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"E. Fermi"  
Università di Pisa



Istituto Nazionale di  
Fisica Nucleare  
SEZIONE DI PISA

# DoPET: an in-beam monitoring system for proton therapy applied to MoVe-IT

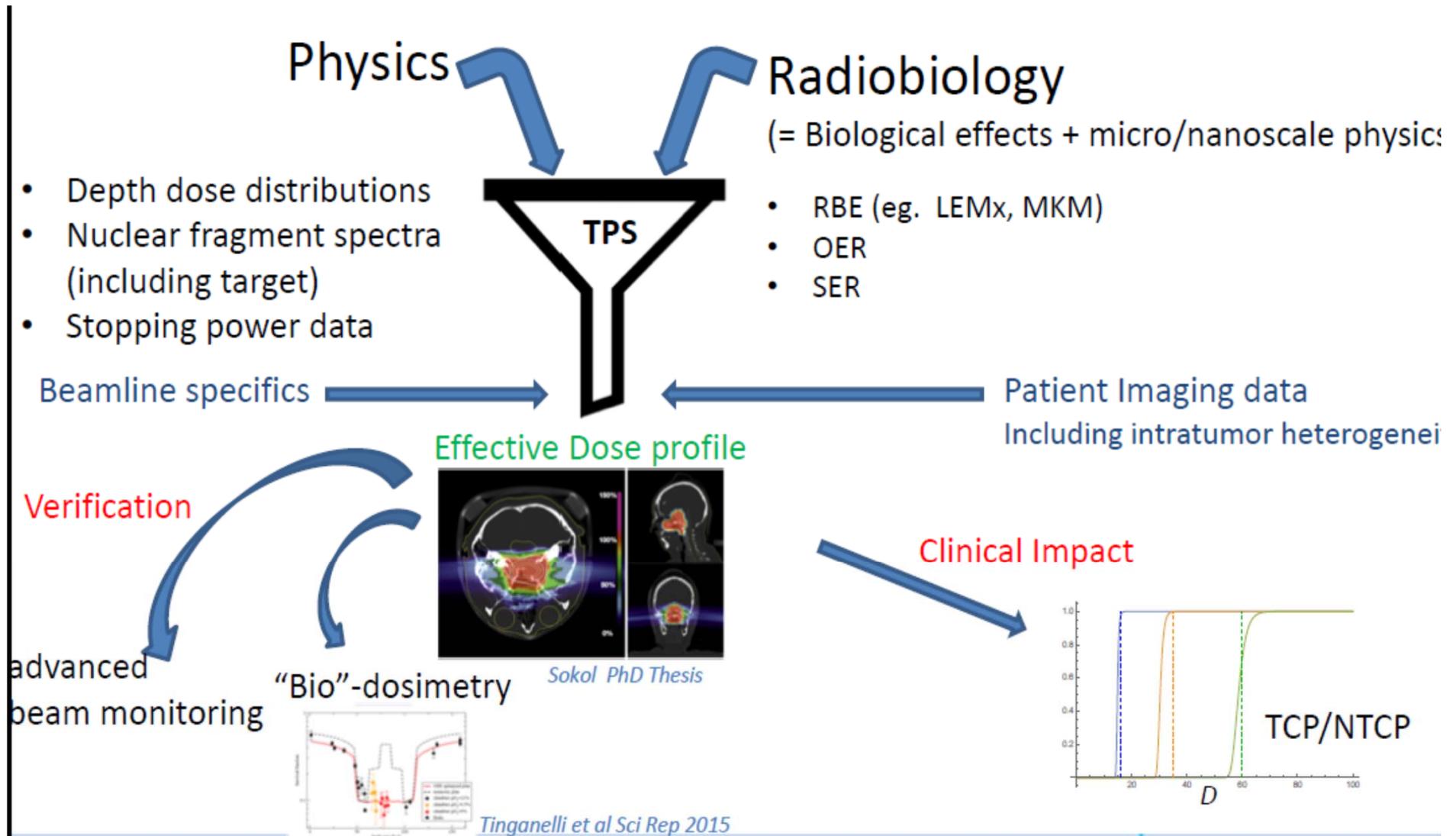
*Valeria Rosso, N. Belcari, M.G. Bisogni, R.  
Borgheresi, A.C. Kraan, M. Morrocchi e G.  
Sportelli*

# MoVe-IT: Modeling and Verification for Ion beam Treatment planning

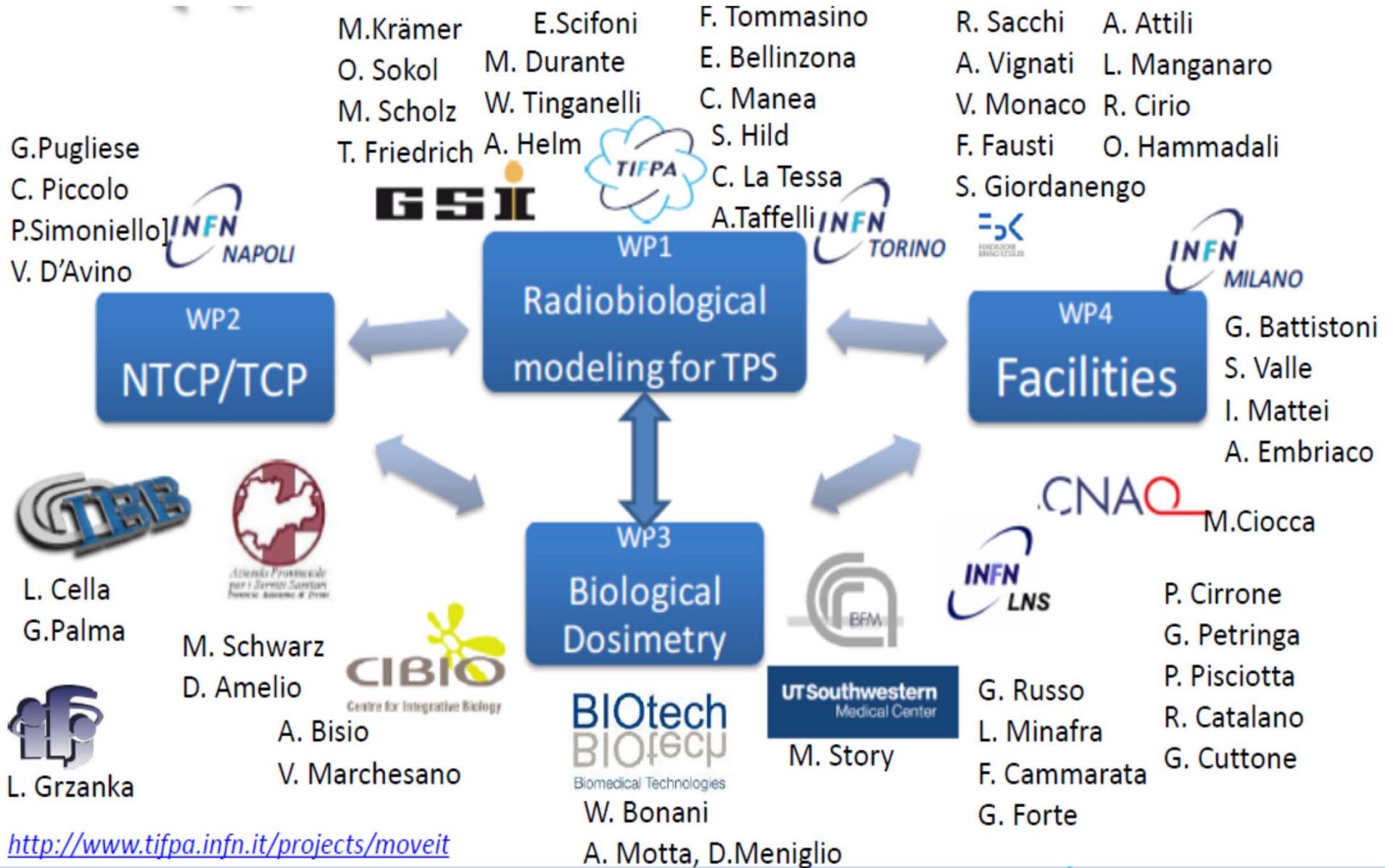
INFN CSN5 Call 2017

Emanuele Scifoni - TiFPA

MoVe IT



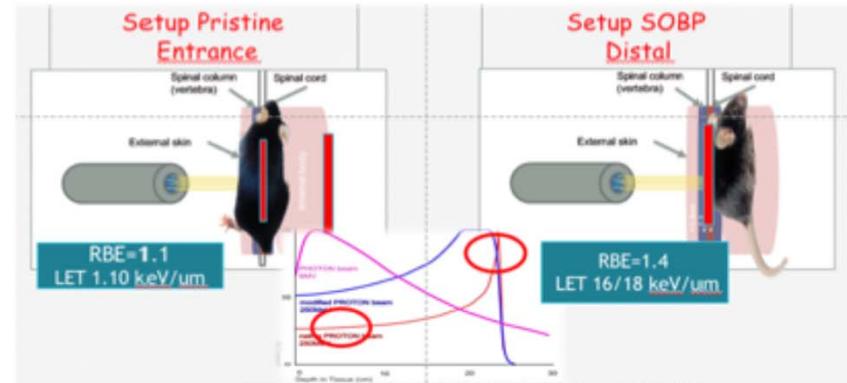
# Move IT



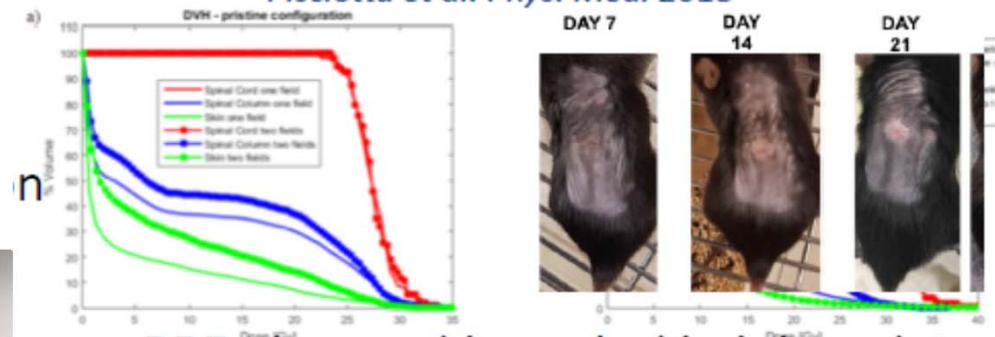
# • WP3: Biological Dosimetry

Sono previste 2 prese  
dati presso i LNS per  
MoVe-IT:  
febbraio e maggio 2020

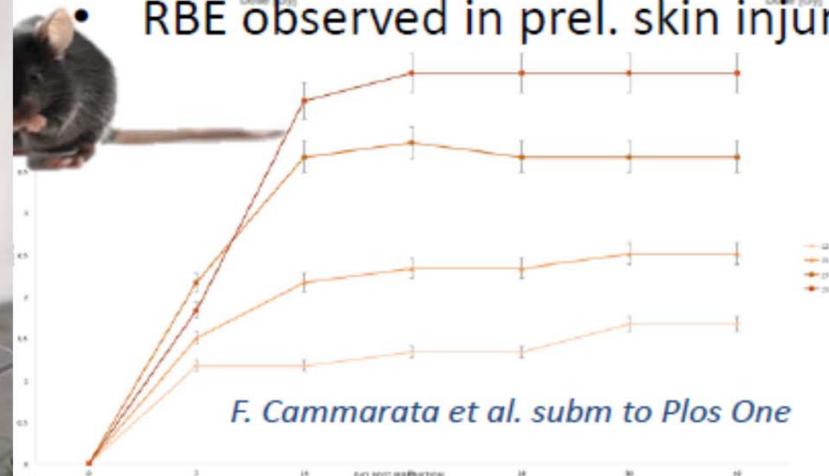
- In vivo RBE assessment (myelopathy)



Pisciotta et al. Phys. Med. 2018



- RBE observed in prel. skin injury data



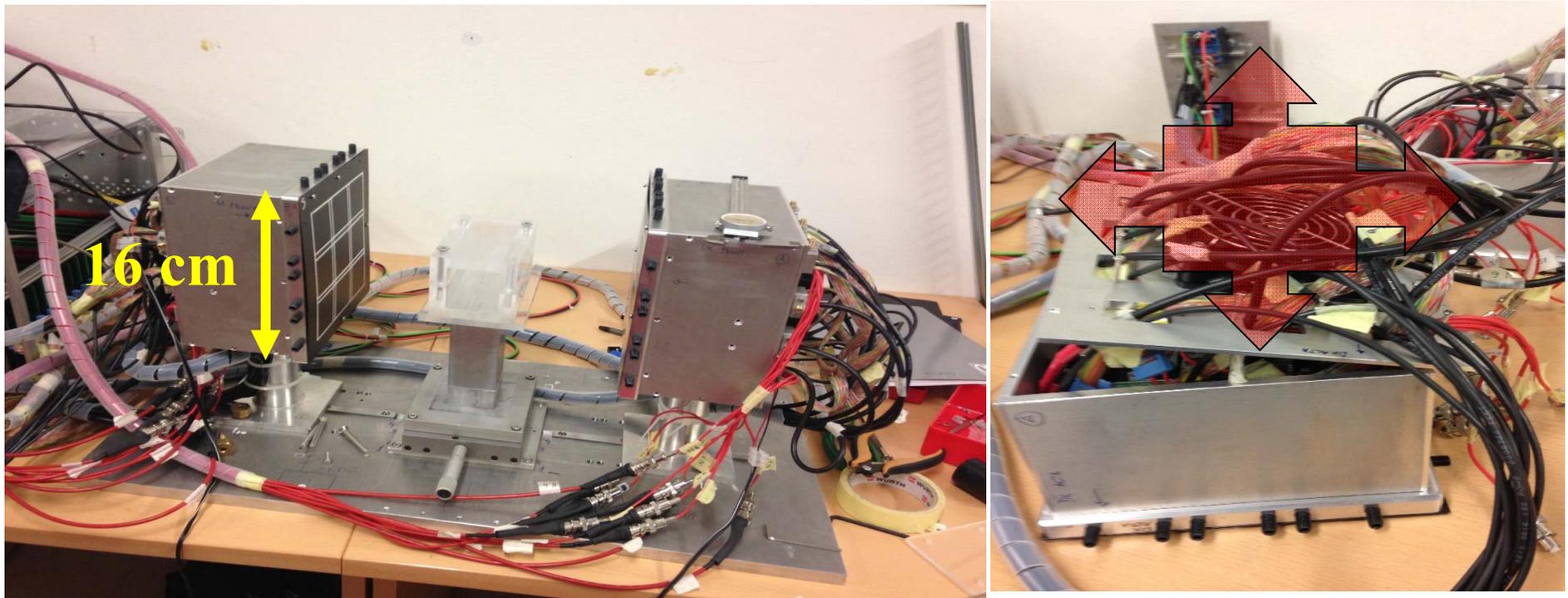
F. Cammarata et al. subm to Plos One



# DoPET

DoPET is a dual head stationary PET scanner

- beam-on and beam-off working capabilities
- space and time information

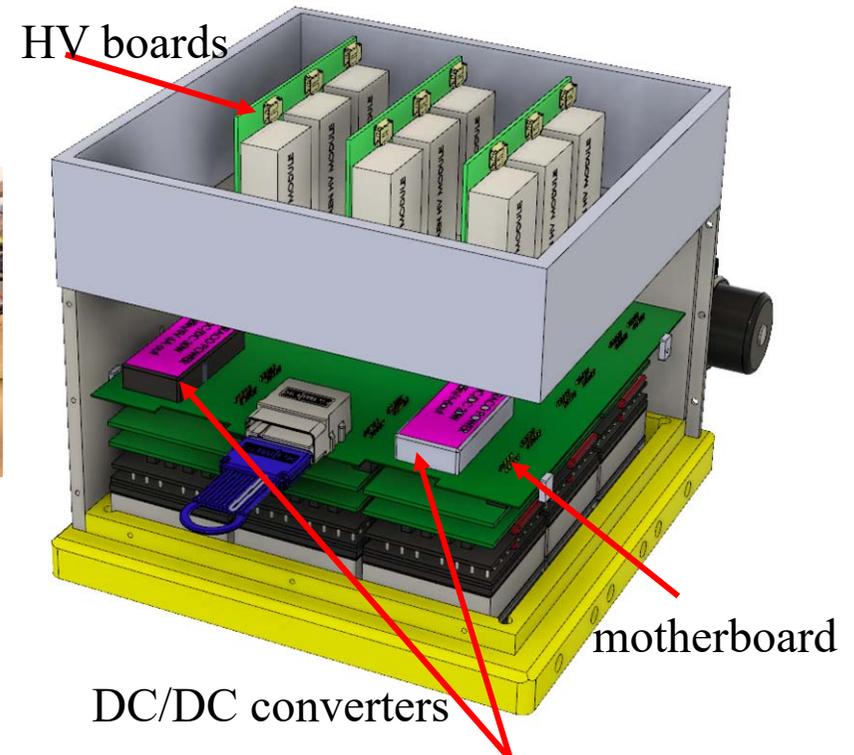
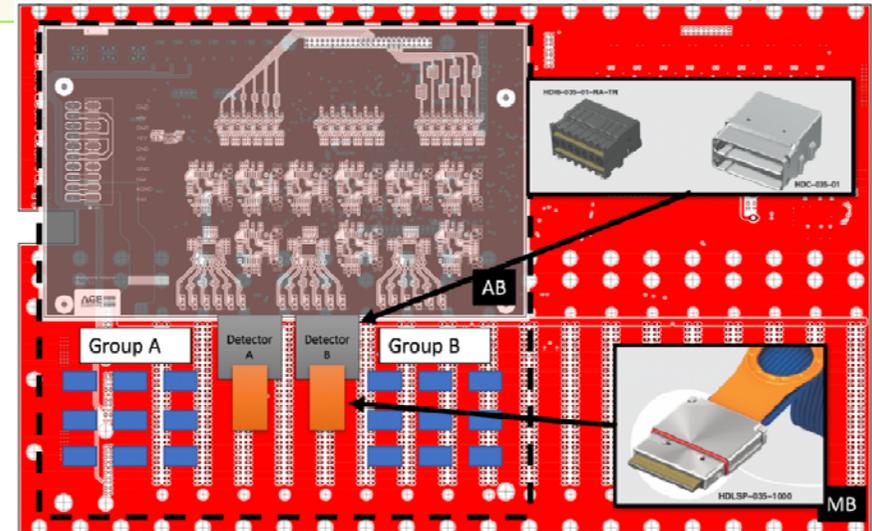


Il Sistema PET in-beam può essere facilmente posizionato vicino al soggetto irraggiato, ma ha evidenziato criticità durante la fase di accensione dopo il trasporto durante l'ultima presa dati.

# DoPET: still more compact...

Main modifications:

- One new motherboard that hosts two high density connectors (one for all the modules instead of 9 TG/PWR + 9 data + 9 HV)
  - Designed by AGE Scientific s.r.l.
  - Single dual connector
  - Bring both time and position information
- Internal CAEN HV power supply
  - Software controlled via I2C
- Long shielded high-speed cables
  - Single dual connector
  - Time and position information
  - Power
- Single 48 V power supply
  - Internal isolated 30W +/- 5 V generation
  - Digital/analog power rails decoupled



## Richieste

- Per l'up-grade usati fondi di Ateneo (progetto PRA-Monsli) e supporto della Sezione.
- *Mo-Ve-IT chiederà un prolungamento per il 2020.*
- Richiesto il finanziamento per permetterci di effettuare le 2 prese dati **sotto dotazioni CSN5.**