

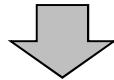
CCALT: a Crystal CALorimeter with Timing for the KLOE-2 upgrade

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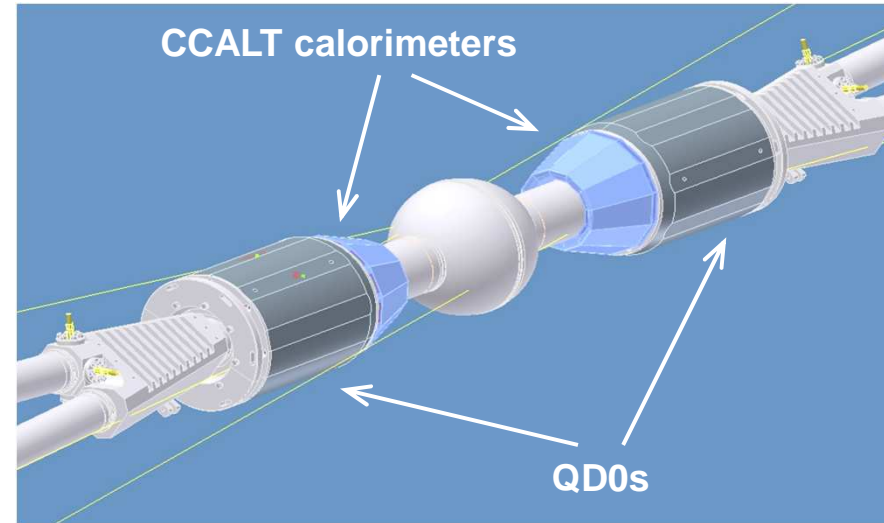
Goal: increase acceptance of the central calorimeter from 18 to 10 degrees, covering QD0 region

Requirements:

- ✗ Small X_0 and Moliere radius (limited available space)
- ✗ Accurate timing: 300-400 ps @ 20 MeV → bkg rejection
- ✗ High efficiency for 20-300 MeV photons
- ✗ Able to work inside 0.5 T magnetic field
- ✗ Position resolution of 2-3 mm

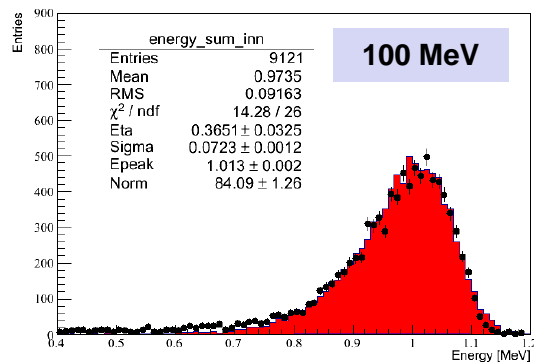


LYSO crystals + Large Area Si-photosensors

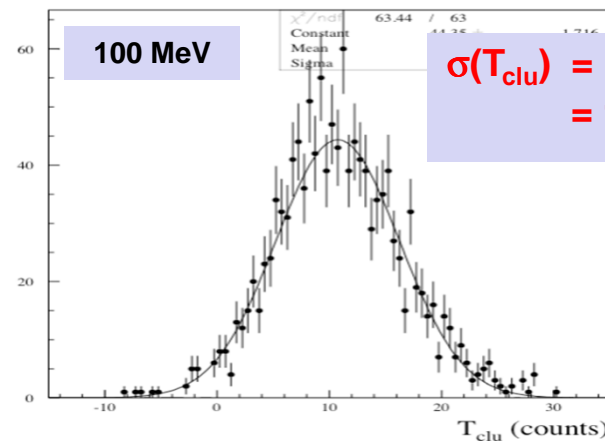


Tests with LYSO crystal matrix + APD

Test beam @ MAMI with 40-300 MeV tagged γ 's: data-MC comparison for energy sum of the internal matrix

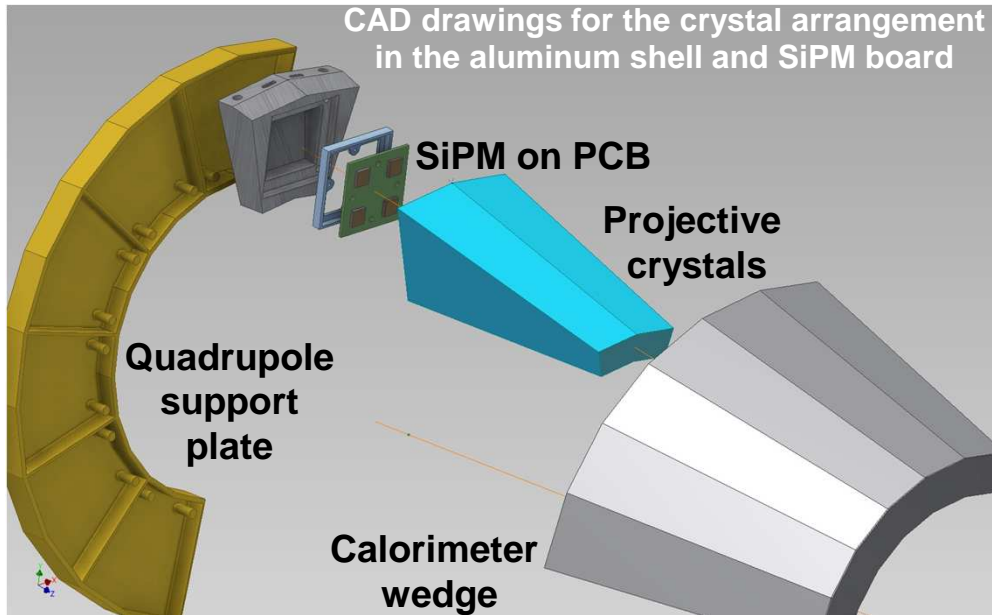


Timing test @ Beam Test Facility, Frascati with 100-500 MeV e^-

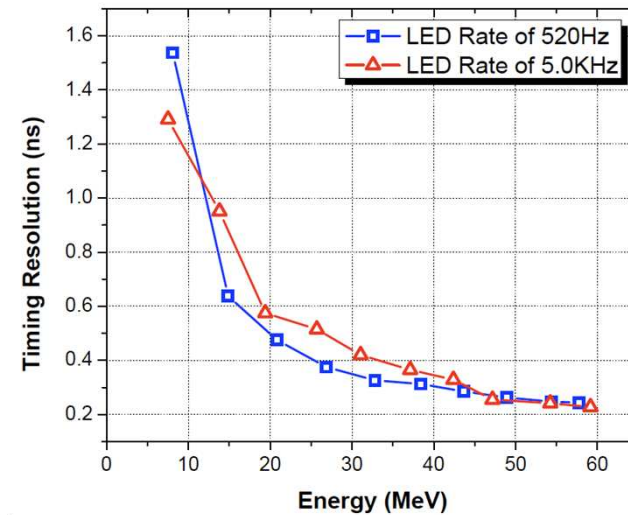


$\sigma(T_{\text{clu}}) = 49 \text{ ps @ } 500 \text{ MeV}$
 $= 120 \text{ ps @ } 100 \text{ MeV}$

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Test with SiPM read out on single crystal
($20 \times 20 \times 150 \text{ mm}^3$) with UV LED



First two crystals under test (^{22}Na source + PM readout)
10% energy resolution @ 511 keV

