ENUBET

PS/SPS user meeting 3 August 2017

- Status of the testbeam:
  - Installation
  - Data Taking
  - Preliminary results
- Plans until August 9th

F. Terranova on behalf of the ENUBET Collaboration

Goals of the test

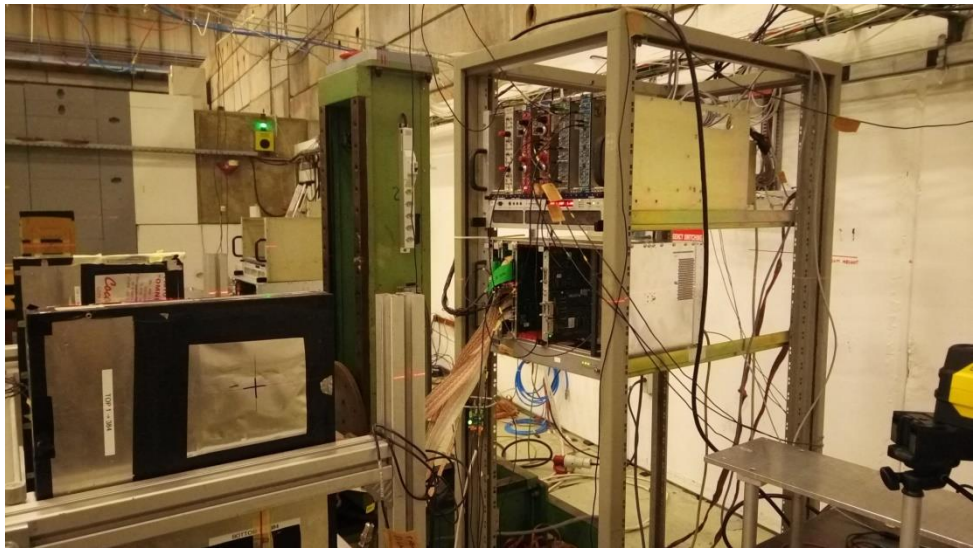
ENUBET: design a new generation of neutrino beams with superior control of the flux at source. Instrumentation of the decay tunnel to monitor positron production from three body decay of the kaon ($K^+ \rightarrow \pi^0\ e^+\ \nu_e$) $\Rightarrow$ **calorimeter** for positron identification and energy measurement, **photon veto**

- Test of a small size longitudinally segmented calorimeter (ENUBET baseline design) with **injection molded scintillators** (scalable to large masses)
- Test of a **large size** longitudinally segmented calorimeter (ENUBET baseline design) with standard EJ-200 scintillators and SiPM readout
- Test of light readout with **SiPM irradiated** at 10^{11}-10^{12} n/cm^2
- Test of photon veto prototypes

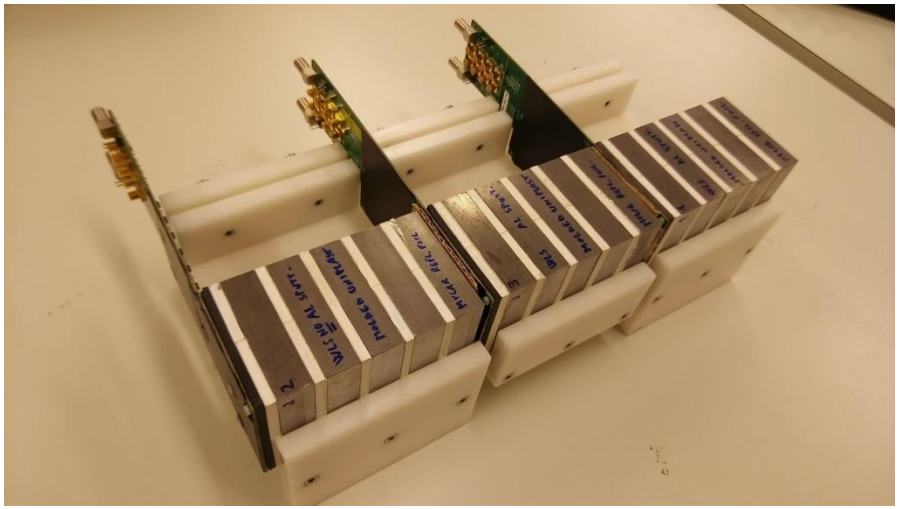
Installation

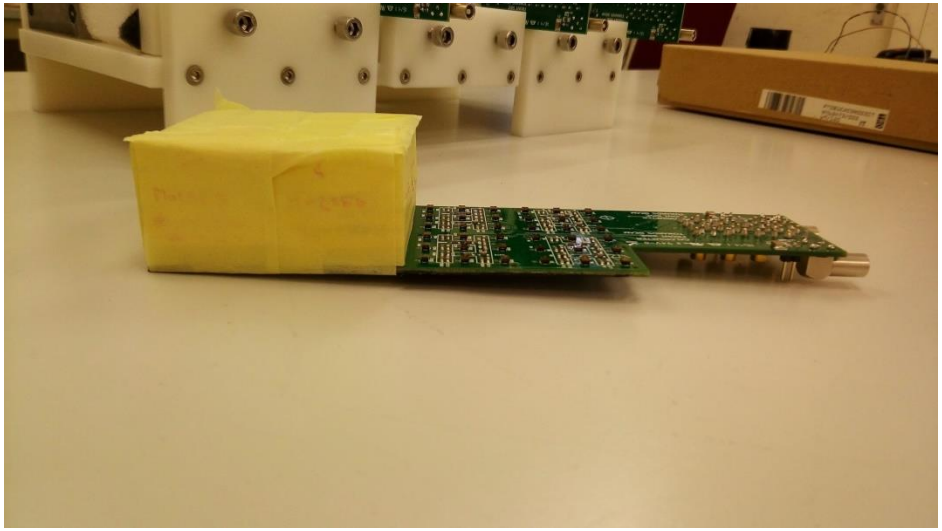
- Installation of the **silicon chambers**, trigger and small size **calorimeter (26-27 july)**

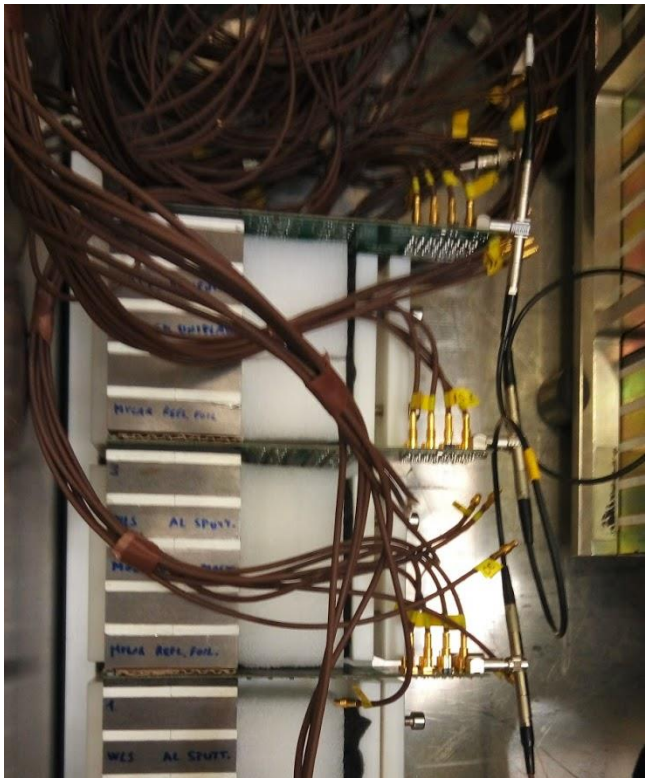
- Front-end and DAQ for the small size calorimeter (27 july)

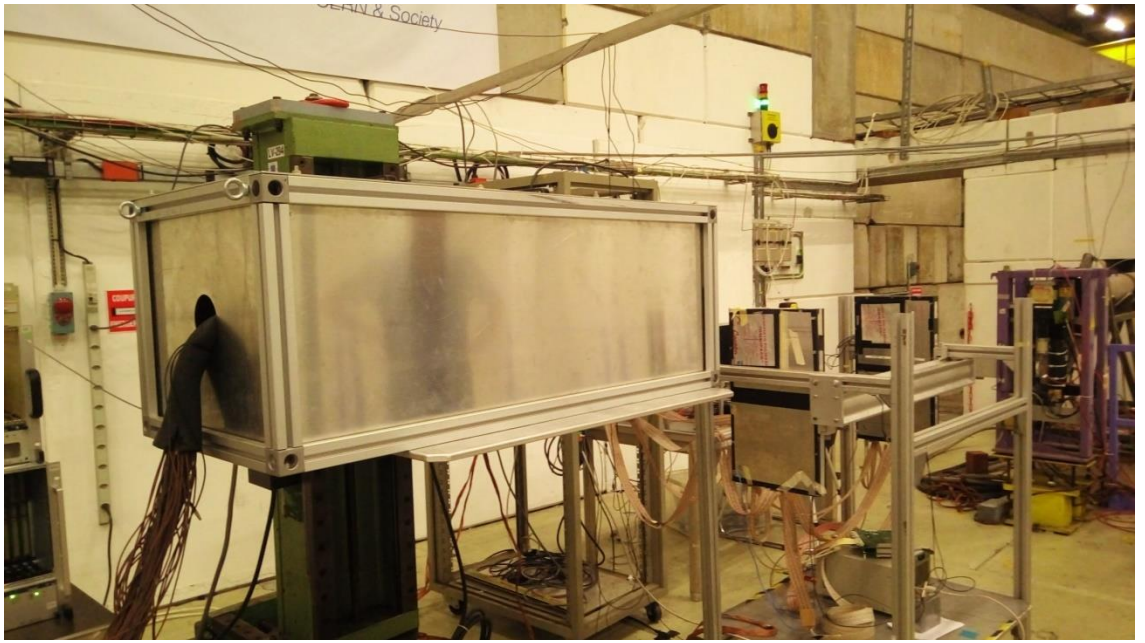


Installation (small size calorimeter)









Data taking

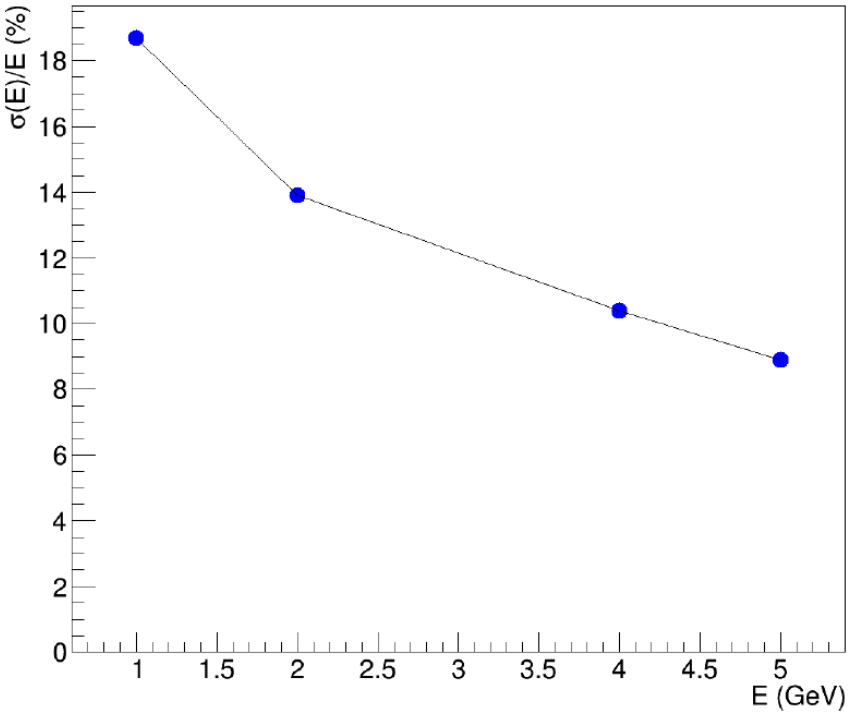
First physics run **with electron enriched target Target 2 (Al-W)**

- Energy scan 1,2,3,4,5 GeV with tracking from silicon chambers and tagging from cherenkov (CO_2, e- tagging at all energies, mu tagging from 3 GeV)
- Position scan: full illumination reached with two different positions of the DESY table

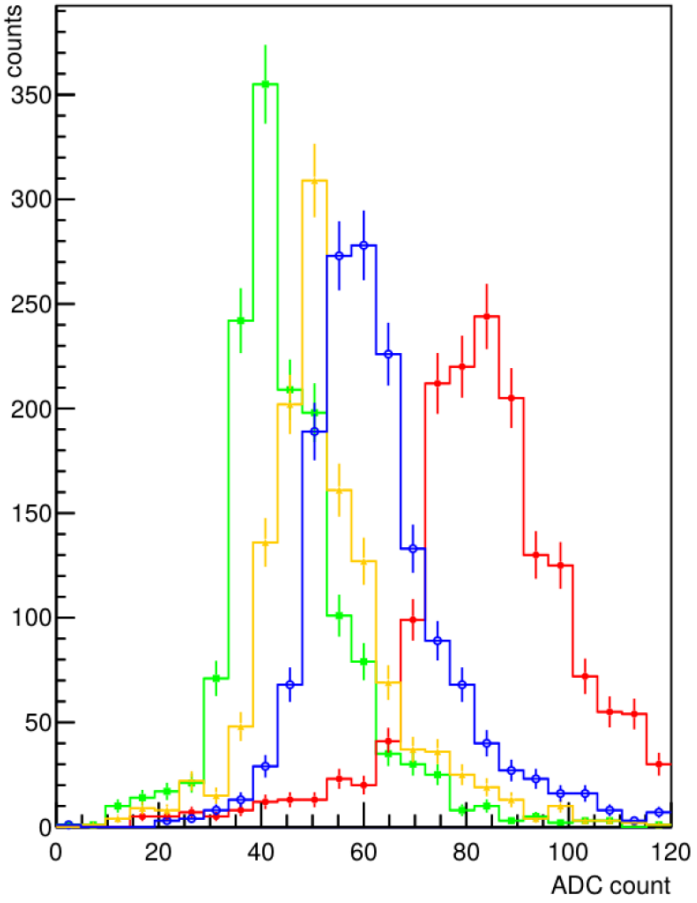
Tuning of the beam:
Vertical alignment with respect to silicon chambers achieved acting on last dipole current (files «T9 enubet jul 2017 -1 GeV» etc.)

- ✓ Small size calorimeter **Done**
- ✓ Scintillator comparison **Done**
- ✓ Test of the irradiated sipm **In progress**
- ✓ Test of photon veto prototypes **In progress**
- ✓ Large size calorimeter **to be done**

Preliminary results

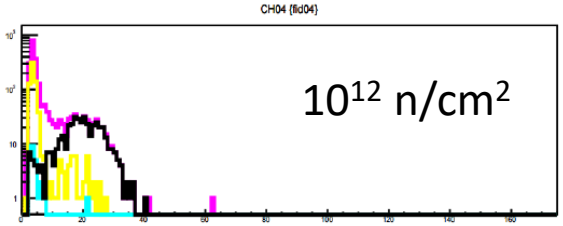


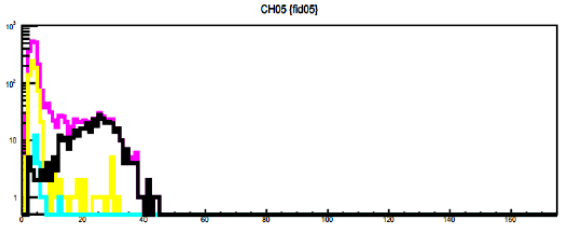
Electron energy resolution for the small-size calorimeter

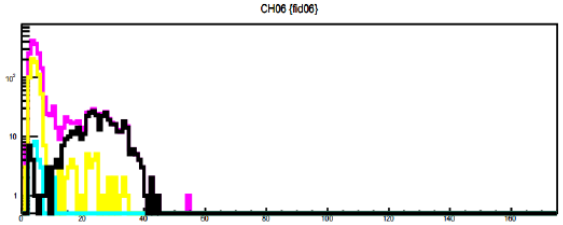


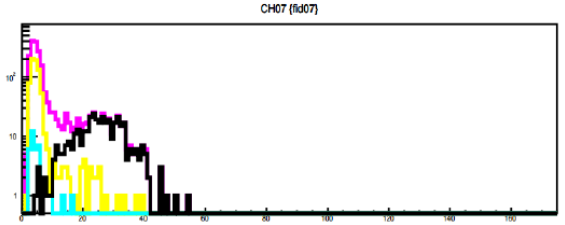
UNIPLAST cast (4.2 mm)
UNIPLAST mold+drill (4.2 mm)
UNIPLAST ext+drill (5.0 mm)
EJ200 (5.5 mm)

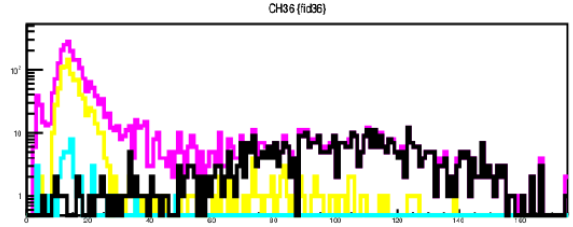
Preliminary results

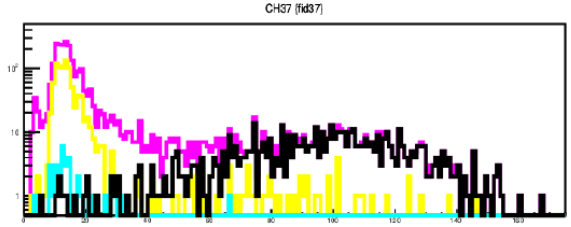


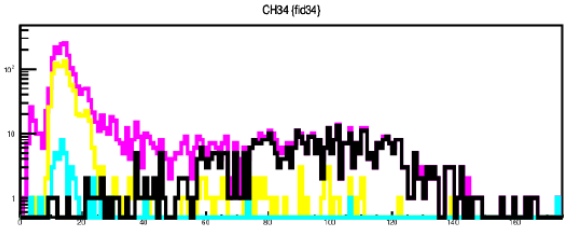


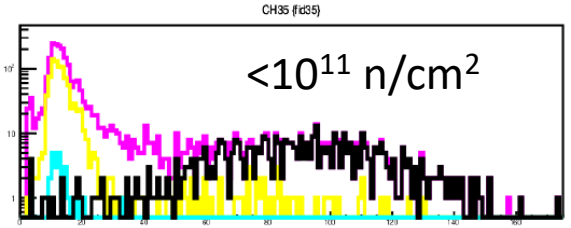












Plan for next week

- ✓ Completion of tests for irradiated SiPM and photon veto (3-5 august)
- ✓ e/π/μ for the large size calorimeter (5-9 august)