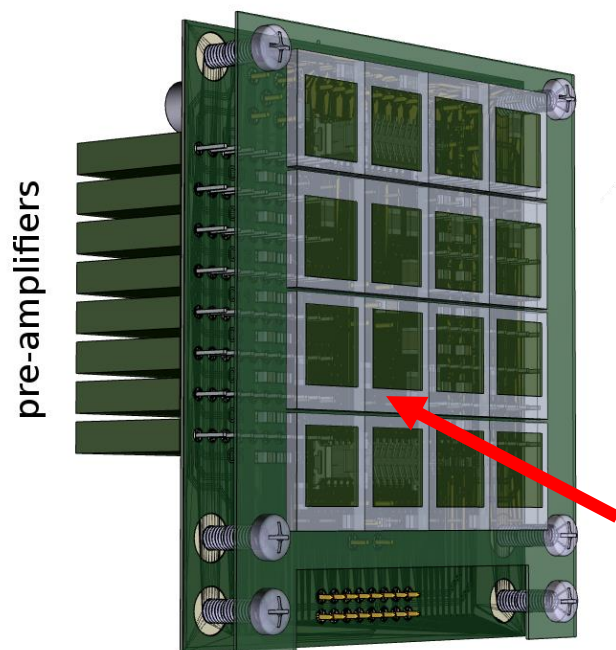


OSCAR: hOdoscope of Si for COrrelations and AAnalysis of RReactions



pre-amplifiers

Silicon pads, 300 μm (HAM.)

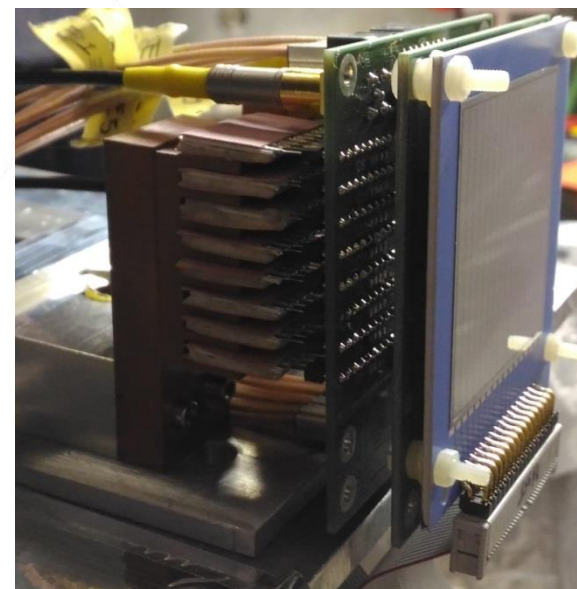
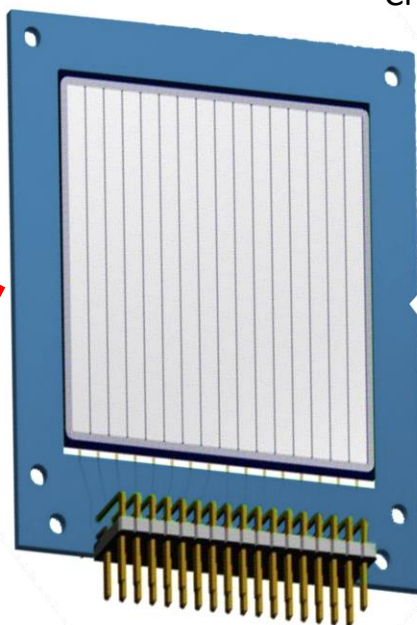
Charge PRE $\rightarrow$ 22mV/MeV

Two boards $\rightarrow$ plug and play

Strip Si 20 μm (nominal) $\rightarrow$ Micron Std.

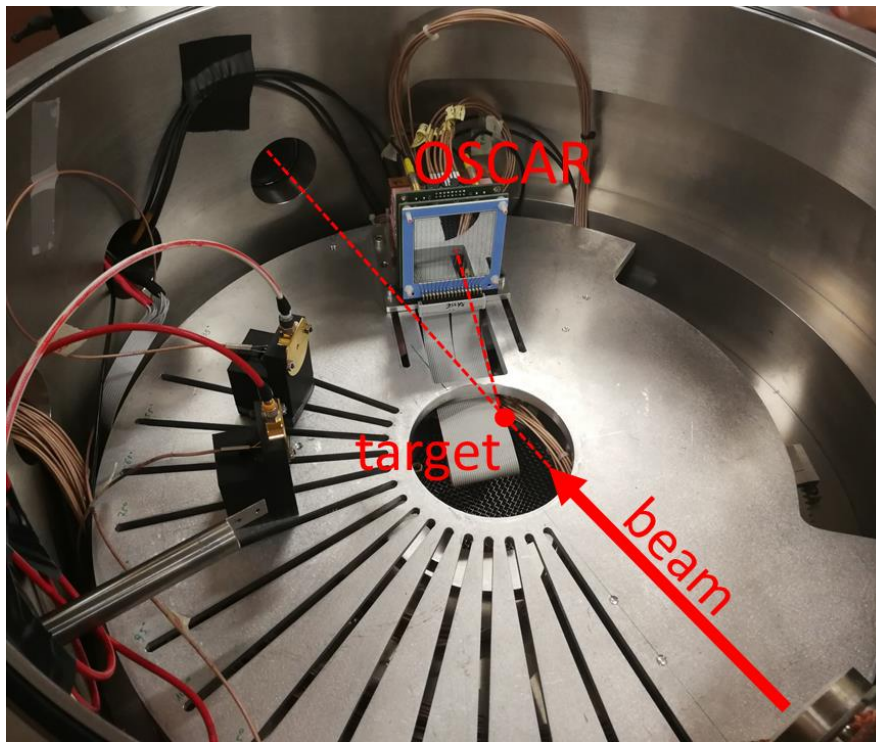
SSSSD $\rightarrow$ 16 strip, 3 mm wide; 0.125 mm interstrip

Charge PRE, 16 ch. NET Inst. (45, 90 mV/MeV)



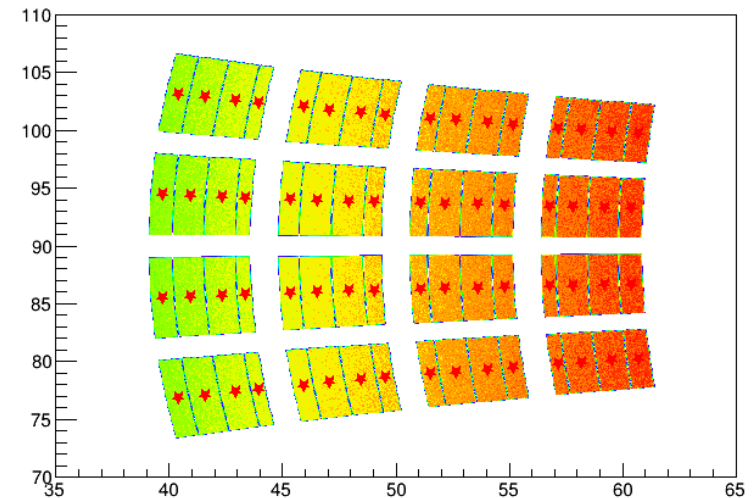
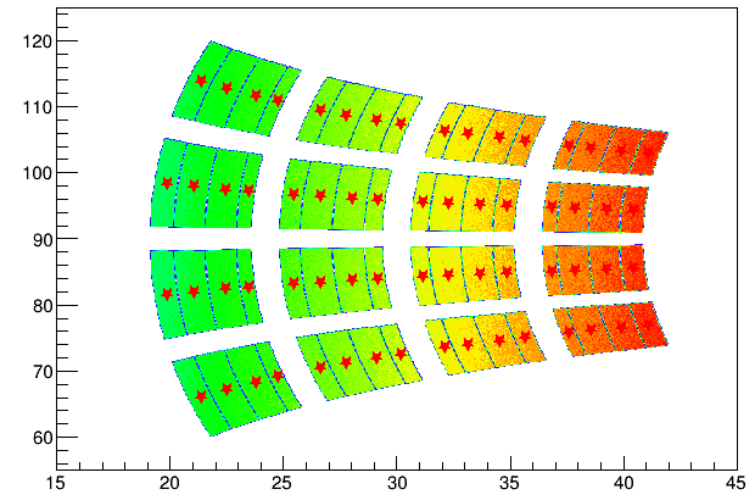
See D. Dell'Aquila et al., Nucl. Instr. Meth. Phys. Res. A **877** (2018) 227.

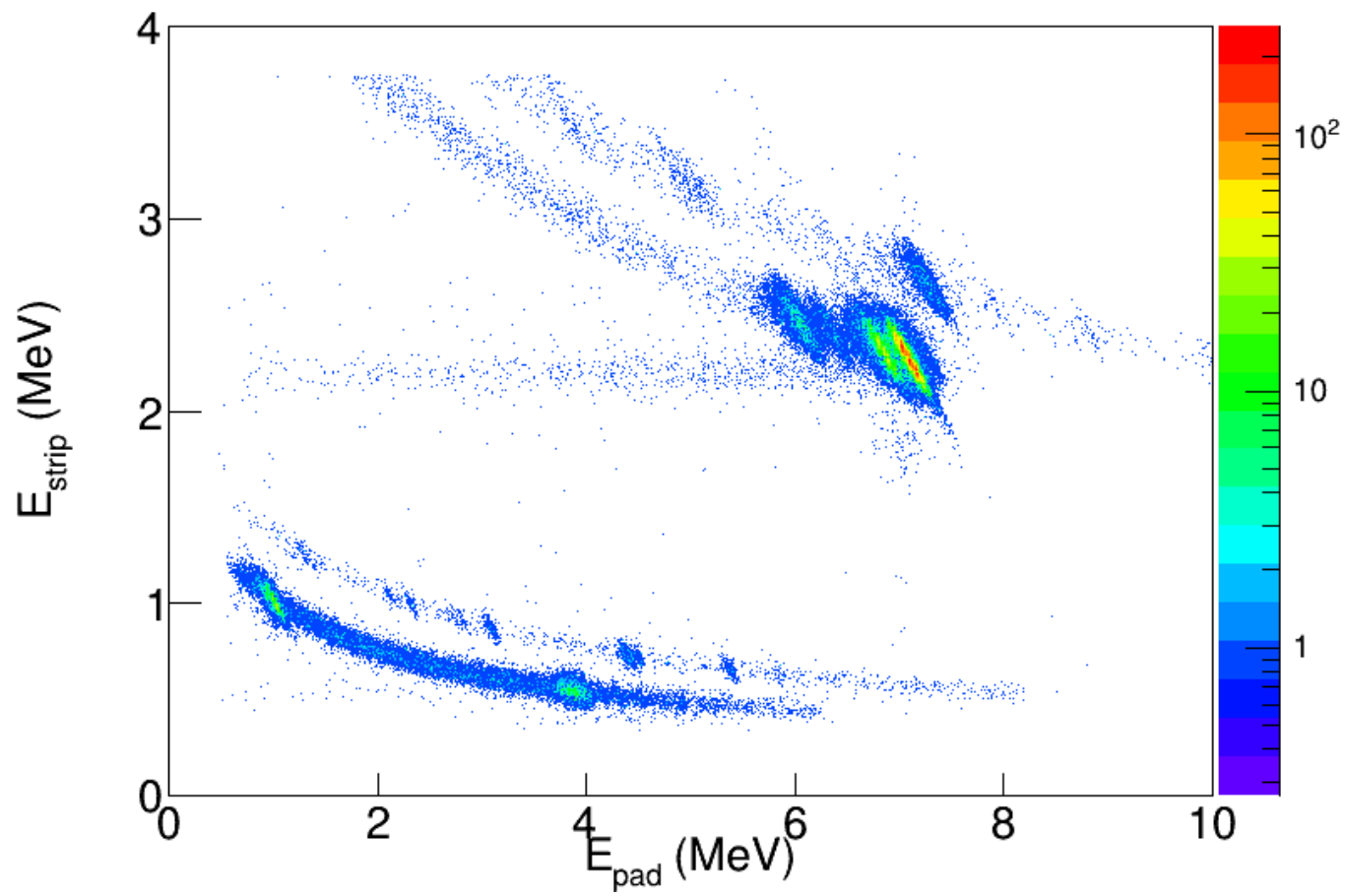
Geometries have been determined with *optical methods* with accuracy of 0.1° ...

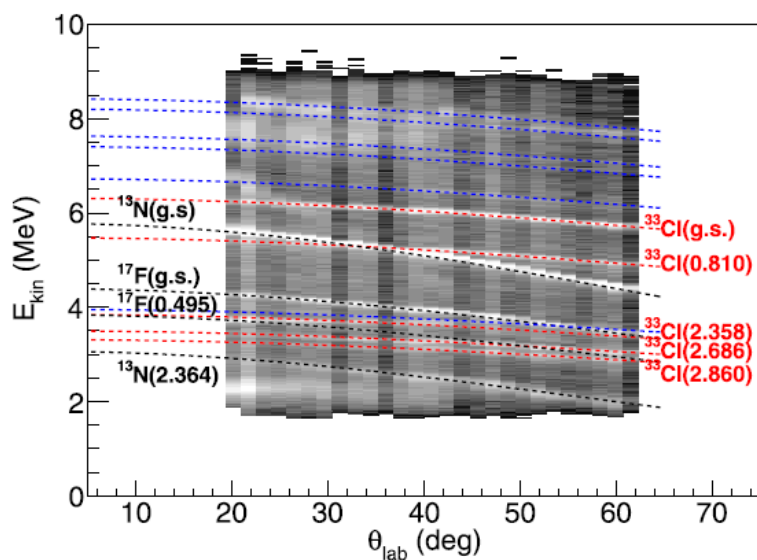
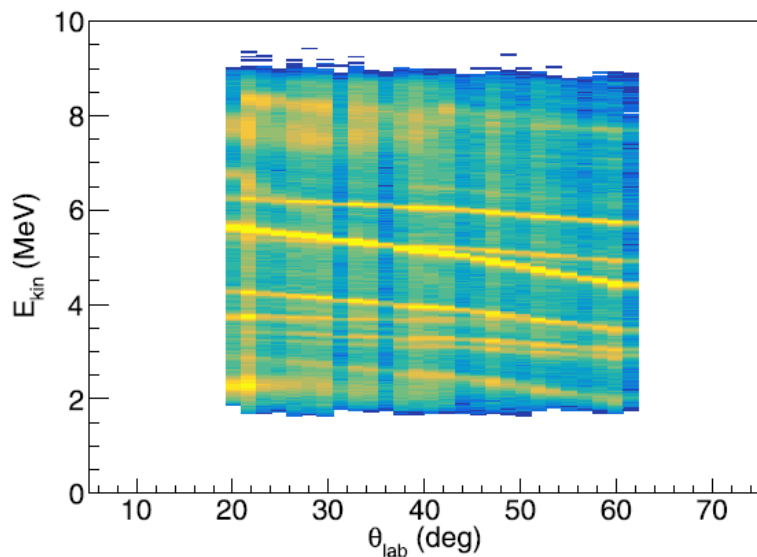


... and were cross-checked with accurate *Monte Carlo* simulations

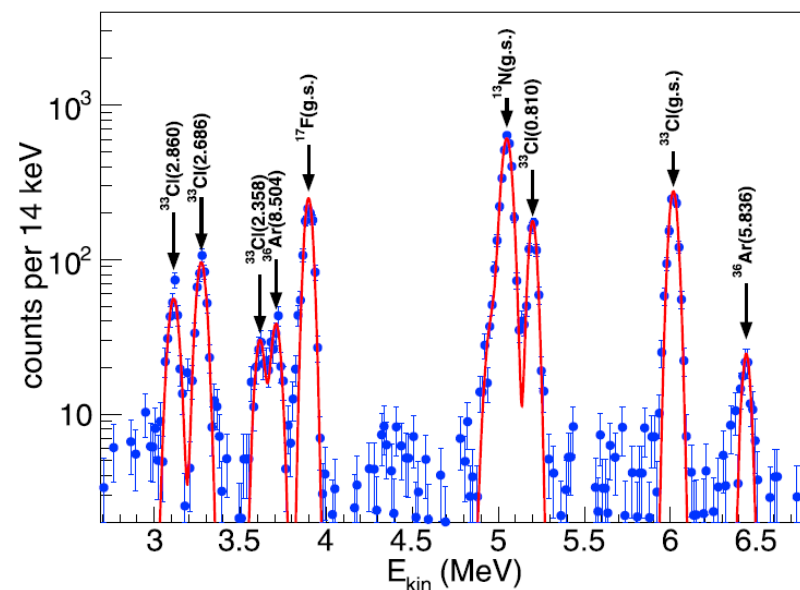
Agreement between direct and calculated polar angles $\rightarrow$ within 0.3° maximum



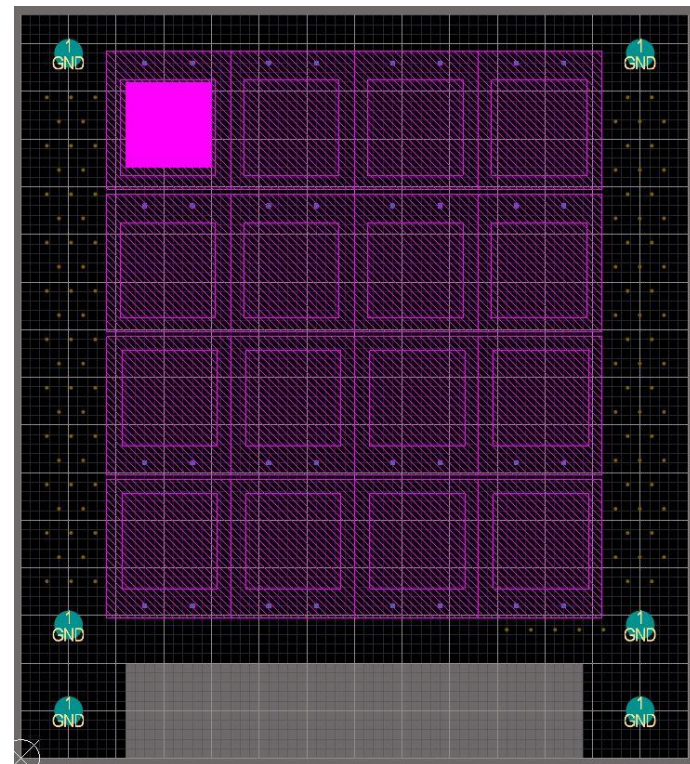
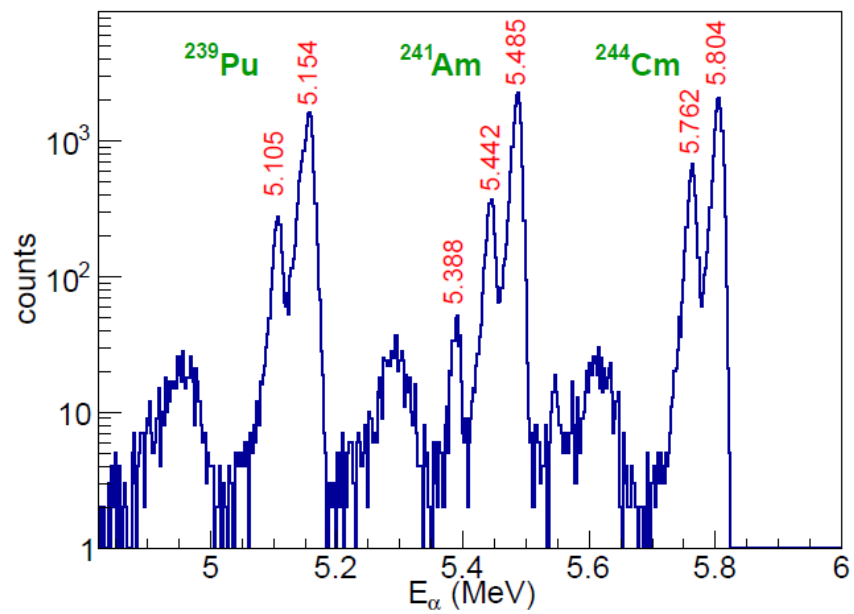




Linee cinematiche ricostruite
nell'esperimento TAUDU ai LNL →
deutoni ben identificati in OSCAR.



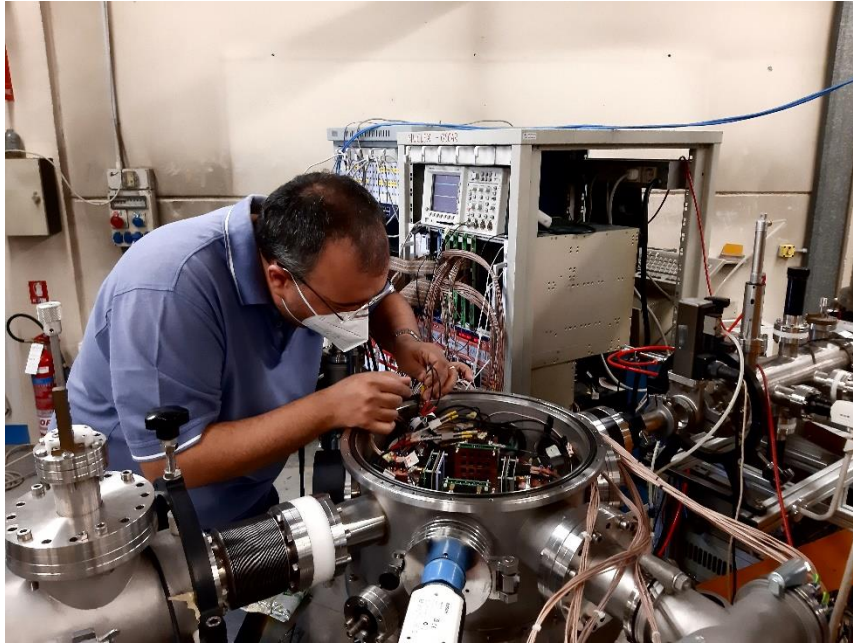
An example for a pseudo-telescope at $\theta_{lab} = 43.7^\circ$



Setup HELICA

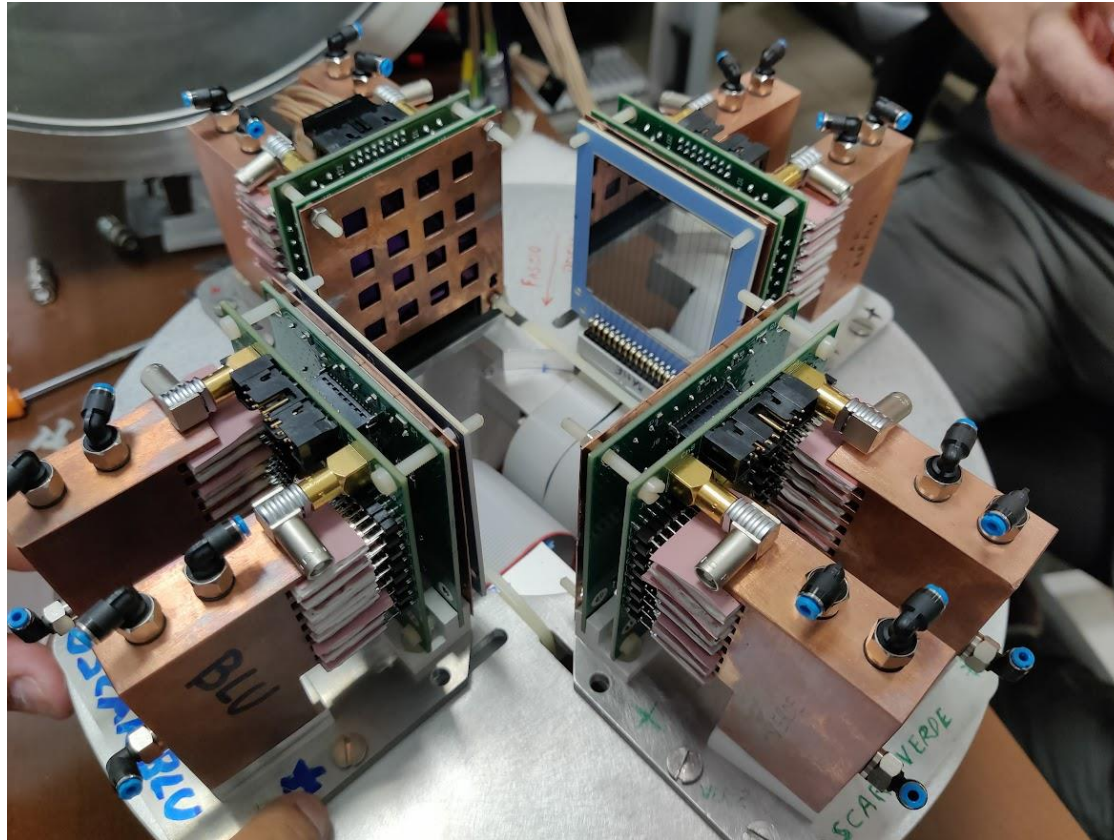
→ turni di Luglio 2021 e Settembre 2021 all'AN-2000 (LNL)

→ Design by CT & NA



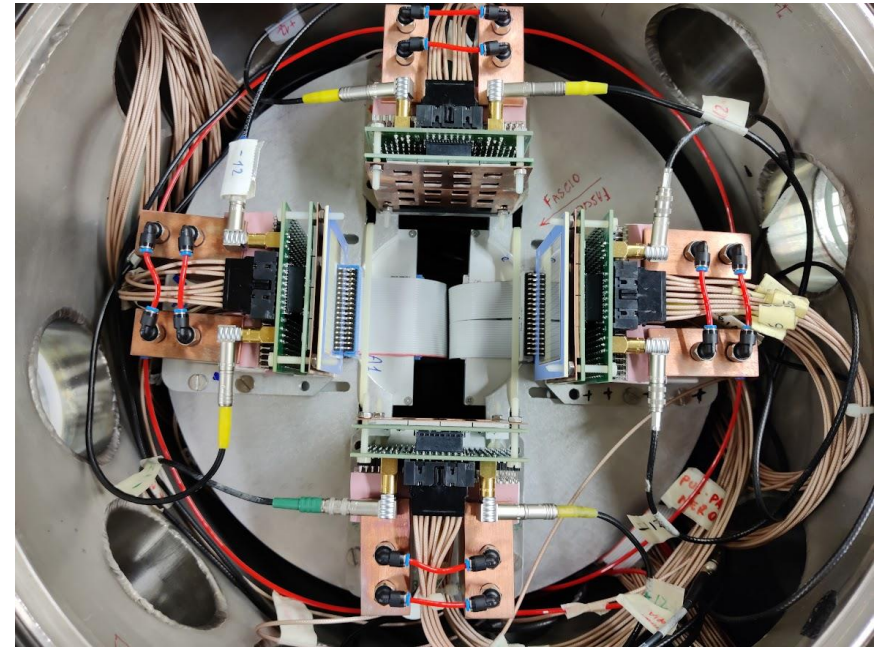
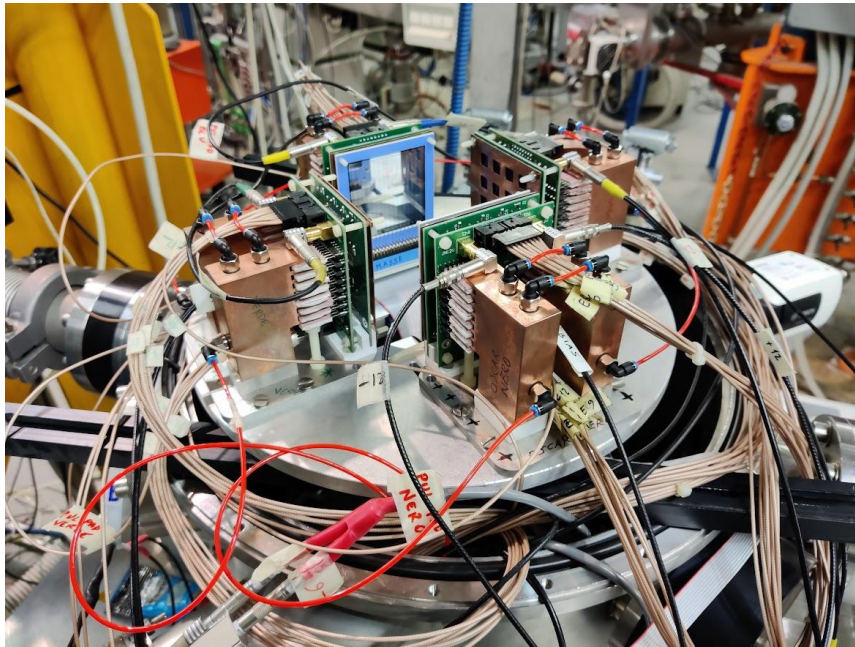
Setup HELICA

- turni di Luglio 2021 e Settembre 2021 all'AN-2000 (LNL)
- Design by CT & NA



Setup HELICA

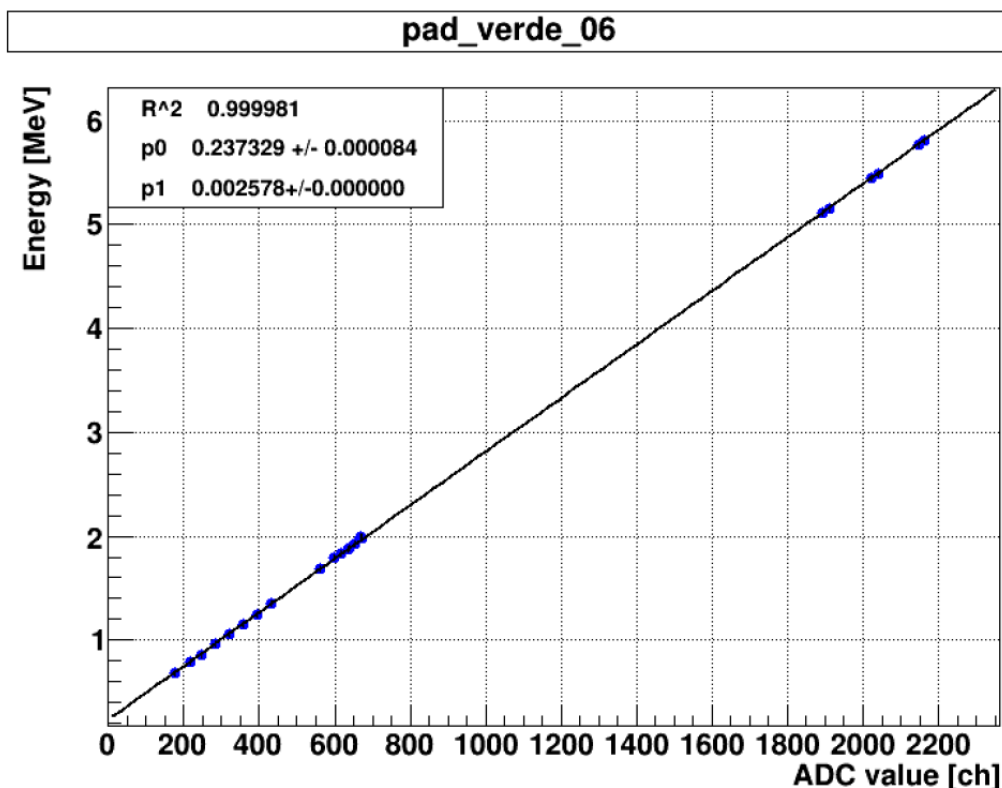
- turni di Luglio 2021 e Settembre 2021 all'AN-2000 (LNL)
- Design by CT & NA



Update su analisi esperimento HELICA

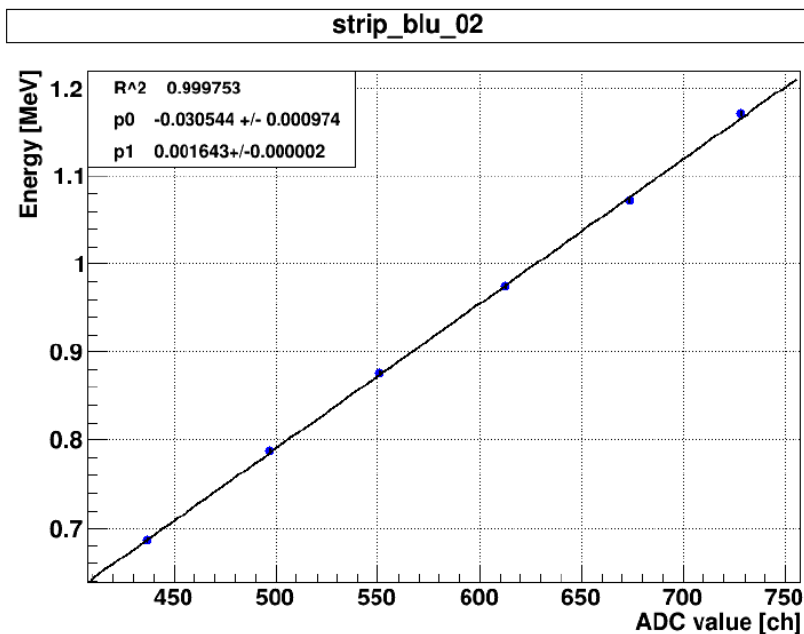
Riduzione analisi dei dati in fase avanzata (Mualla e Mariano)

L'esperimento sarà oggetto di una tesi di laurea triennale all'Università di Padova (Mualla Aytekin, relatori Tommaso, Ivano e Daniele).



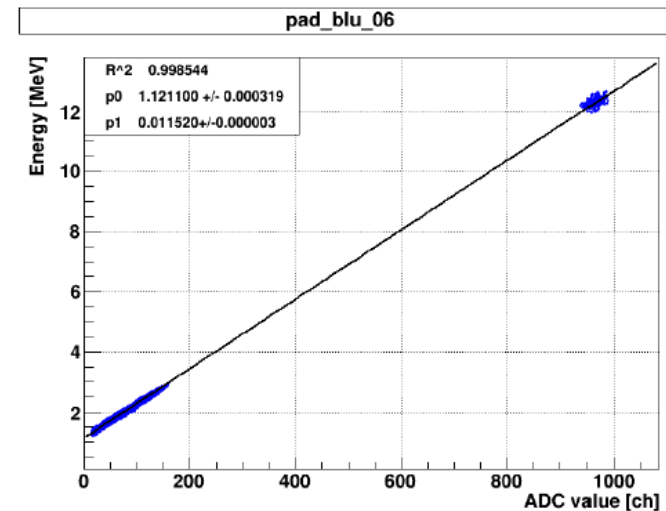
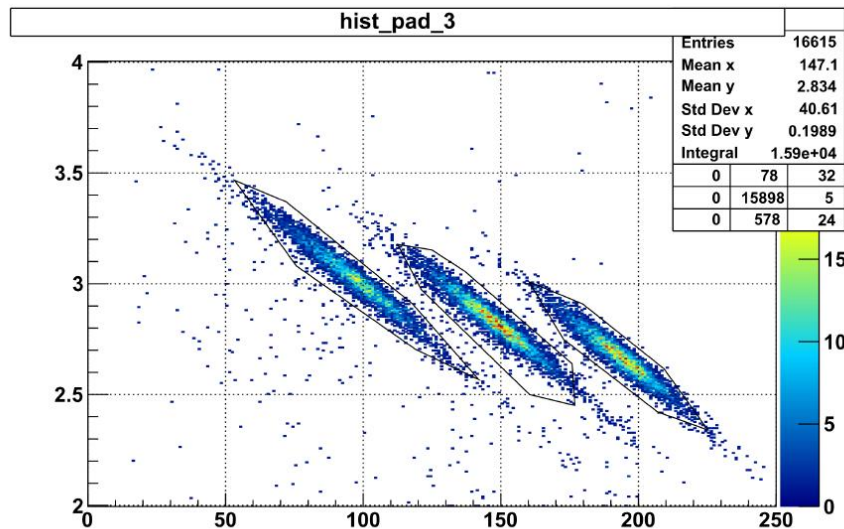
Calibrazioni pad per i moduli OSCAR senza lo strip:

- sorgente alpha;
- punti elastici su Au e C a varie energie.



Per i moduli con strip+pad $\rightarrow$ calibrazione indipendente dallo spessore dello strip (tipicamente molto disuniforme).

- 1) Calibrazione dello strip usando punti elastici p+Au a bassa energia (trigger sullo strip);
- 2) Calibrazione dei pad usando particelle in trasparenza (assumendo solo la calibrazione dello strip).



Risultati preliminari: $^{13}\text{C}(^3\text{He}, \alpha_{0,1})^{12}\text{C}$

Distribuzioni angolari misurate a svariate energie (da 1400 keV a 2200 keV), nell'esempio 1400 keV.

