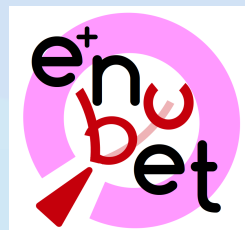
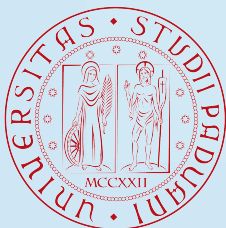


The Demonstrator of the instrumented decay tunnel for the ENUBET monitored neutrino beam

IFD2022 - Bari, Italy
19th October 2022

Università degli Studi di Padova
INFN, Sezione di Padova

Fabio Iacob
on behalf of the NP06/ENUBET collaboration



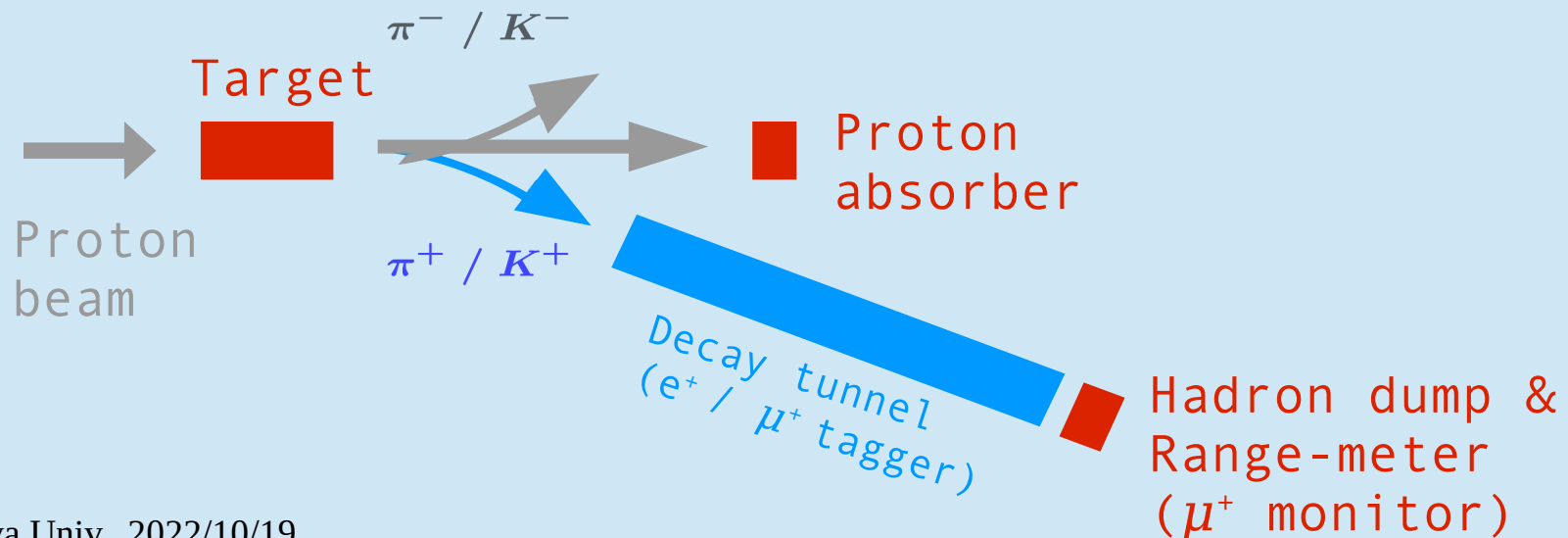
NP06/ENUBET

NP06: CERN Neutrino Platform experiment number 6.

ENUBET: Enhanced NeUtrino BEams from Kaon Tagging.

GOAL: develop a new monitored neutrino beam in which the flux and flavor composition are known at 1% level, and the energy with $O(10\%)$ precision.

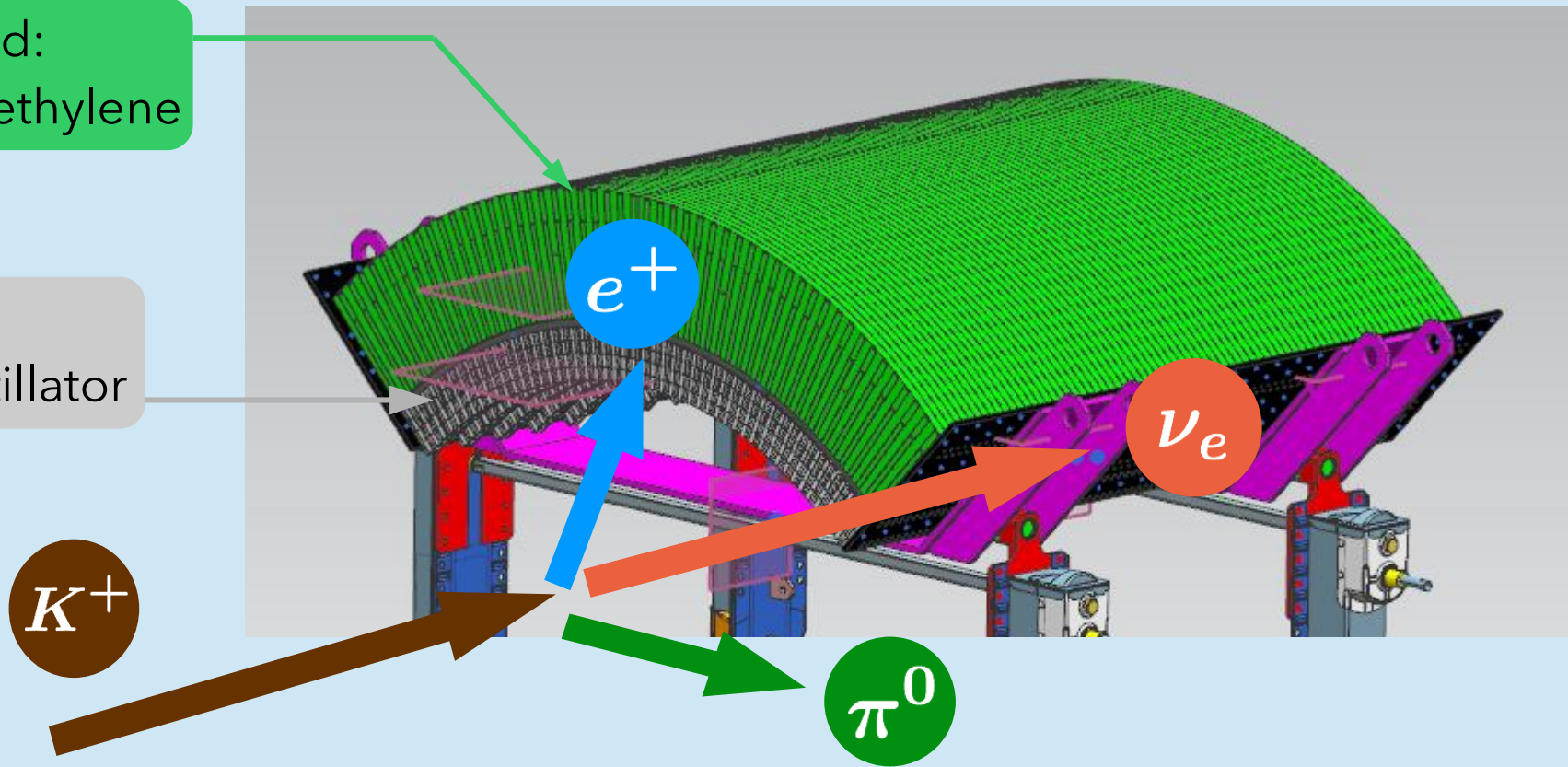
SCIENTIFIC JUSTIFICATION: the monitored neutrino beam enables a programme of precise cross-sections measurements, which are useful to other neutrino experiments (e.g.: DUNE, Hyper-Kamiokande).



Demonstrator

Neutron shield:
Borated polyethylene

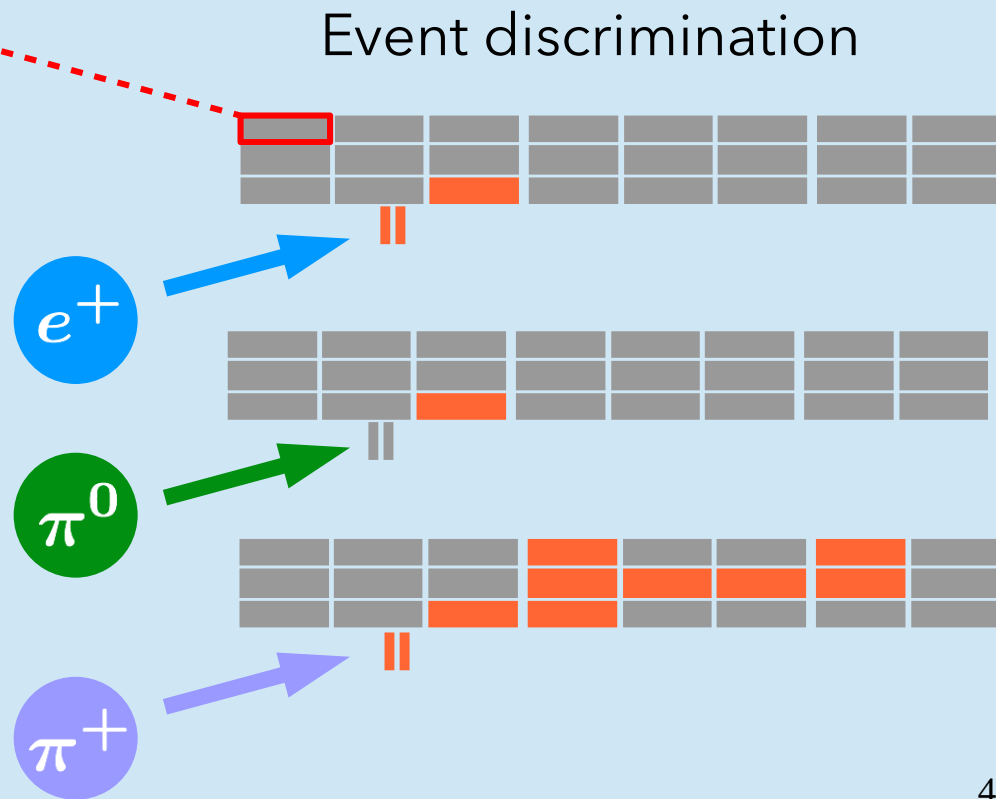
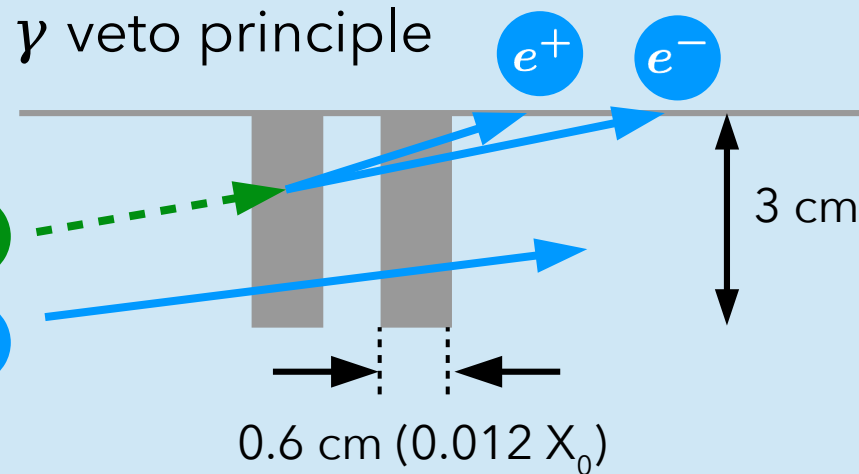
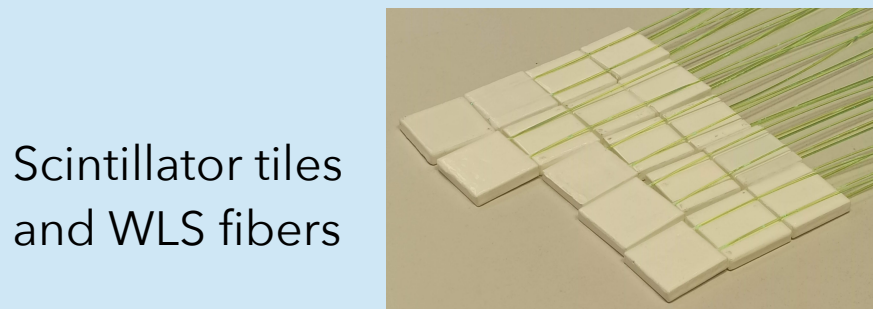
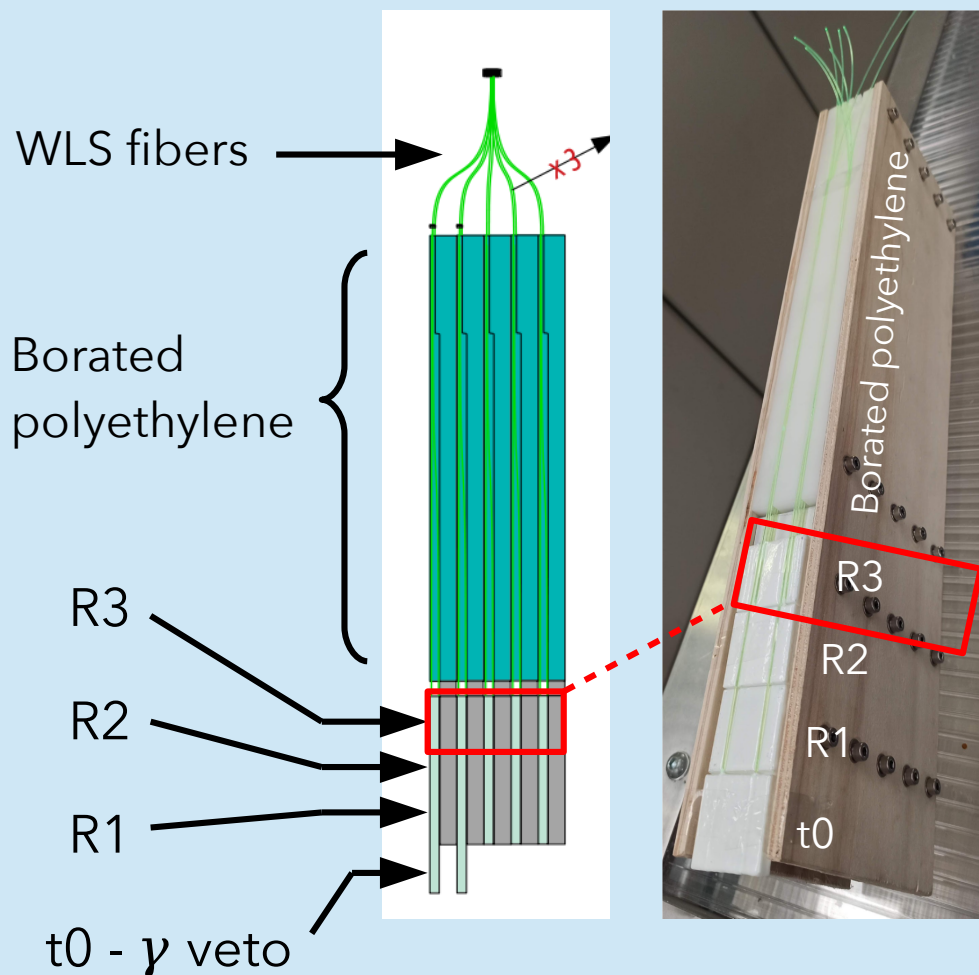
Calorimeter:
Iron and scintillator



Hardware deliverable: tagger demonstrator (portion of instrumented decay tunnel).

- Should tag positron in coincidence with electron neutrino
- $e / \mu / \pi$ discrimination capabilities
- Quarter of circle x 1.65 m length

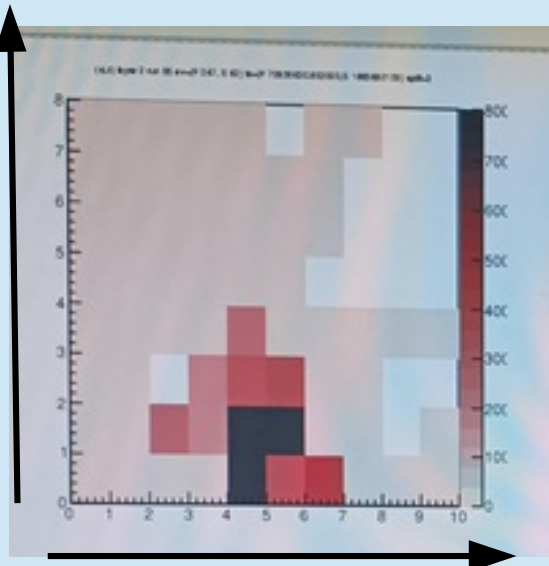
Demonstrator azimuthal sector



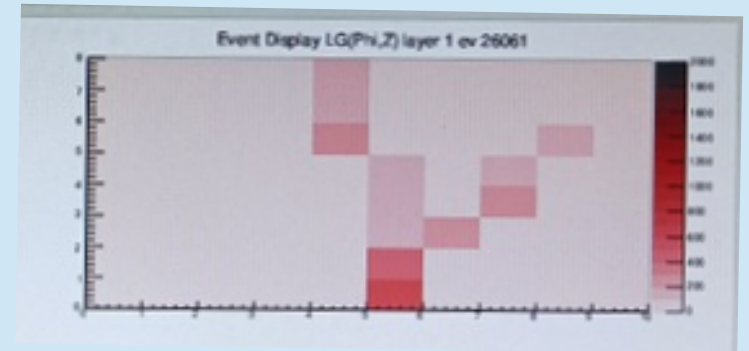
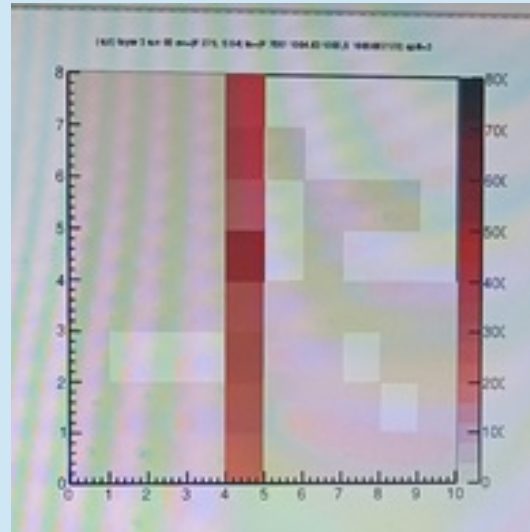
Events at CERN PS T9

3 - 16 October 2022 test beam at CERN PS T9

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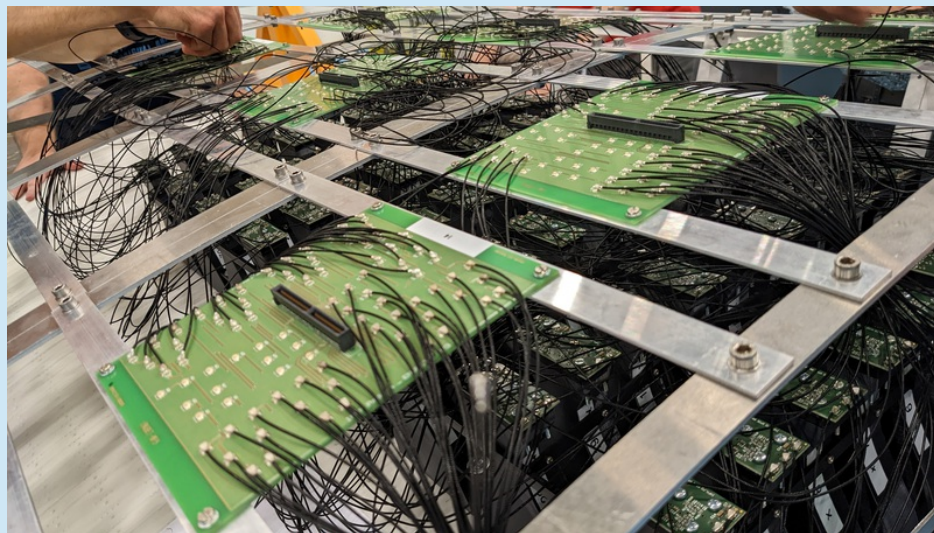


PRELIMINARY! $e / \mu / \pi$ discrimination
from energy deposit and event topology

Demonstrator at CERN PS T9



SiPM boards



Interface boards



Readout



80 SiPM boards
400 SiPMs
1360 tiles
~1.5 km fiber

Demonstrator