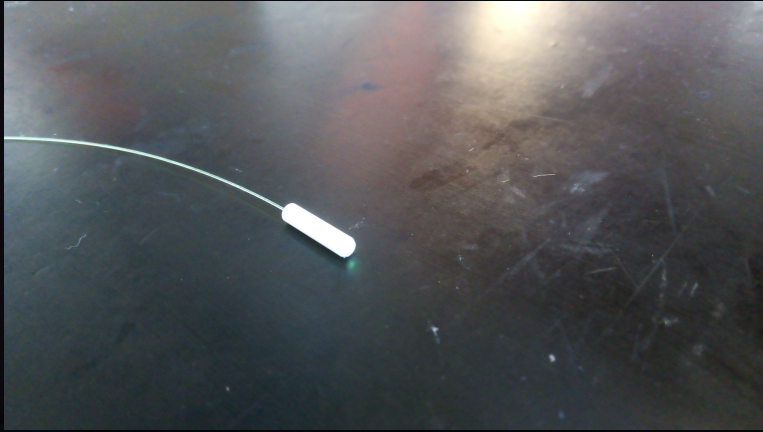


# Study of the fiber signal dependence on the PD package features

---

Pietro Betti, Eugenio Berti, Lorenzo Pacini

# Fiber signal readout using SiPM

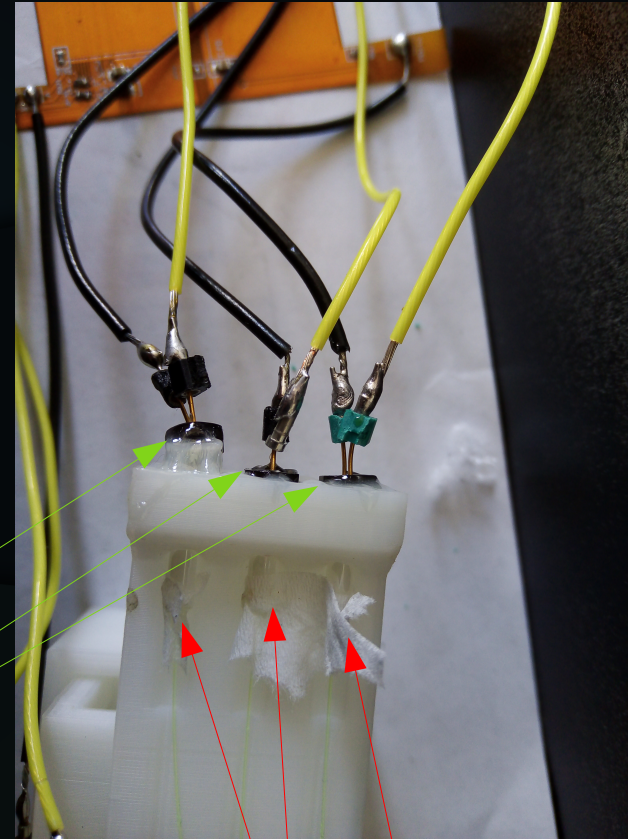


- 1) Fiber glued in the ferula
- 2) Small part of the fiber emerges from the ferula exit
- 3) The fiber excess is sanded with sandpaper

- 1) A teflon sheet is positioned on the support to couple ferula with SiPM
- 2) SiPM is glued on the support
- 3) Ferulas are positioned in the support at contact with teflon

Badly glued SiPM

Well glued SiPM



Ferulas

# Experimental apparatus

Configurations:

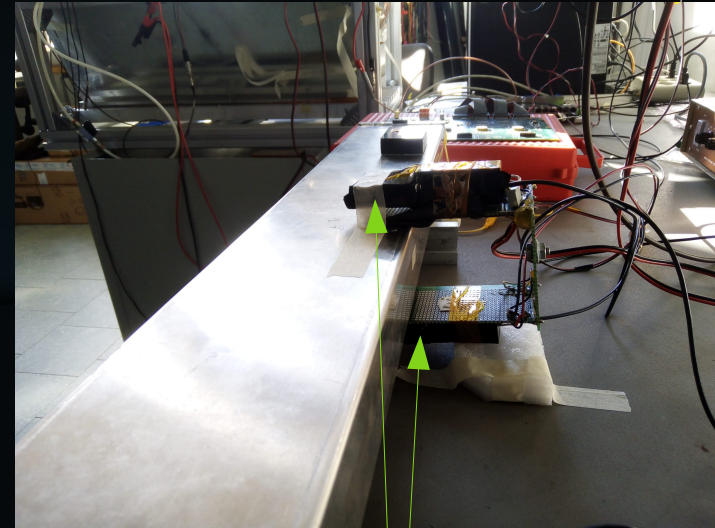
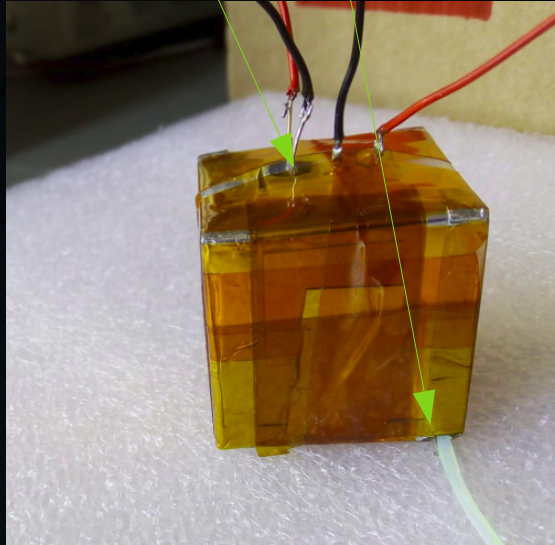
- Package
- Package with vikuiti (ESR)
- All vikuiti, no PDs



PD package dimension:  $15 \times 10 \text{ mm}^2$   
Active area LPD:  $25 \text{ mm}^2$   
Active area SPD:  $1.6 \text{ mm}^2$

PD package

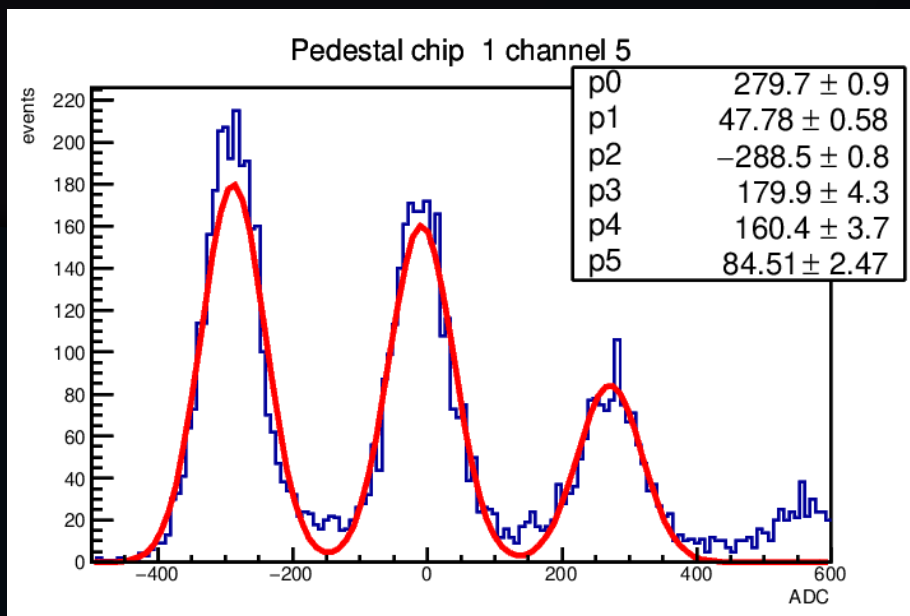
Fibers



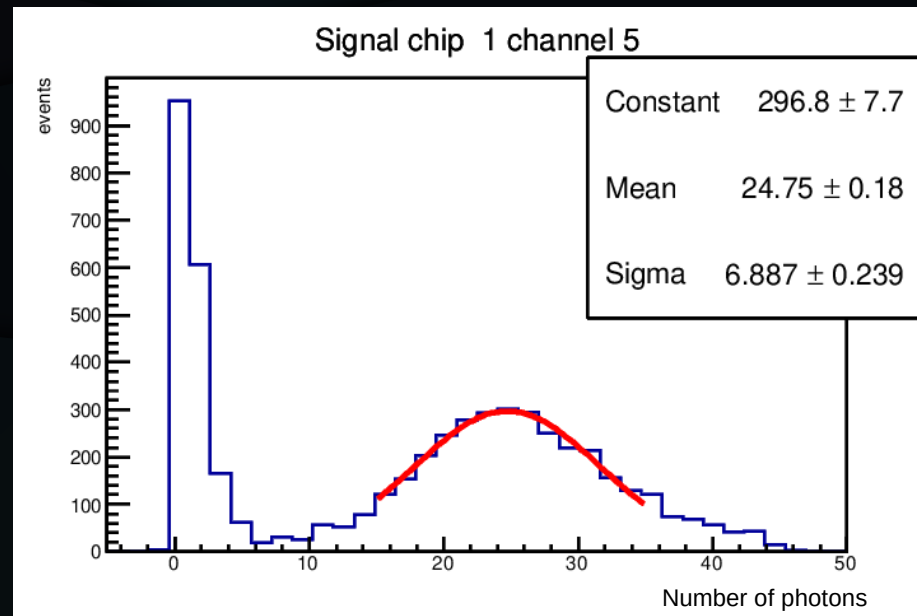
Plastic scintillators  
trigger to select  
cosmic ray muons

# Measures of MIP in fibers

Fit of pedestals for calibration  
from ADC to number of photons

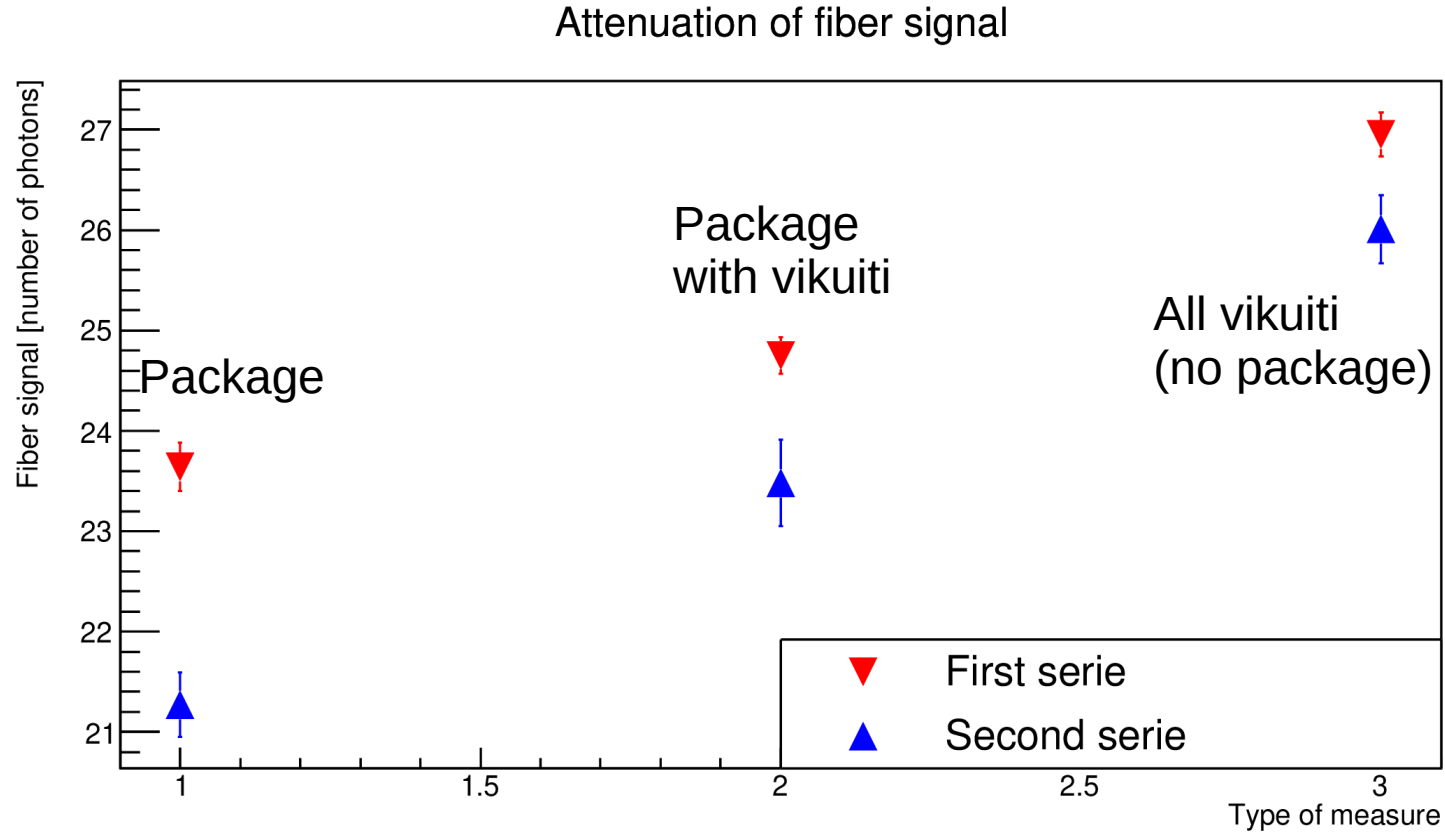


Gaussian fit of MIP peak





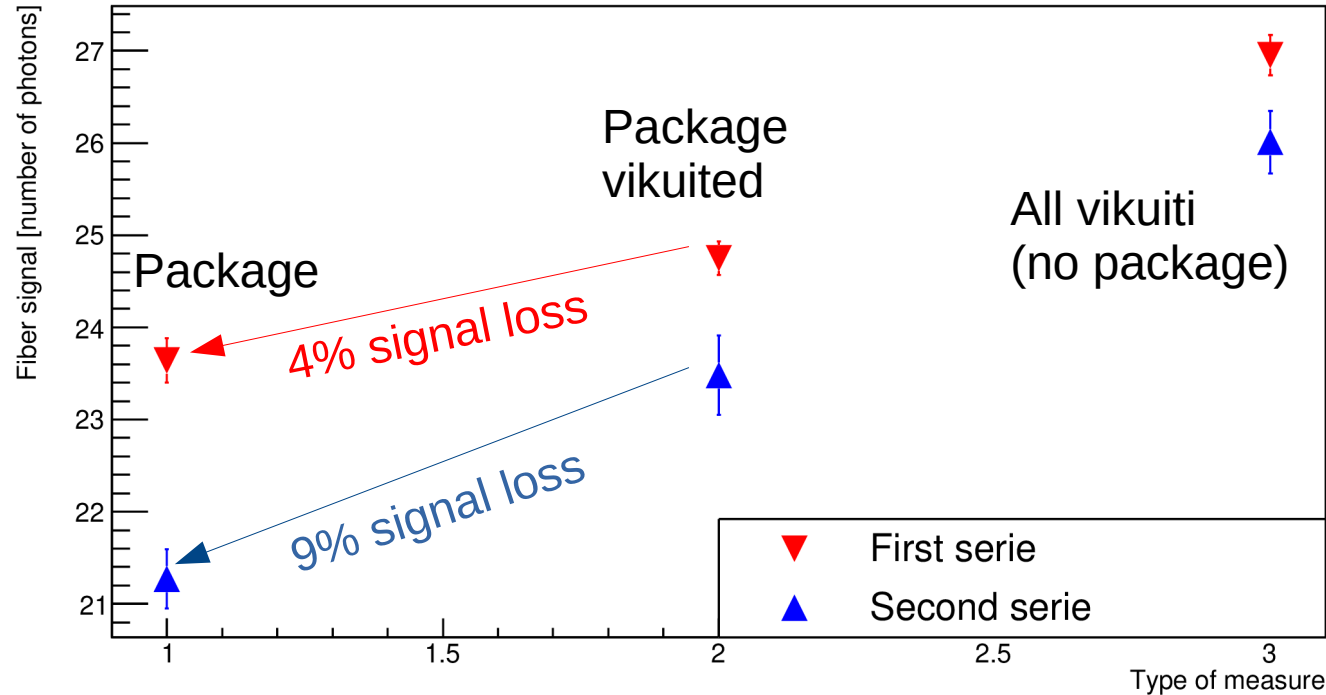
# Results



We performed  
two series of  
measures

# Results

Attenuation of fiber signal



Critical factors:

- Temperature variations induce SiPM efficiency variations
- Optical coupling between package and Lyso
- We are acquiring a new set of measurement

The loss of signal in the fiber covering the package with vikuiti is less than 10%