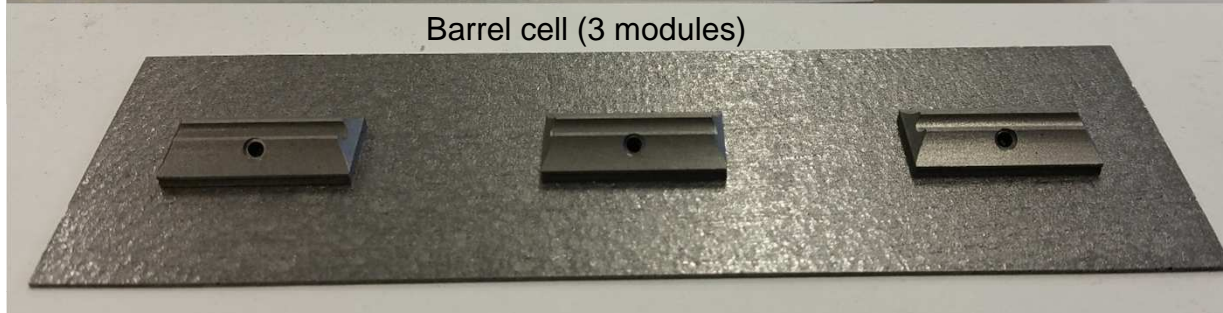
PIXEL project (Atlas UPGRADE)
Design, Simulations, Prototyping for SLIM



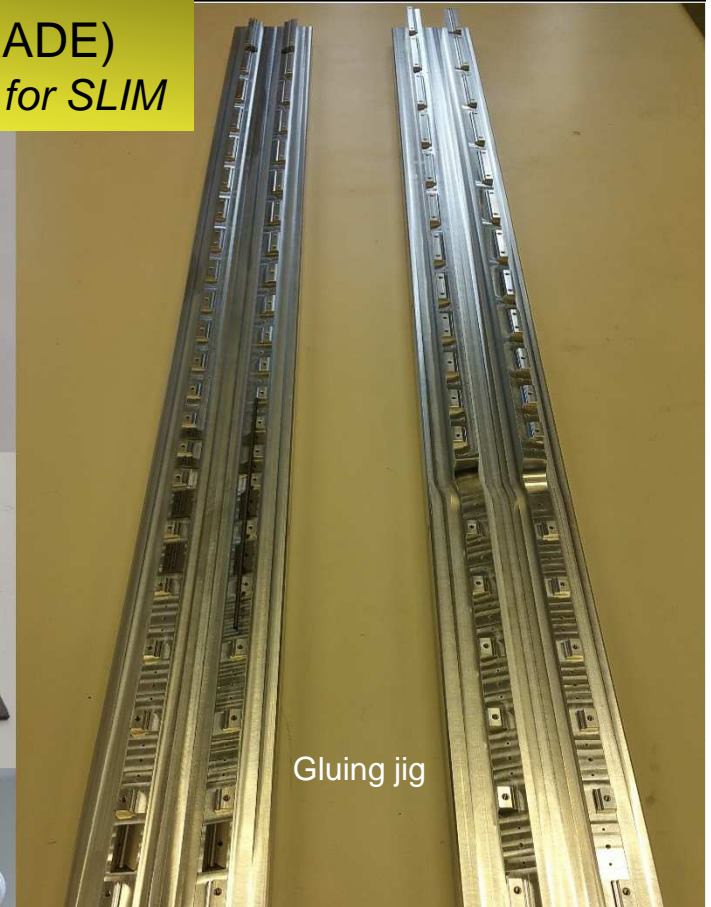
Gluing jig



Tilted cell



Barrel cell (3 modules)



Gluing jig



Metrology @ DPNC

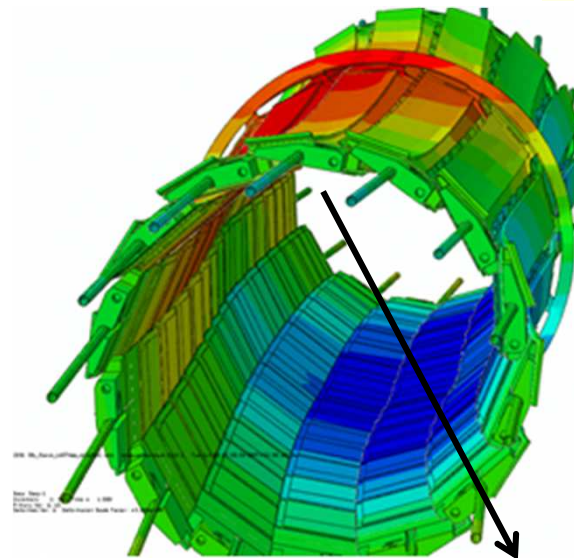


Longeron by Composite Design

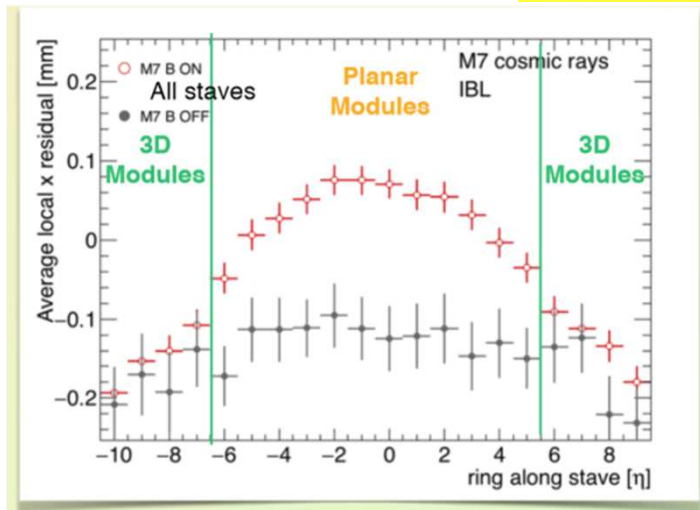
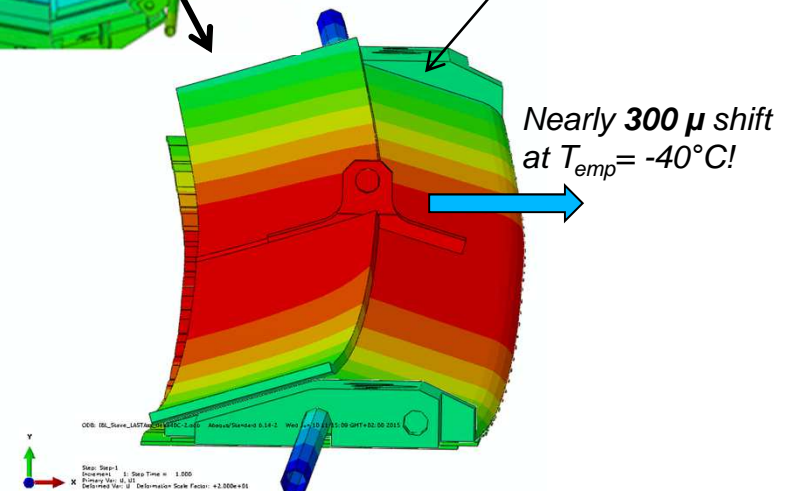
IBL project (after the first collisions...)
Tests and Simulations of the IBL package...



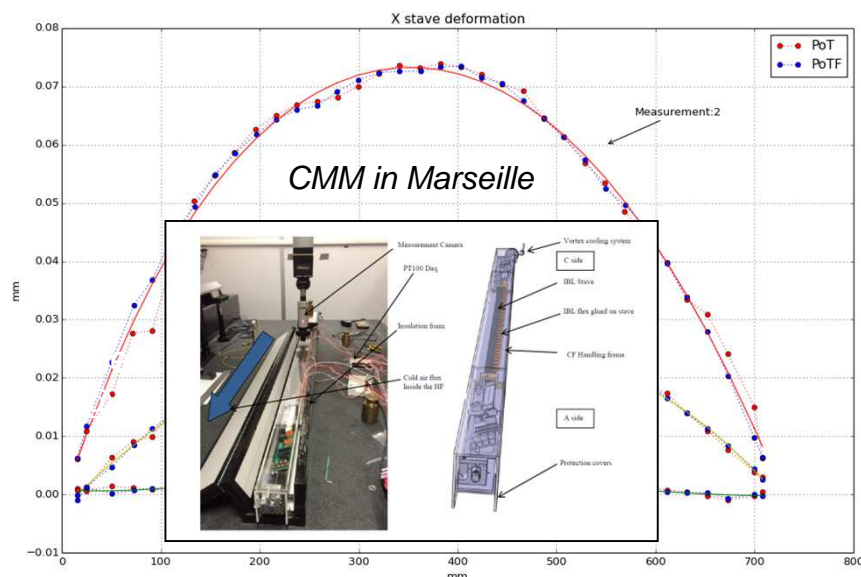
"14 staves"
FEA simulations



IBL stave



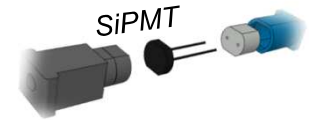
CMM (metrology) in Marseille (CPPM) to fit
with simulations (DPNC) and real tracks (CERN)



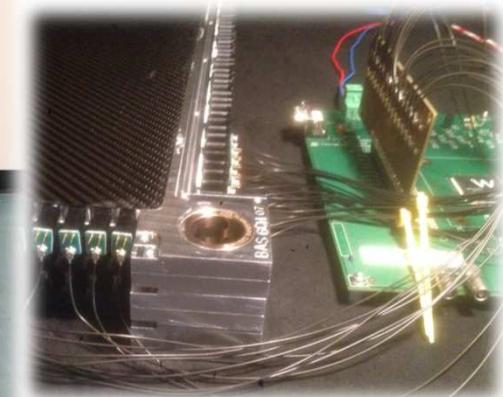
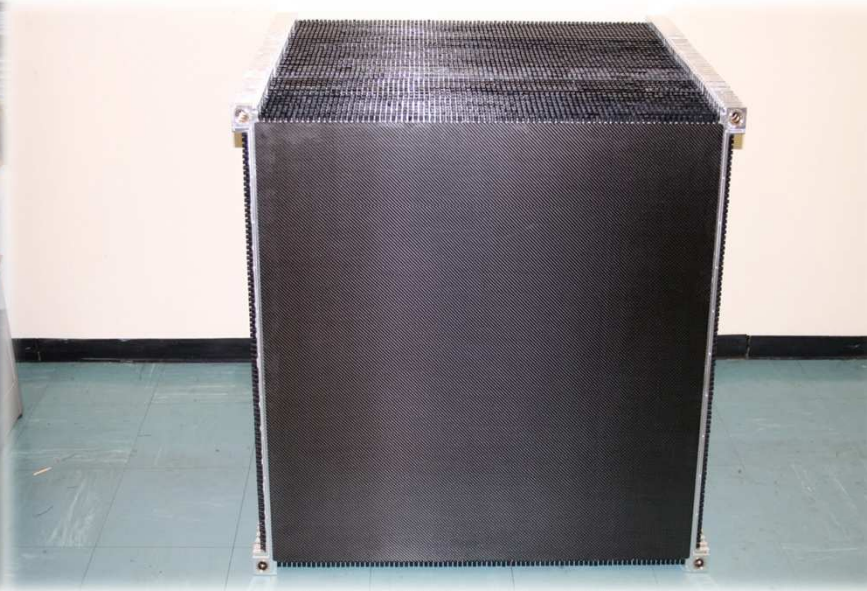
Key lessons: never underestimate the "capacities" of
simulation (and tests)... provided we trust it!

People involved in 2015...
Laurent, and Maxime

Neutrino Projects
TASD modules production



50 X-Y modules are produced (from May to September at CERN)
Still stored at CERN (see below...) due to technical issue on Morpurgo magnet...

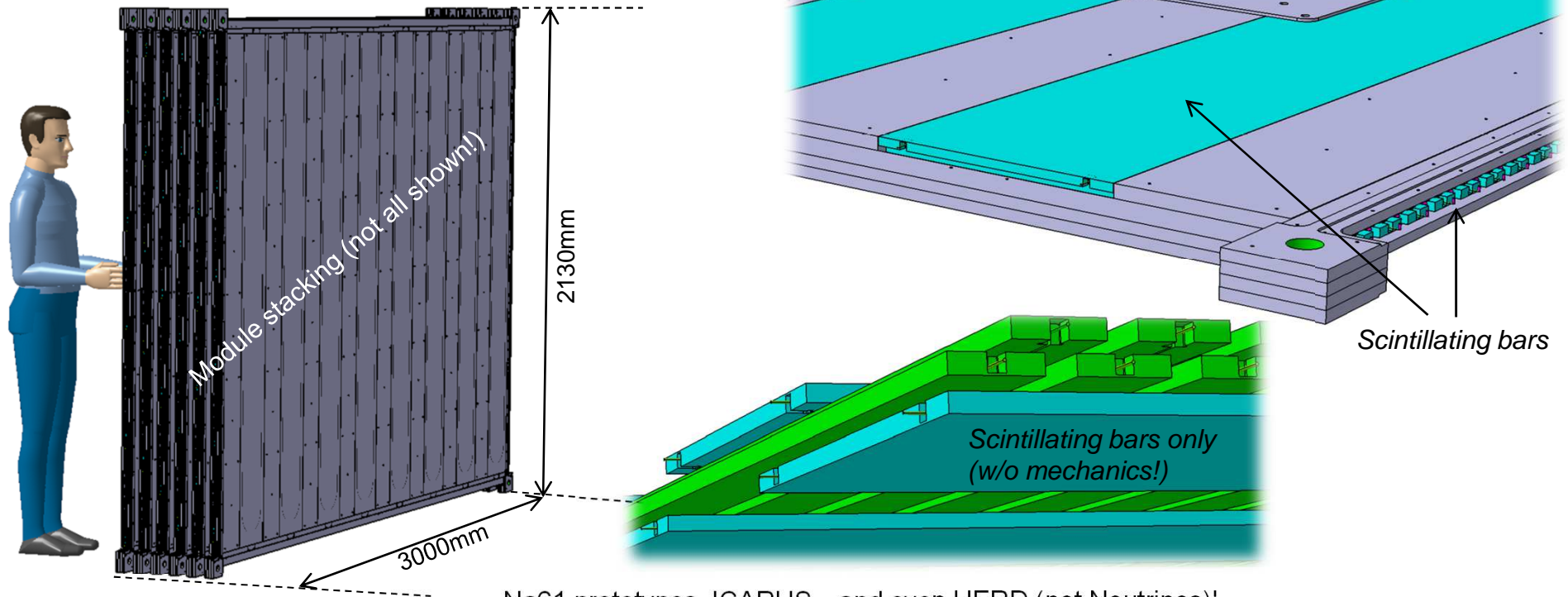


Neutrino Projects

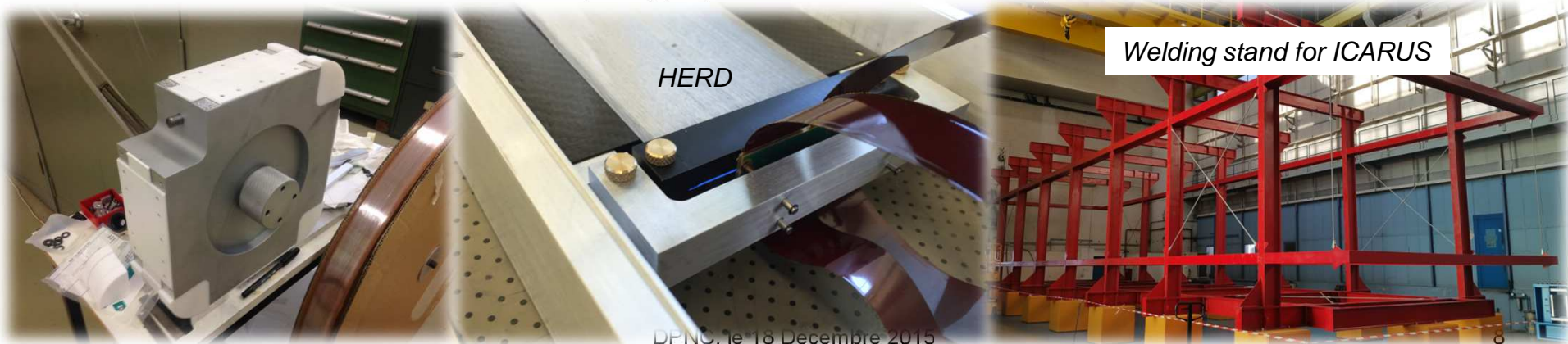
«BabyMIND» design work + Na61 + ICARUS!

People involved in 2015...

Laurent, Maxime, Sebastien, Franck (small fraction)



Na61 prototypes, ICARUS... and even HERD (not Neutrinos)!

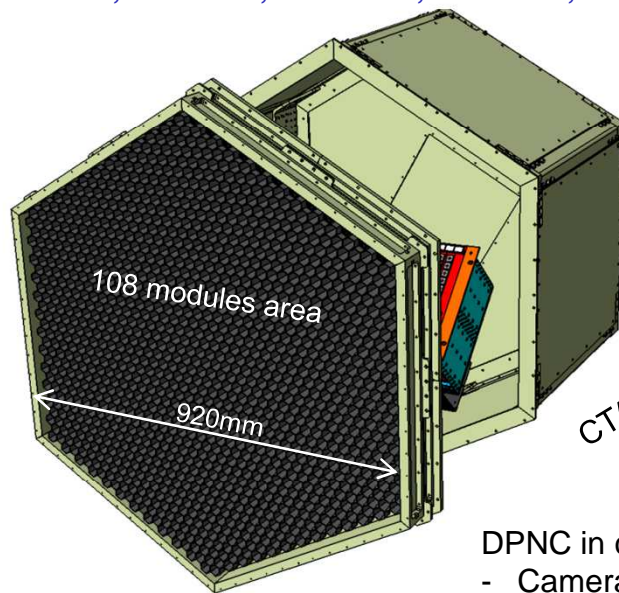


CTA Camera

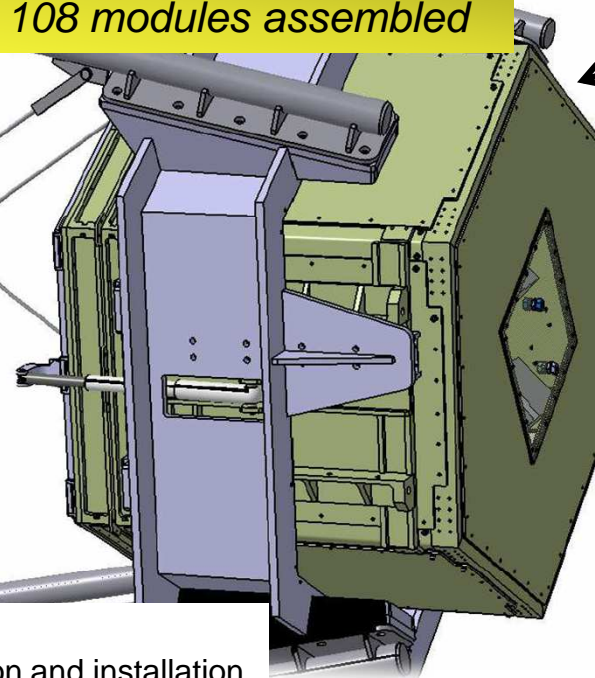
First prototypes + 108 modules assembled

People involved in 2015...

Coralie, Laurent, Maarten, Maxime, and Franck



CTA camera design

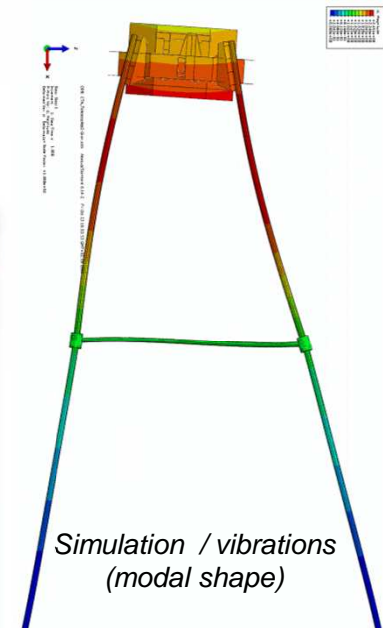
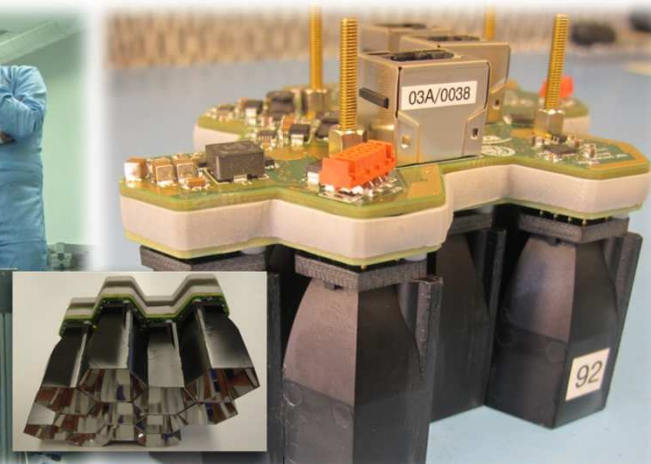
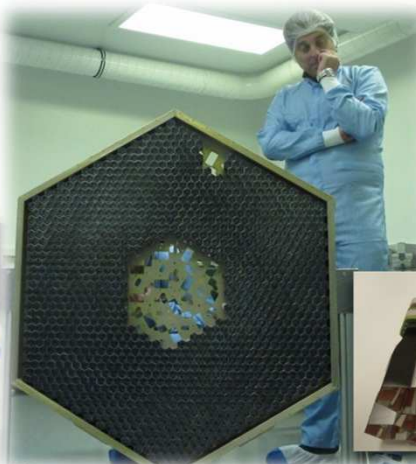
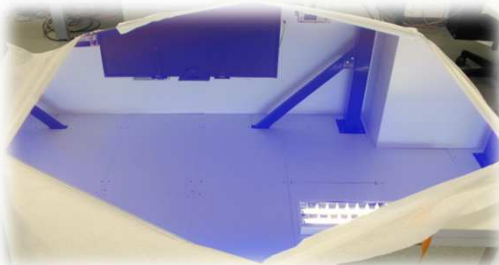


Telescope in Cracow

DPNC in charge of :

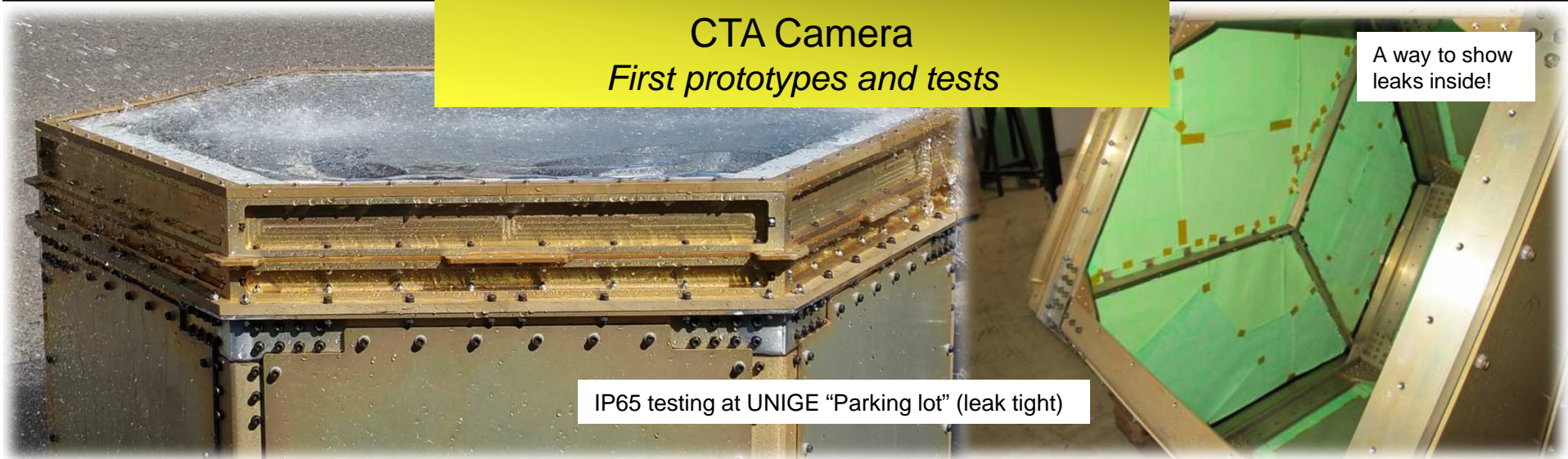
- Camera design, fabrication and installation
- 108 SiPMT modules
- Camera support redesign

Nice front window (borofloat)



DPNC, le 18 Decembre 2015

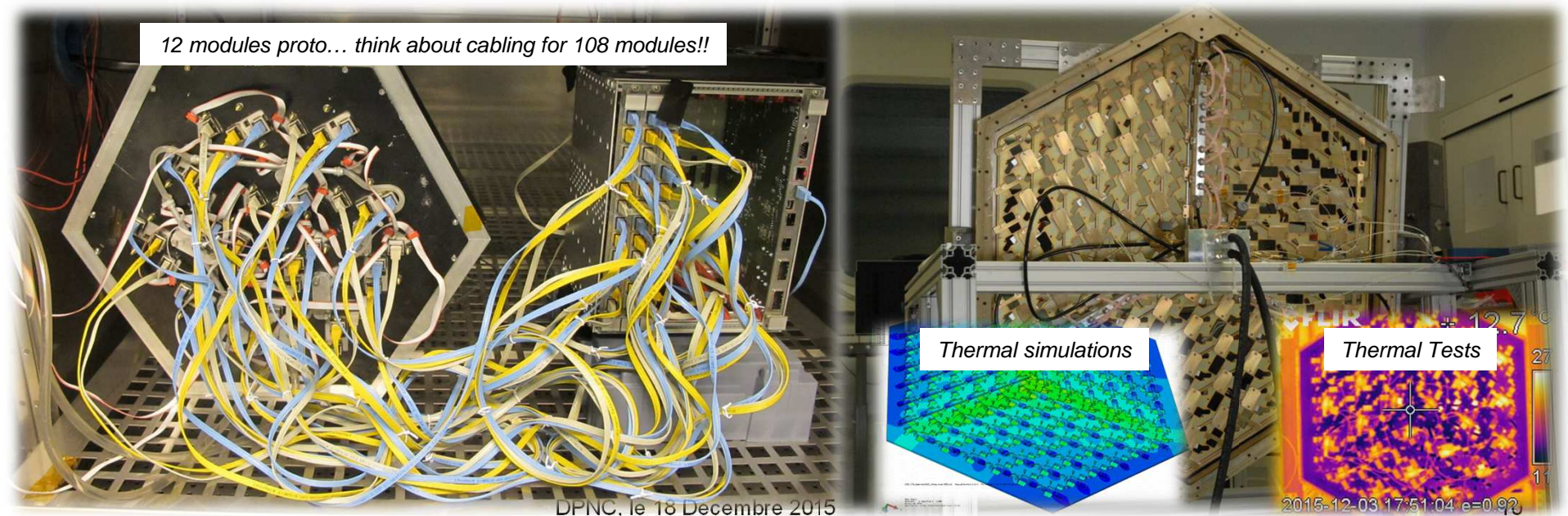
CTA Camera First prototypes and tests



A way to show leaks inside!

IP65 testing at UNIGE "Parking lot" (leak tight)

Lots of prototype works successfully assembled & tested
(still a lot ahead of us... cooling, camera shutter, and Insertion...)



12 modules proto... think about cabling for 108 modules!!

Thermal simulations

Thermal Tests

DPNC, le 18 Decembre 2015

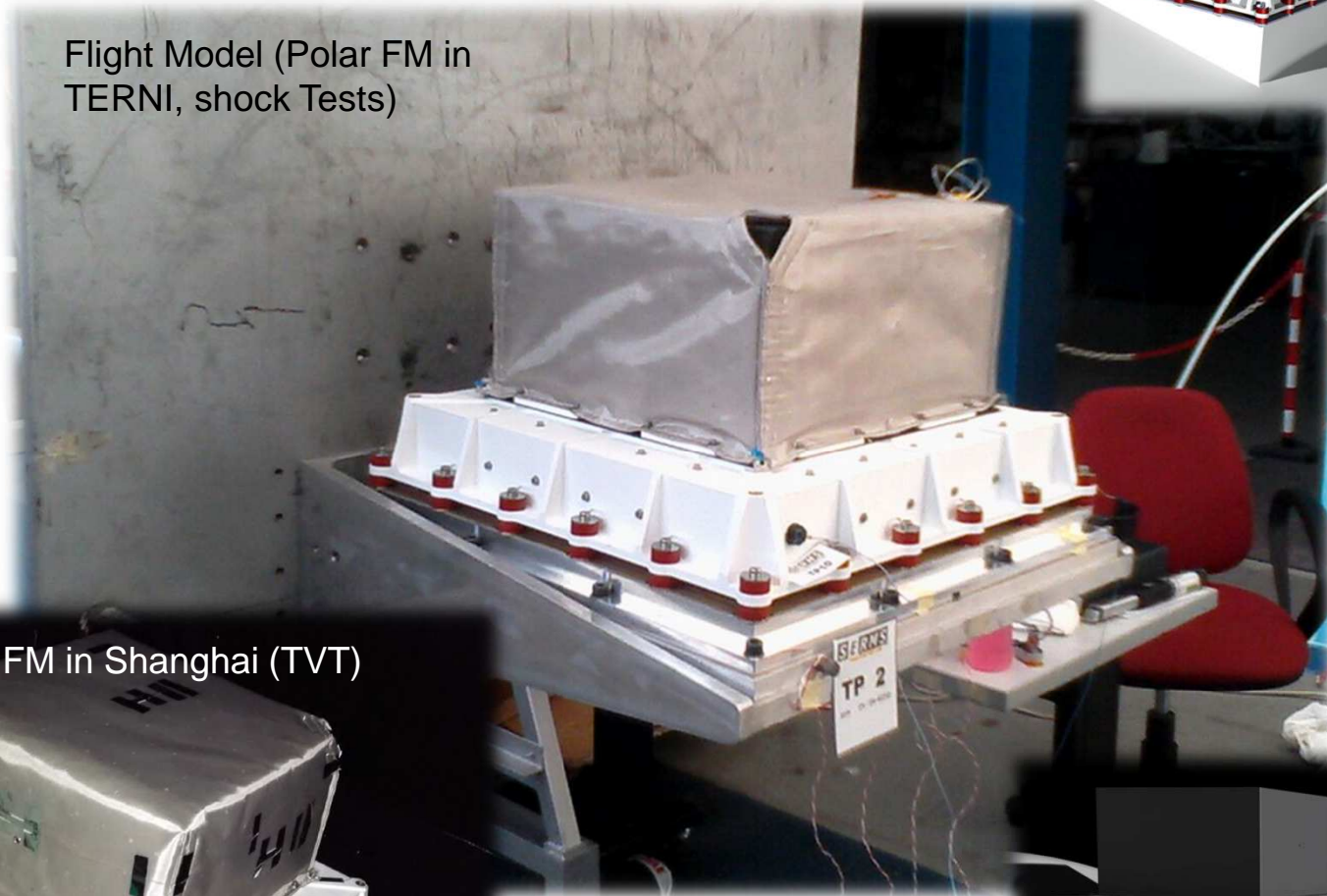
2015-12-03 17:51:04 e=0.92

POLAR

Flight and Spare models (fully qualified!)

People involved in 2015
Franck

Flight Model (Polar FM in
TERNI, shock Tests)



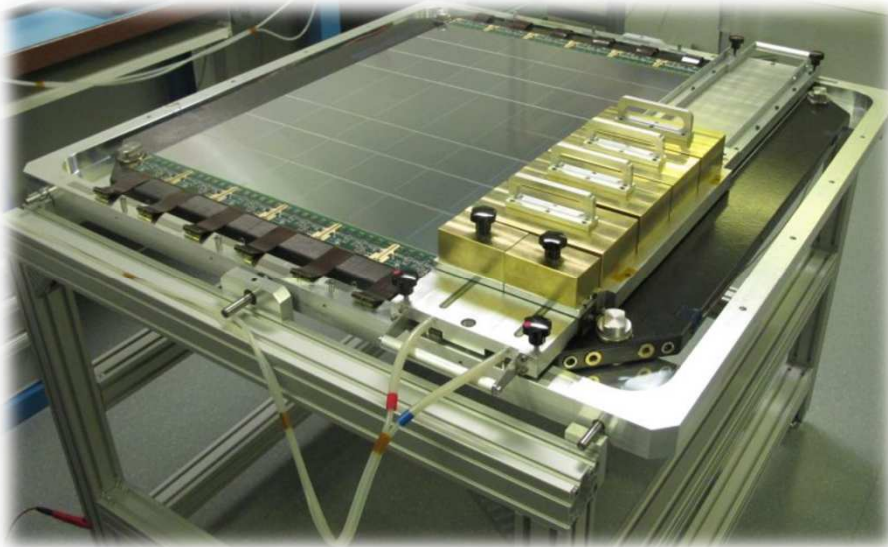
Polar FM in Shanghai (TVT)



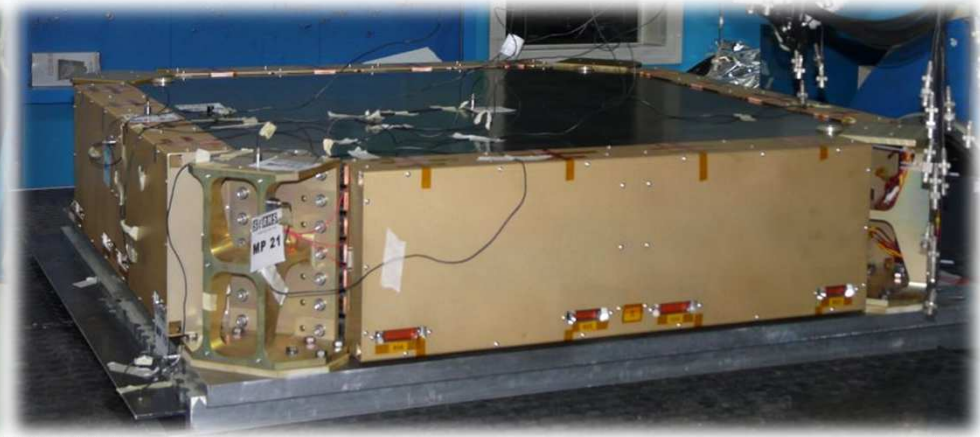
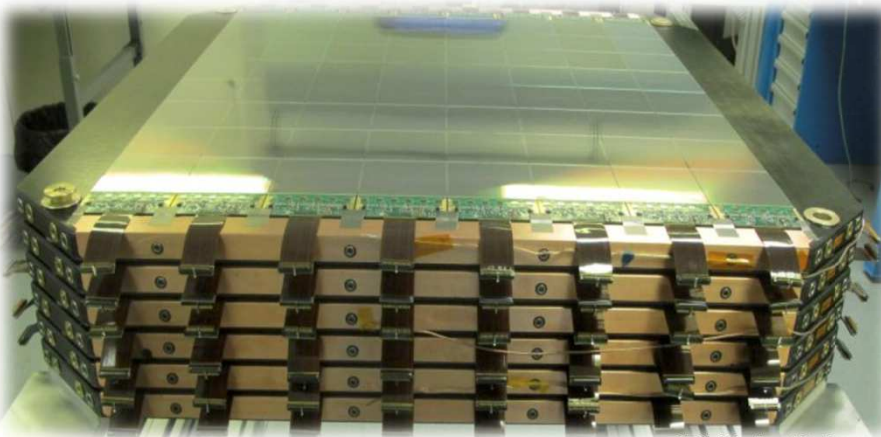
Dampe_STK Fabrication & Qualification for flight

People involved in 2015

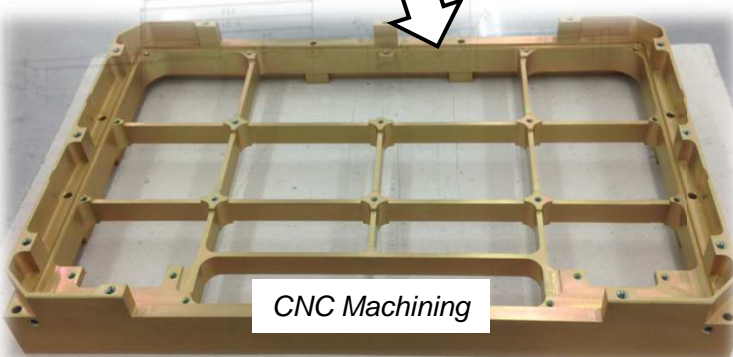
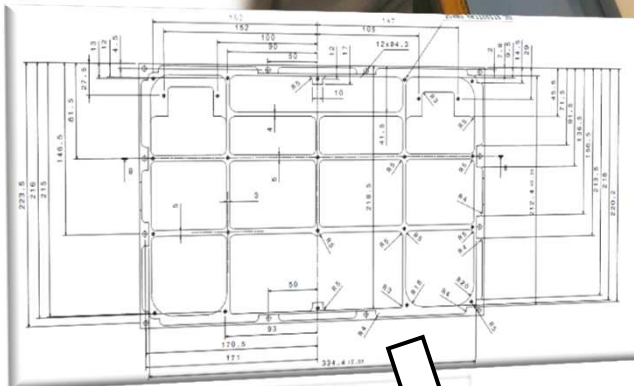
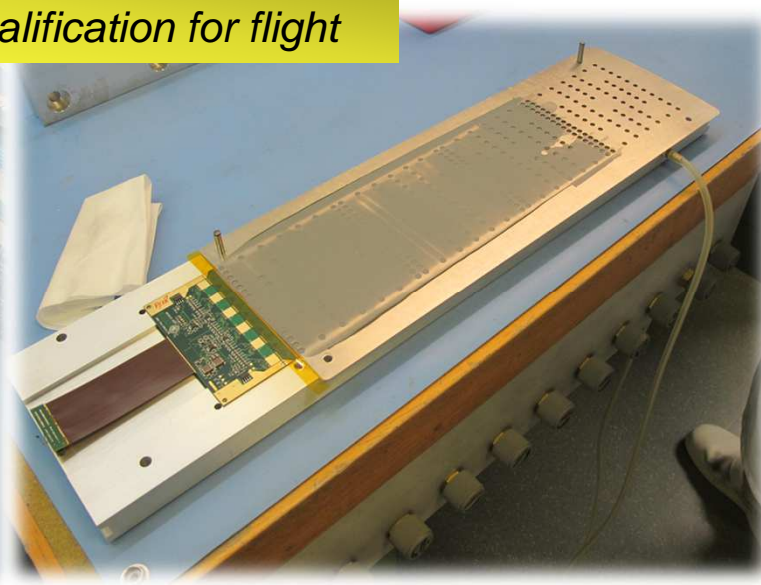
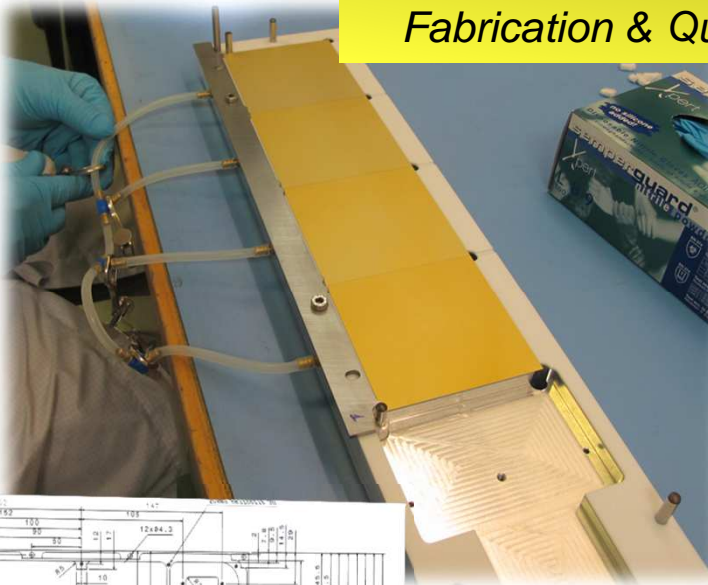
Coralie, Laurent, Maarten, Maxime, and Franck



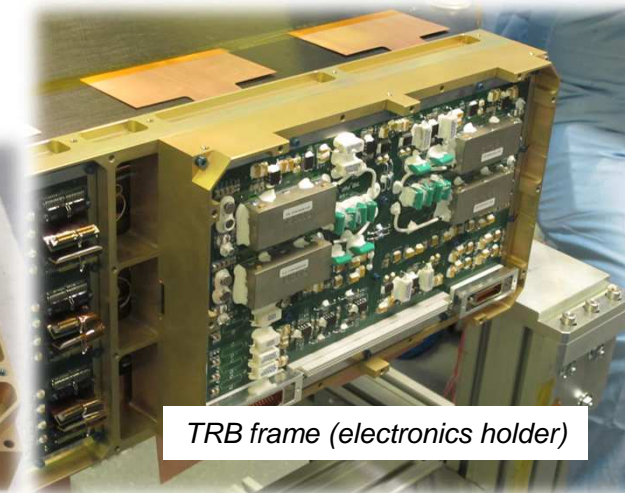
- 50% of silicon ladder fabrications
- Ladder assembly onto mechanics
- Mechanical design, Fabrication and Assembly



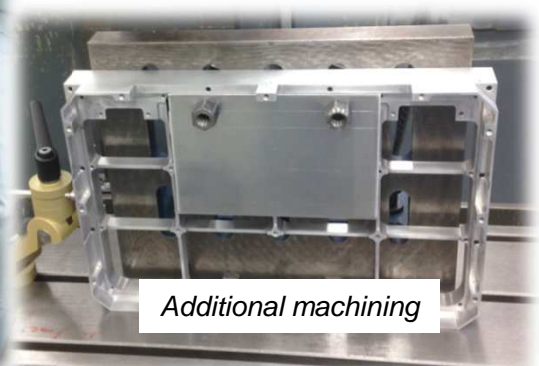
Dampe_STK
Fabrication & Qualification for flight



CNC Machining



TRB frame (electronics holder)



Additional machining

2 years project for the mechanics, quite challenging!
Only possible with a skilled team at DPNC!

- Various projects in quite different fields (CTA, Dampe, PIXEL, Neutrinos)
- Lots of activities ... BUT some KEY resources are leaving the group!!
- This is not without huge consequences... let's think about it soon...

Thanks again and Merry Christmas!