
Presentation of the DUNE Roma-1 group



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DUNE ITALIA meeting – 11-12 November, 2021

The DUNE Roma-1 group



Sapienza University of Rome - Department of Physics & Istituto Nazionale di Fisica Nucleare - Sezione di Roma



Prof. Antonio Di Domenico

KLOE-2 spokesperson

Activities in KLOE:
e.m. calorimeter (design, construction, commissioning, maintenance)
Neutral kaons and tests of CPT and QM



Dr. Veronica De Leo

KLOE-2 offline expert

Activities in KLOE:
e.m. calorimeter (calib)
Offline expert
MC production



Dr. Riccardo D'Amico

Master thesis on CPT and QM tests with neutral kaons at KLOE
FROM 1 Nov 2021
PHD STUDENT
University of Ferrara



Prof. Paolo Gauzzi

KLOE-2 INFN national responsible
Physics coordinator
Offline co-coordinator

Activities in KLOE:
e.m. calorimeter (design, construction, commissioning, maintenance)
offline
Hadron physics



Mr. Carmelo Piscitelli

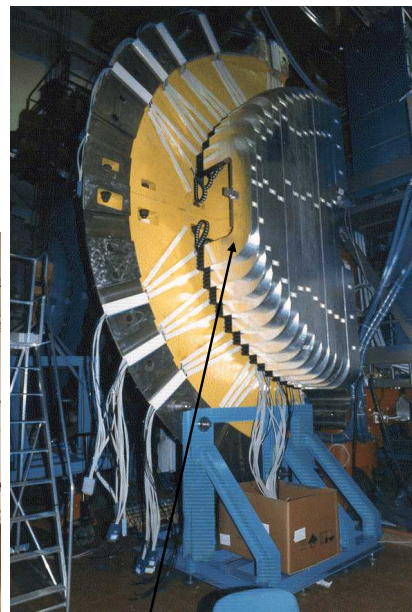
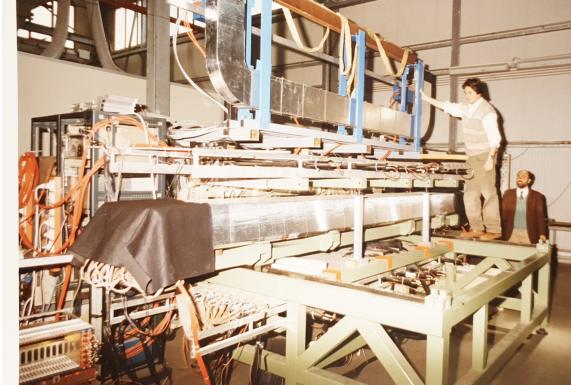
Former technician mech. workshop INFN Roma

Activities in KLOE:
KLOE EmC installation operations

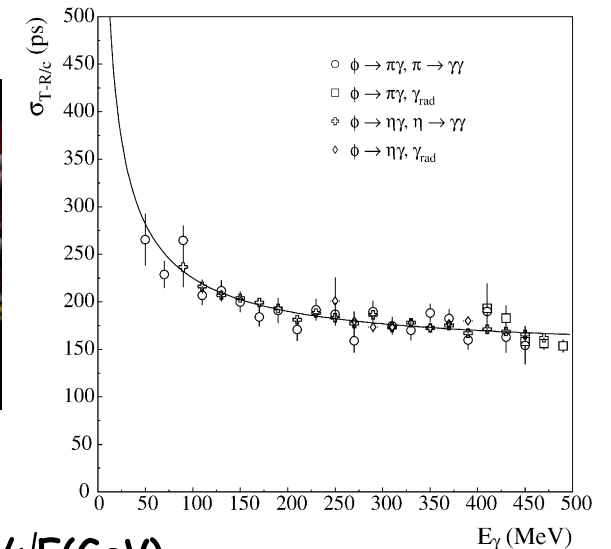
Technical support for EmC operations at LNF in 2022 requested to mechanical and electronic workshop of INFN-Roma: **1+1 MU**

Some activities for the KLOE experiment: e.m. calorimeter

Construction at RM-1 of ~1/3 of end-cap modules, quality control, assembly and final installation, commissioning and calibration



- KLOE cal. group, "Construction and performance of the lead-scintillating fiber calorimeter prototypes for the KLOE detector" NIM **A354** (1995) 352
- KLOE cal. group, "Measurements of light yield, attenuation length and time response of long samples of "blue" scintillating fibres", NIM **A370** (1996) 367
- KLOE cal. group, "Performance of fine mesh photomultiplier tubes in magnetic fields up to 0.3 T", NIM **A368** (1996) 628
- M. Adinolfi et al., "The KLOE electromagnetic calorimeter", NIM **A 482** (2002) 364



$$\sigma_E/E \cong 5.7\% / \sqrt{E(\text{GeV})}$$

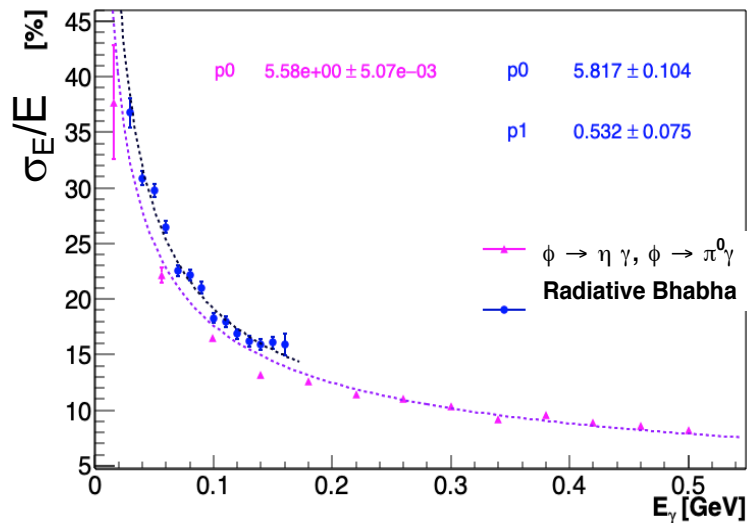
$$\sigma_{\dagger} \cong 54 \text{ ps} / \sqrt{E(\text{GeV})} \oplus (50 \oplus 125_{\text{coll}}) \text{ ps}$$

(relative time between clusters)

$$\sigma_{\gamma\gamma} \sim 2 \text{ cm} (\pi^0 \text{ from } K_L \rightarrow \pi^+\pi^-\pi^0)$$

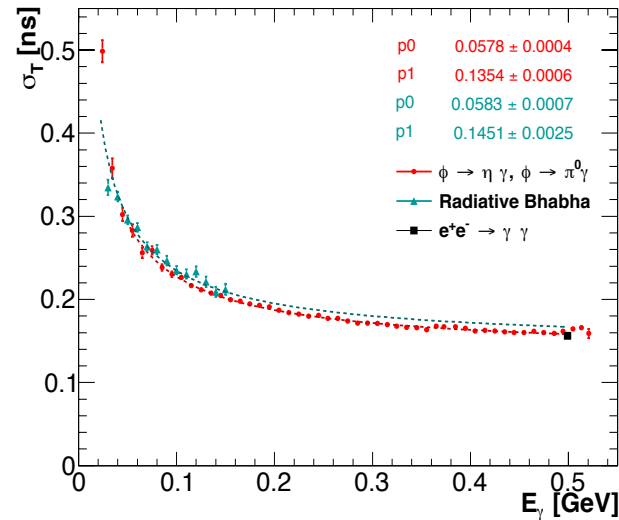
Some activities for the KLOE-2 experiment and R&D

Check e.m. calorimeter performance during KLOE-2 data taking (2015-2018): compatible with known performance.

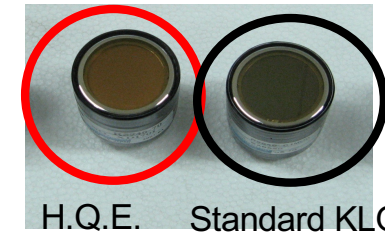


$$\sigma_E/E \cong 5.6\% / \sqrt{E(\text{GeV})}$$

$$\sigma_{\tau} \cong 58 \text{ ps} / \sqrt{E(\text{GeV})} \oplus 135 \text{ ps}$$



Studies for a possible EmC upgrade for KLOE-2: HQE PMs



HAMAMATSU
HAMAMATSU PHOTONICS K.K. Electron Tube Division

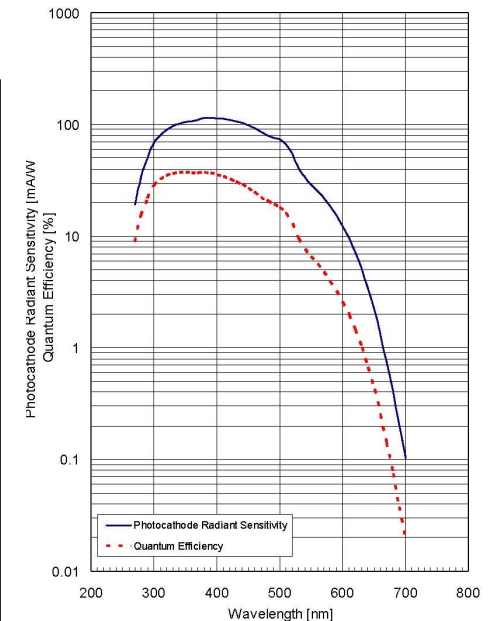
TECHNICAL DATA

DEPT.# 22
Mar. 17, 2008

PHOTOMULTIPLIER TUBE

R5946-70MOD (R5946-02 High QE)
for KLOE-II

Figure 1 : Typical Spectral Response



Measurement of the neutron response of the KLOE EmC

- M. Anelli et al., "Measurement and simulation of the neutron response and detection efficiency of a Pb-scintillating fiber calorimeter", NIM **A581** (2007) 368
-
- M. Anelli et al., "Measurement of the neutron detection efficiency of a 80% absorber-20% scintillating fibers calorimeter", NIM **A626** (2011) 67 (Gauzzi corresponding author)

