

# Update from Pavia

- Tablets measurements
- Fiber grouping

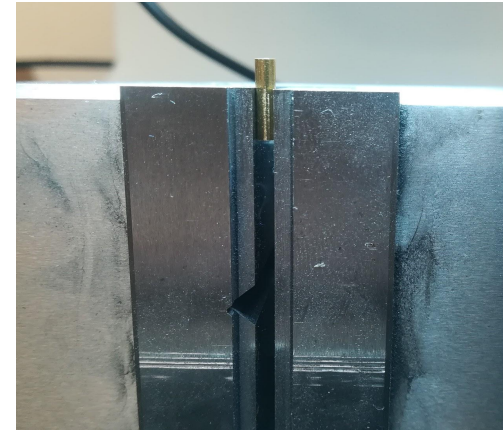
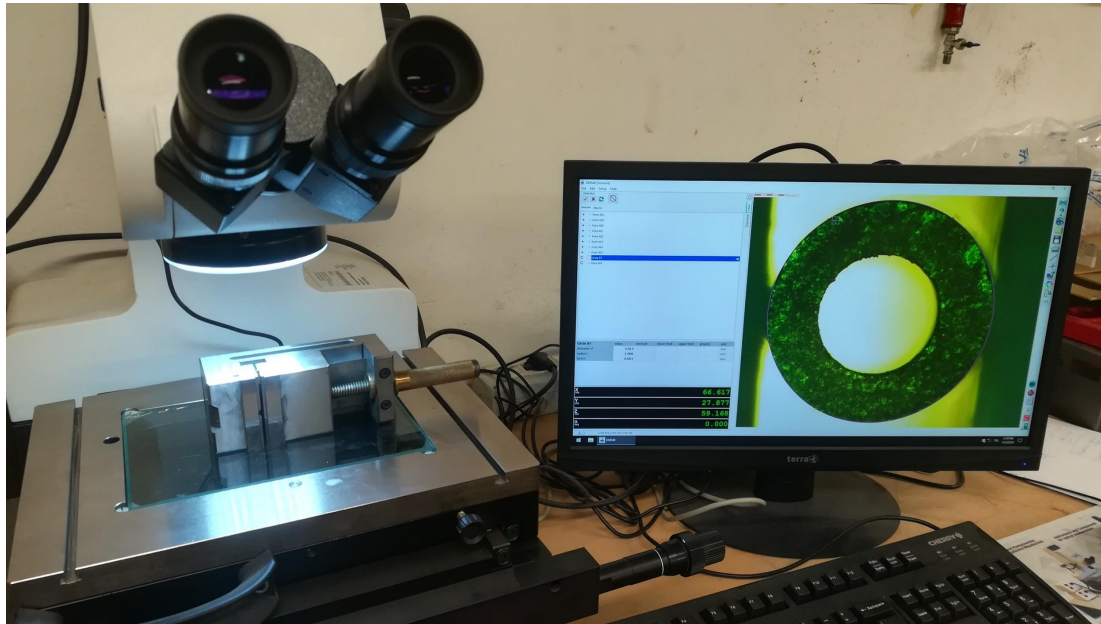
G. Gaudio on behalf of the Pavia RD\_FA group  
Nov. 6th 2019

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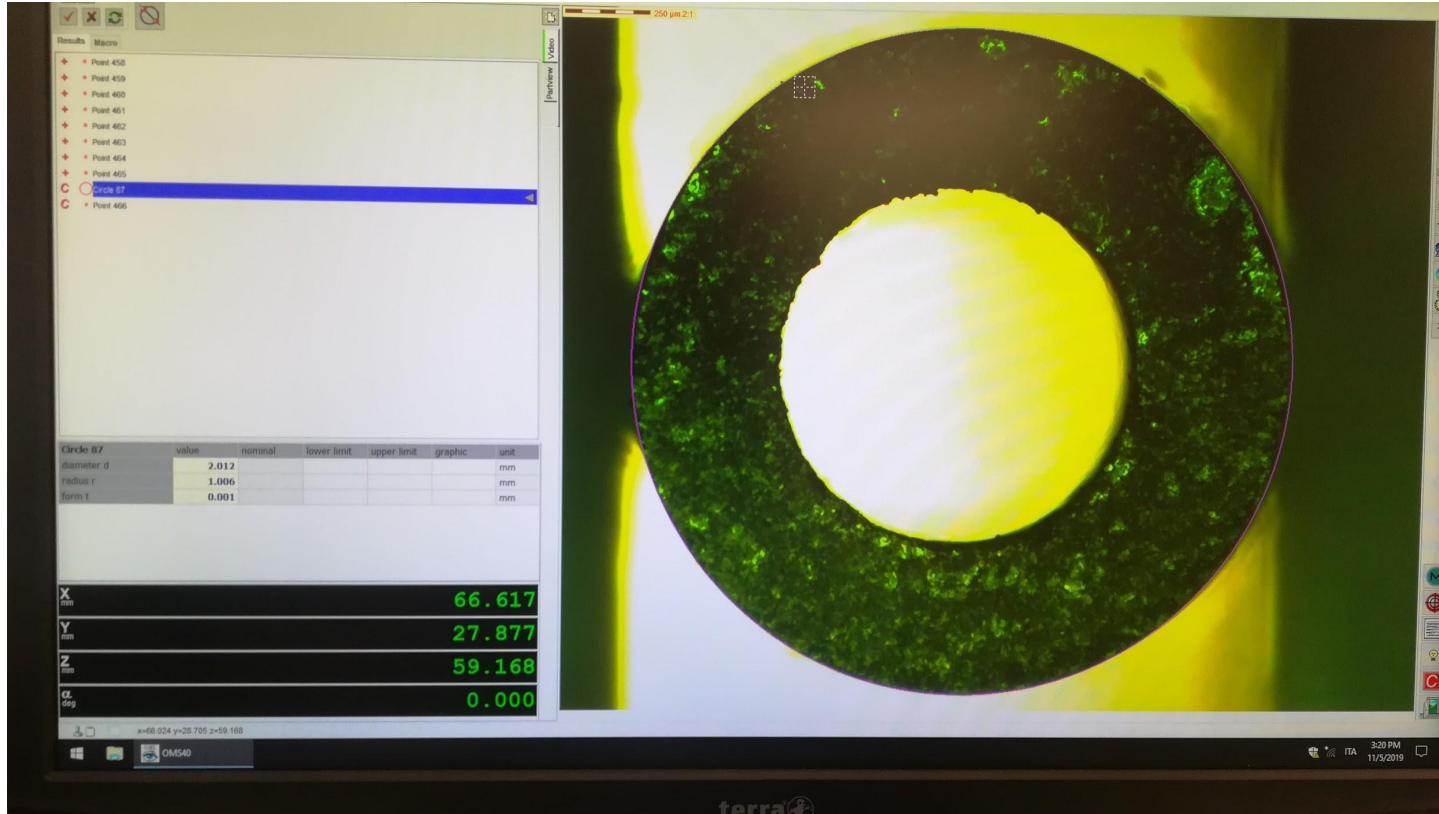
# Measurements setup

2 out of 3 tablets were cut with electroerosion in pieces 1 cm long each 19 cm

12 such pieces were measured with microscope + measuring system



# Measurement setup

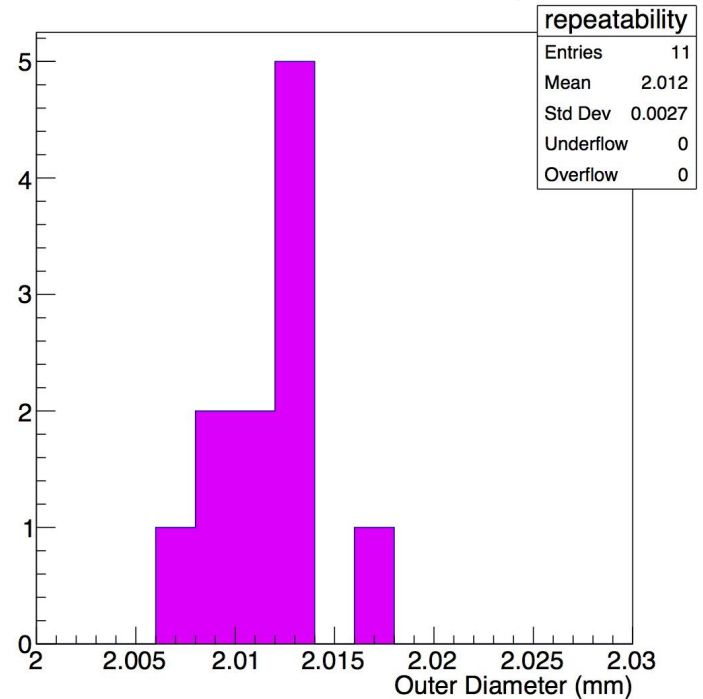


# Repeatability measurement

- One sample was positioned 10 times
- Measurement of external diameter redone

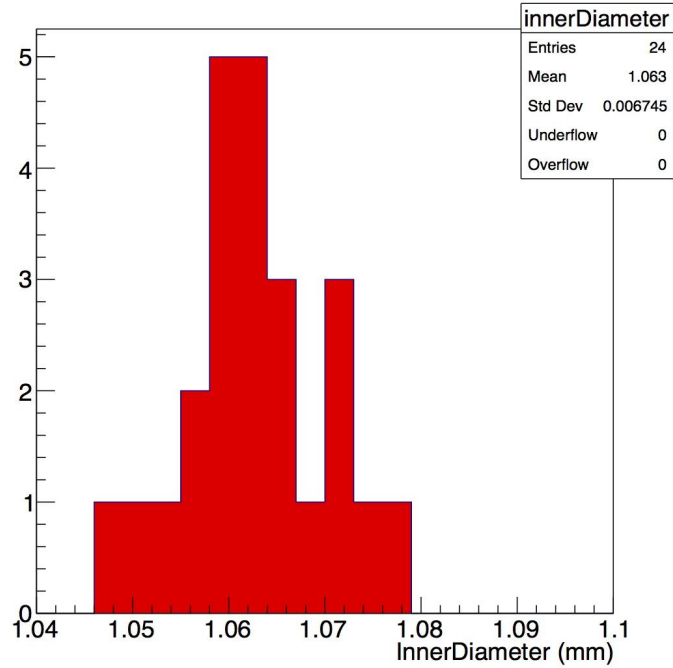
3  $\mu\text{m}$  rms

Measurement Repeatability

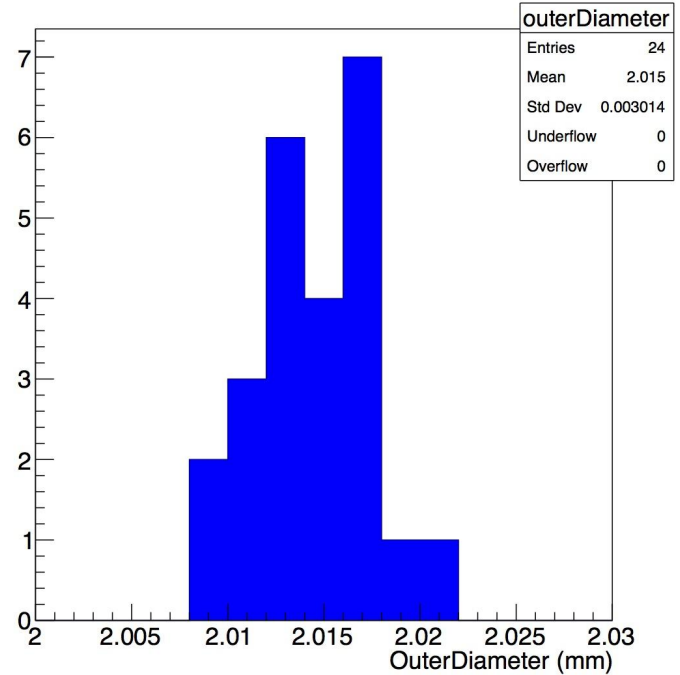


# Results

### Tablets Inner Diameter

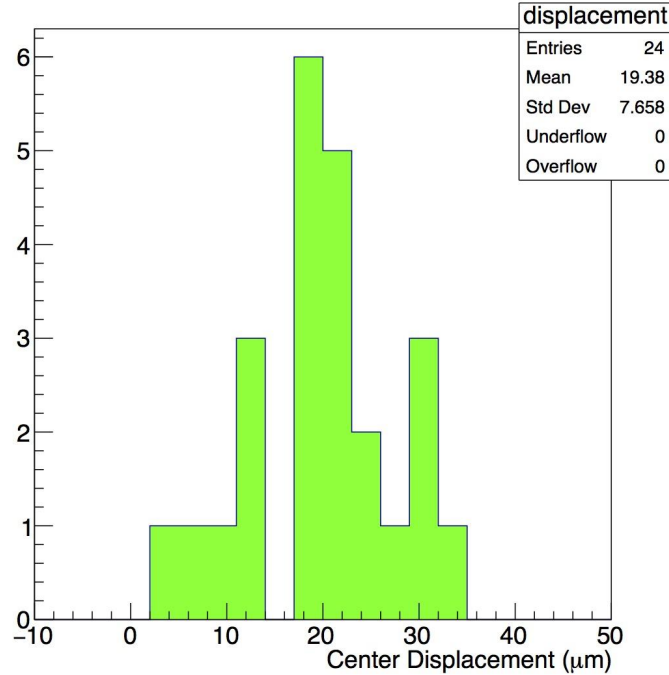


### Tablets Outer Diameter



# Results

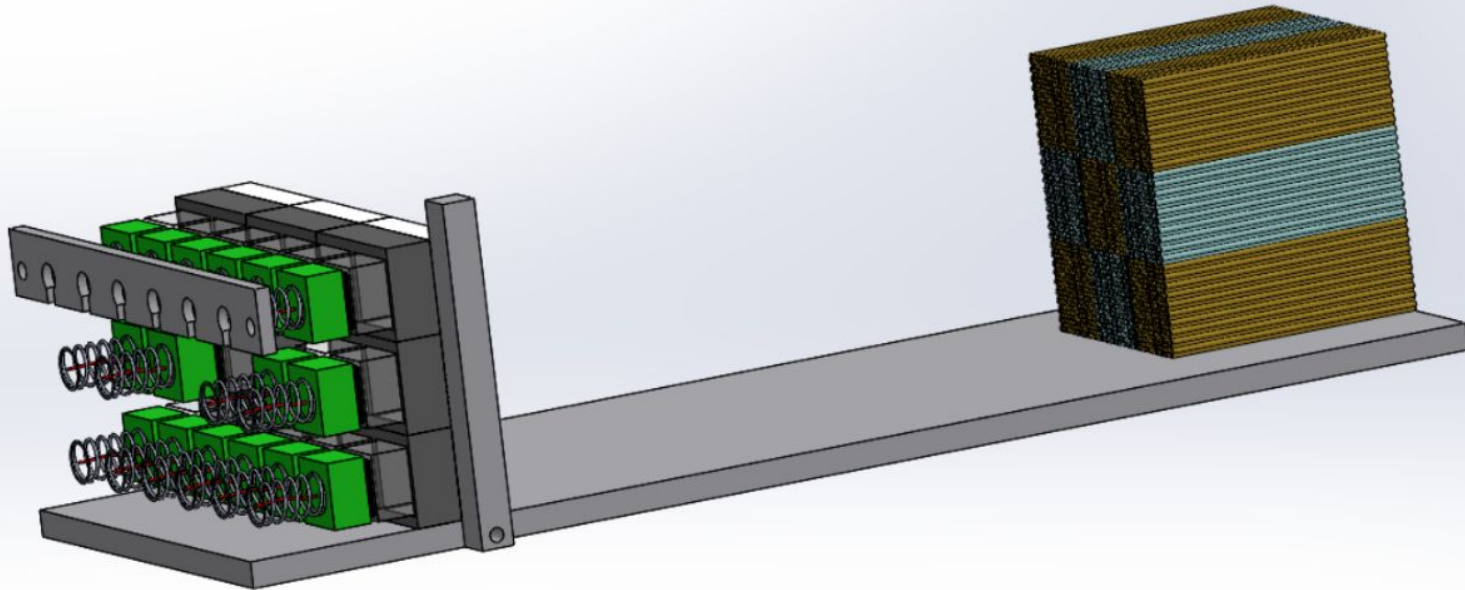
Tablets Center Displacement



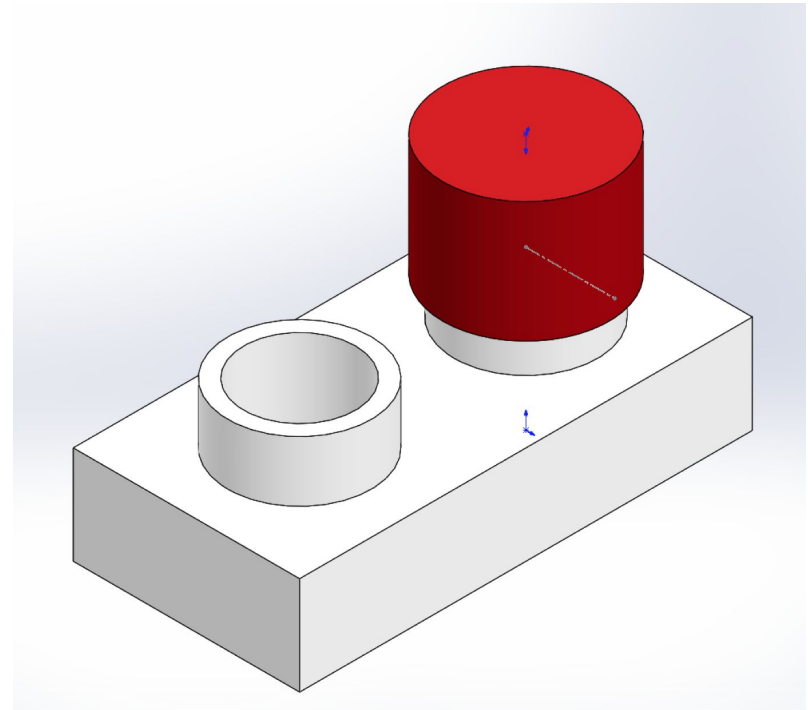
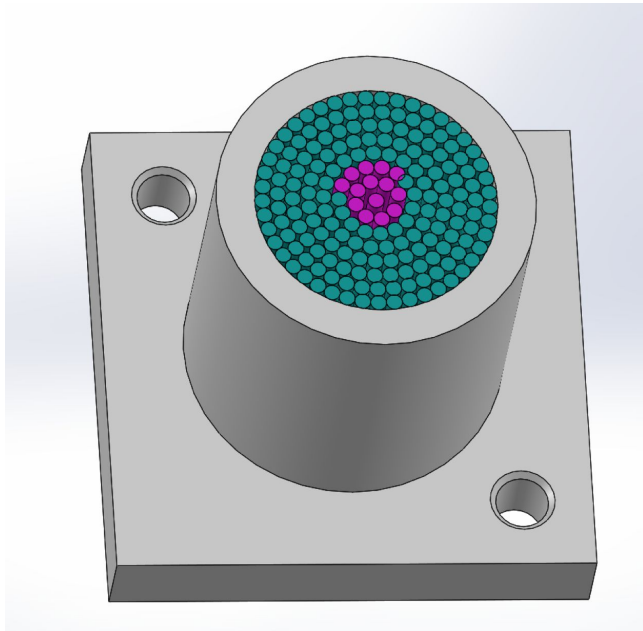
- **Outer Diameter:**
  - Average: 2.015 mm
  - RMS 3 μm
- **Inner Diameter:**
  - Average: 1.063 mm
  - RMS 7 μm
- **Concentricity Offset**
  - Average 19 μm
  - RMS 8 μm

# Fiber grouping

Adopting known solution to a (slightly) different object  
Considering 16x20 tublets per module (according to RO request)



# Fiber grouping - PMT





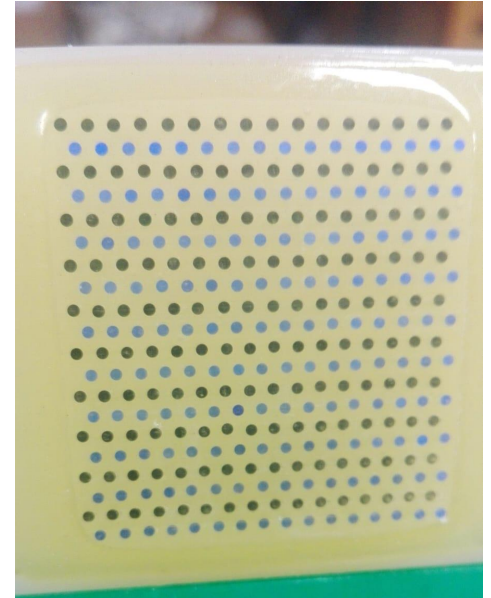
# Fiber Grouping test



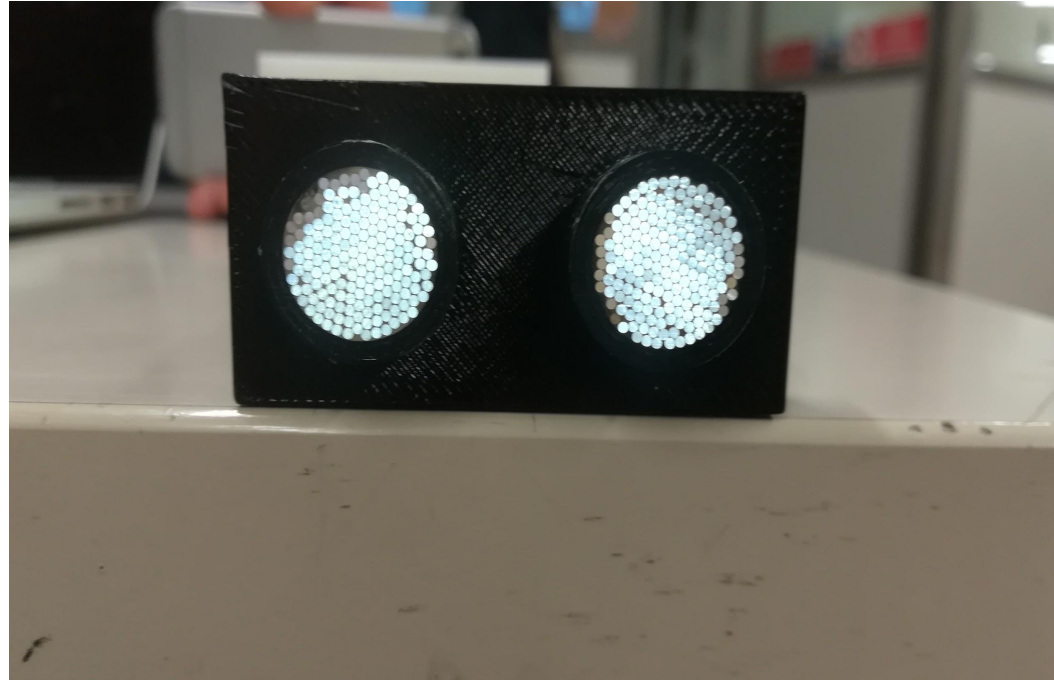
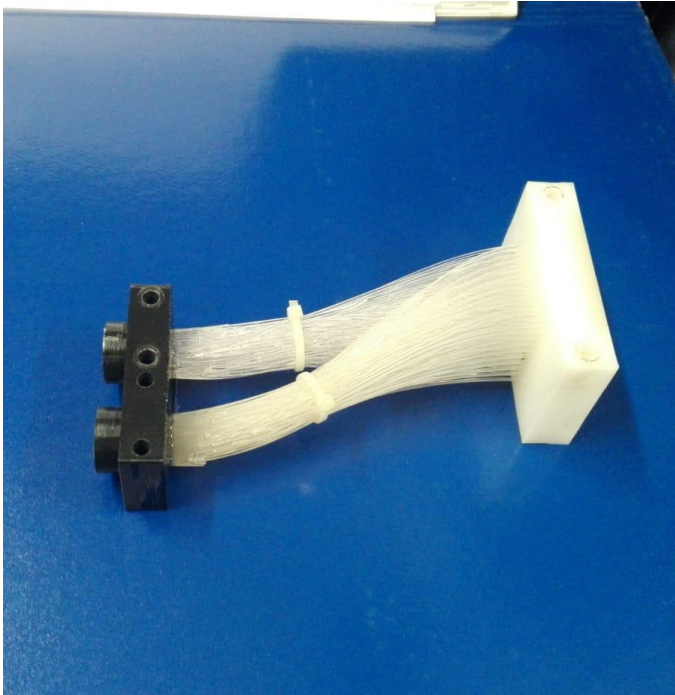
Fibers from a “lateral sector” connected to the fiber holder

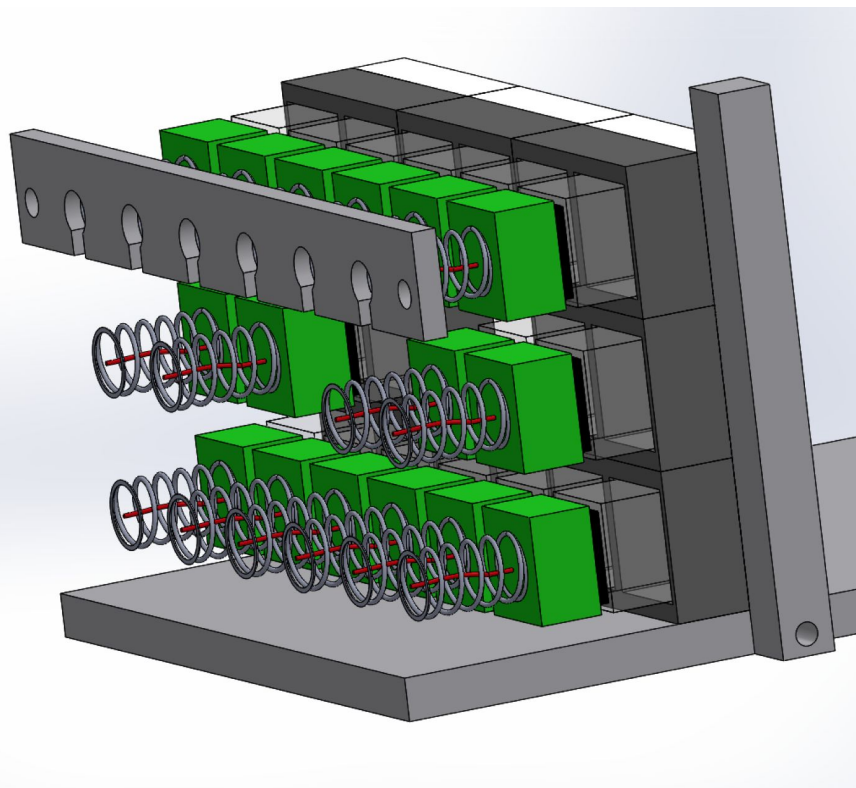
120 mm allows for required bending

Module Mock-up:  
alternate rows of C and S fibers



# Glued fibers





- PMTs holder are 30X30 mm
- 6 holder for external rows, 2+2 for internal

#### Electronic Side expected dimensions:

- 180 mm x 90 mm overall
- 60 mm x 90 mm clearance for SiPM tower
  - **Can be modified on request**

# Wiring the fibers

## Learning from “on shelf” solutions

### Overview

### Specification

Fibercore provides fiber in metal tubes (FIMTs) in different sizes, wall thickness and metal types. FIMTs are used in a variety of applications due to the hermeticity of the tube, strength, crush resistance, corrosion resistance and fiber density. Some of these applications include downhole fiber optic cables, logging cables, power cables, cryogenic applications, industrial monitoring, subsea cables and many more.

#### Outer Tube Materials

304 Stainless Steel  
316 Stainless Steel  
Incoloy 825  
Inconel 625  
(Other materials may be available upon request)

#### Diameter Range

0.84mm to 6.35mm (0.033" to 0.250")  
(Diameters are available in 0.1mm increments)

#### Wall Thickness Range

0.127mm to 0.3mm (0.005" to 0.12")

Outer buffering over the FIMT is available upon request.

Fiber In Metal Tube

Available in different sizes, wall thickness and metal types.

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An example... but there are many companies producing FIMT  
How to wire fibers in tubes is a known problem, apparently