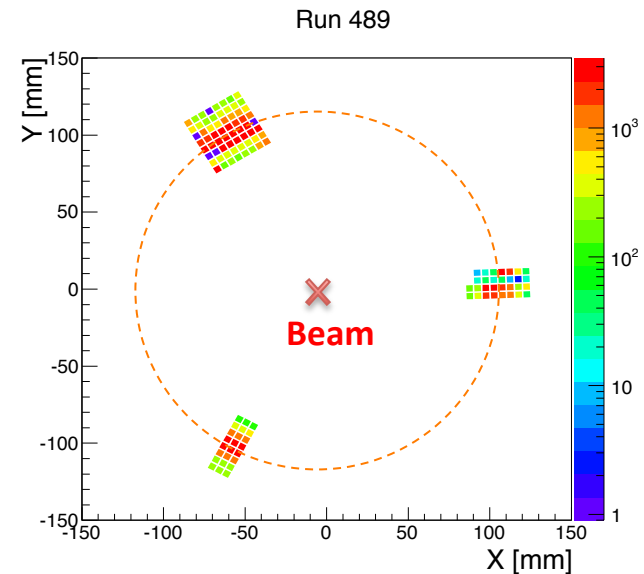
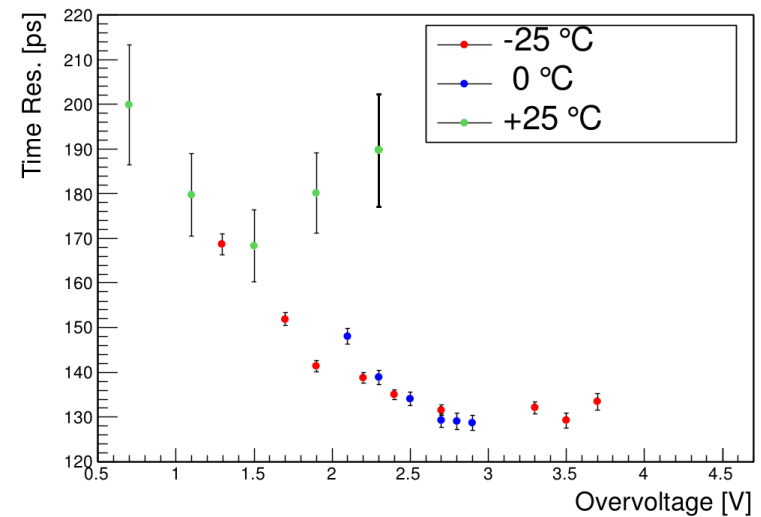
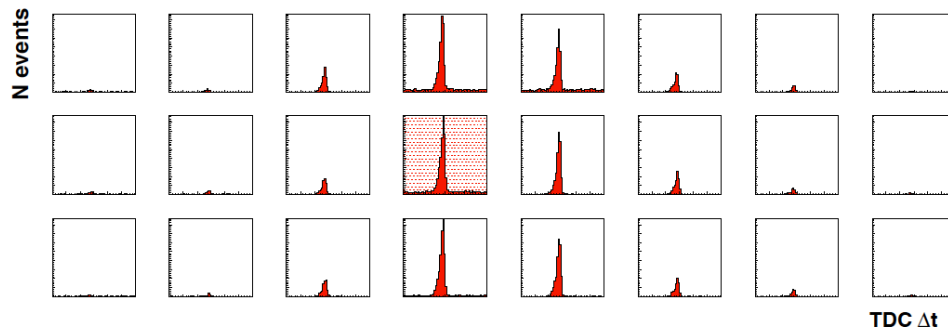
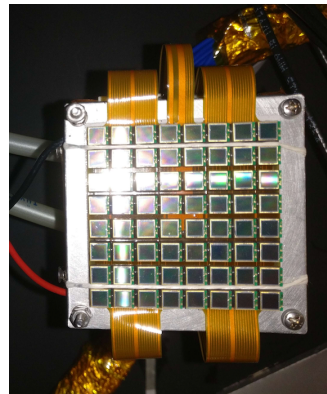
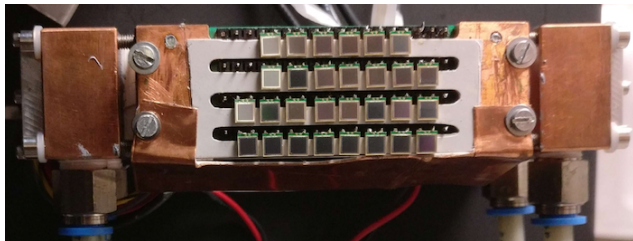


Cherenkov Application: CLAS12 RICH

SiPMs (few m²)

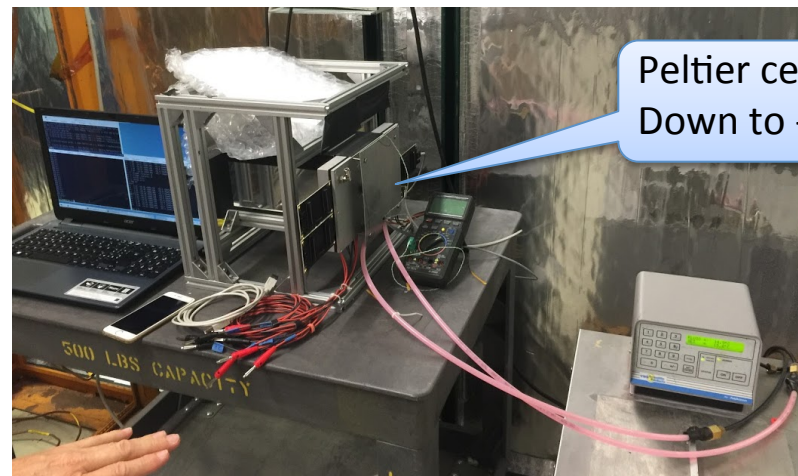
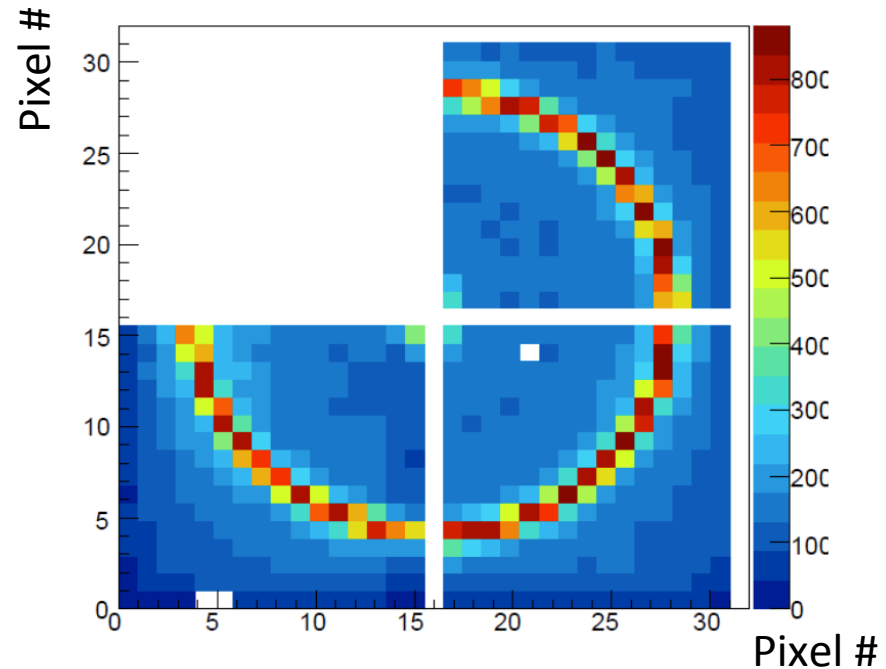
- ✓ Mass production technology ~ ½ MAPMT cost
 - ✓ Photon counting
 - ✓ Excellent time resolution
 - ✓ Compatible with magnetic field
 - ✓ High dark rate
 - ✓ Low radiation tolerance
- } Work at low temperature



Cherenkov Application: EIC mRICH



Test of SiPM with RICH electronics

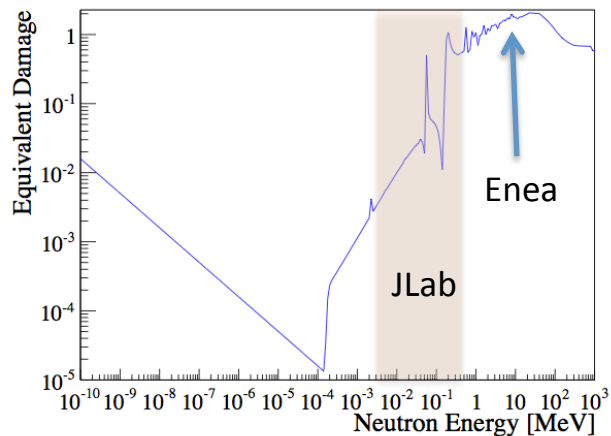


Radiation Tolerance



Neutrons produced isotropically through
 $d(230\text{keV})\ t \rightarrow n\ \alpha$
 α particles measured to monitor the intensity

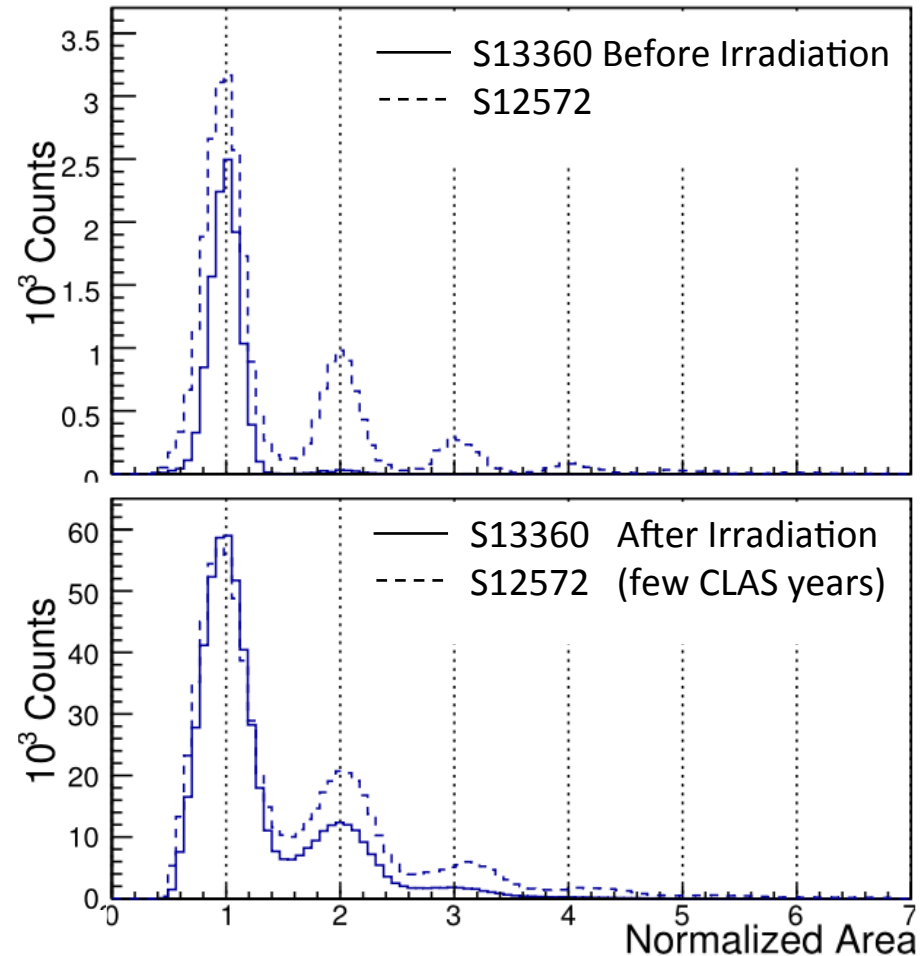
- max flux $10^{11}\ \text{s}^{-1}$ in 4π
- max neutron energy 14.6 MeV



Single-photon capability after irradiation ?

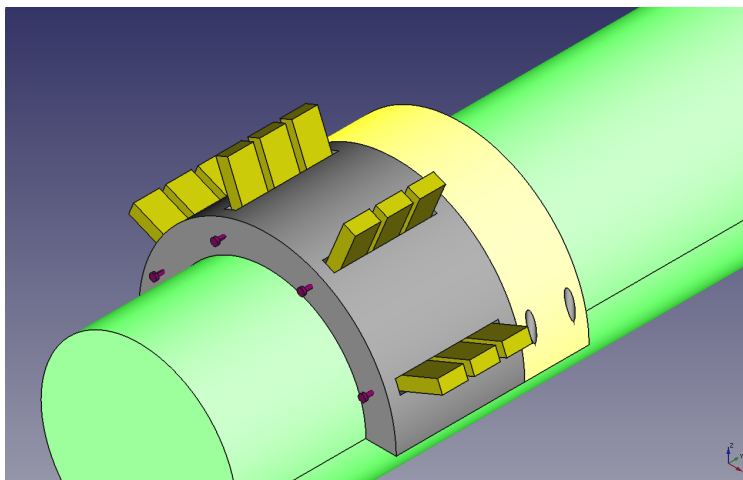
S12572 standard technology

S13360 trench technology

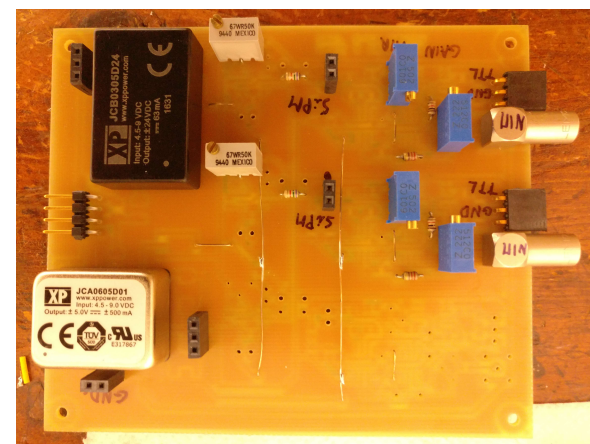


Trigger / Tracking Application

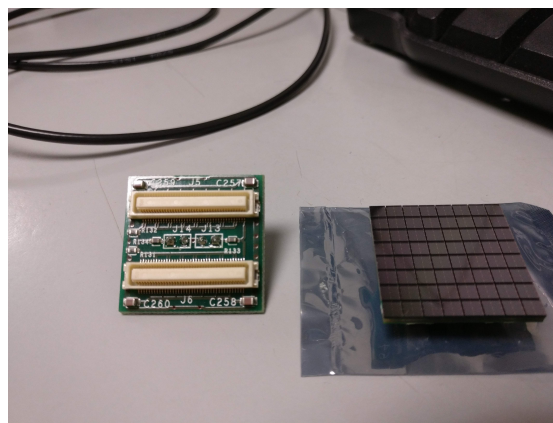
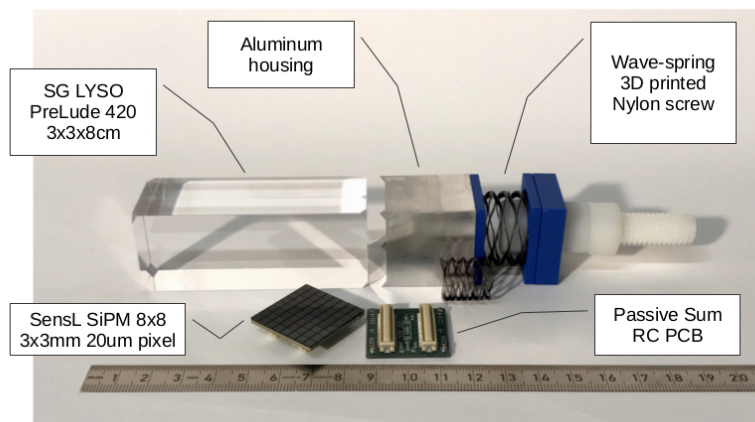
Varie applicazioni per piccoli sistemi
Beam Halo Counter



Bias and Trigger circuit
Analog and Digital outputs



Polarimeter with LYSO cristal + SiPM Matrix



Status e Prospettive

Esperimento CLAS12 RICH (Premiale CLASMED) + EIC PID R&D Consortium

Attrezzature: Laboratorio sviluppo rivelatori 212

- ✓ oscilloscopio Tektronik DPO 7254
- ✓ laser impulsato (in prestito da LNF)
- ✓ macchina per circuiti
- ✓ armadi a secco
- ✓ elettronica RICH (Servizio elettronica)
- ✓ scatole a prova di luce e aria (Servizio meccanica)
- ✓ basette di raffreddamento + linea N₂
- ✓ alimentatori (Luciano Milano)
- ✓ dark boxes

Aspetti SiPM: Dark counts
Radiation Damage

Futuro: Rivelazione singolo fotone
Applicazioni

Sezione: Attrezzature comuni (accesso ??)
Gruppo di lavoro
Camera climatica con laser impulsato / oscilloscopio
Studenti