



Gains Monitor System

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on behalf of the HERMES collaboration

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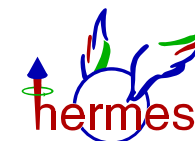
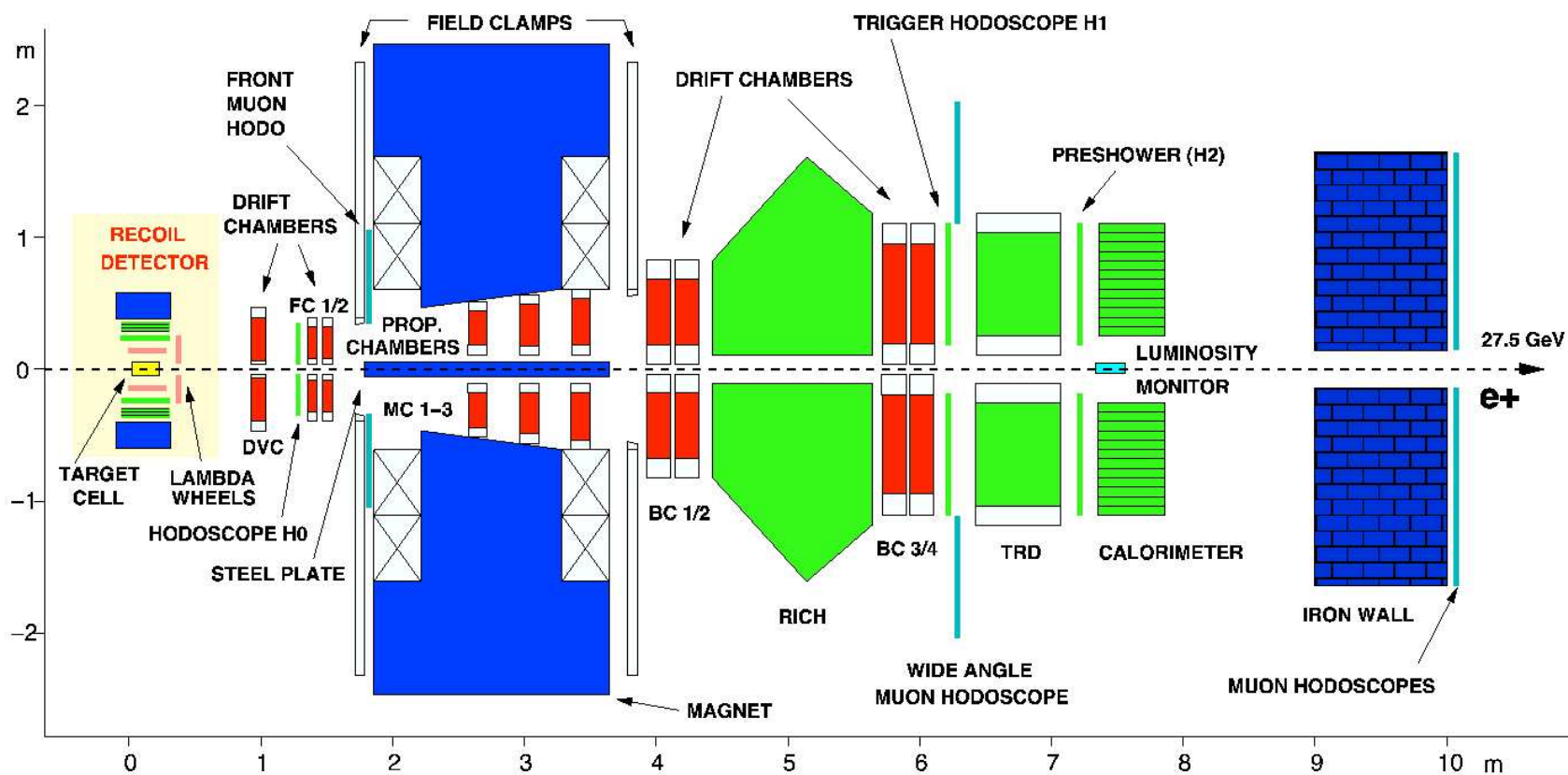
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Hermes

- The missing mass resolution of the HERMES is not sufficient to identify exclusive events individually and to separate them

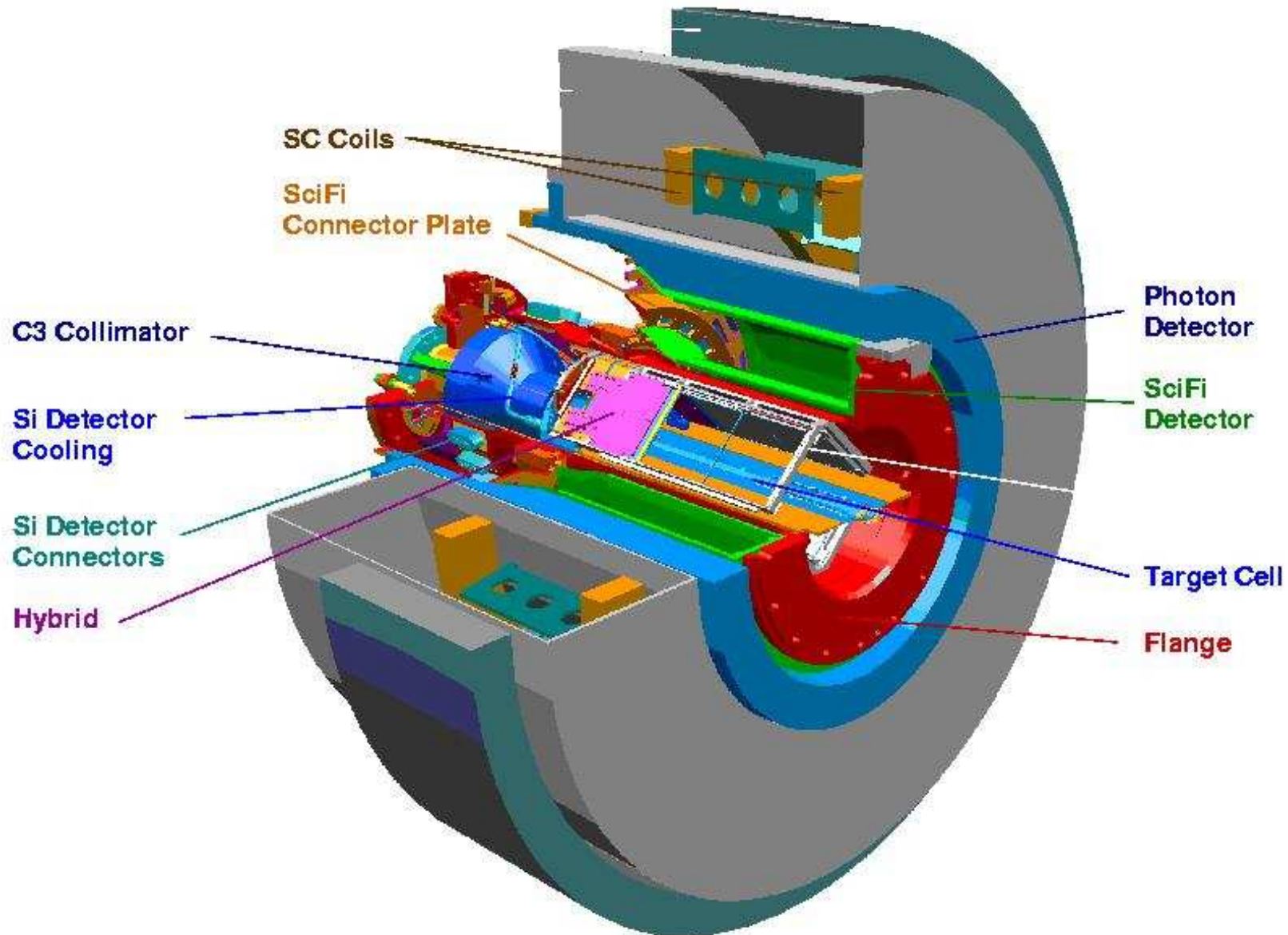


Recoil Detector

- The Hermes recoil detector will consist of three active detector components
 - Silicon detector surrounding the target cell, inside the beam vacuum
 - Scintillating fiber (SciFi) tracker in a longitudinal magnetic field of about 1 Tesla
 - Photo detector consisting of several scintillator layers
- the SciFi measures the momentum of recoil protons between about 250 and 1400 MeV/c



Recoil Detector

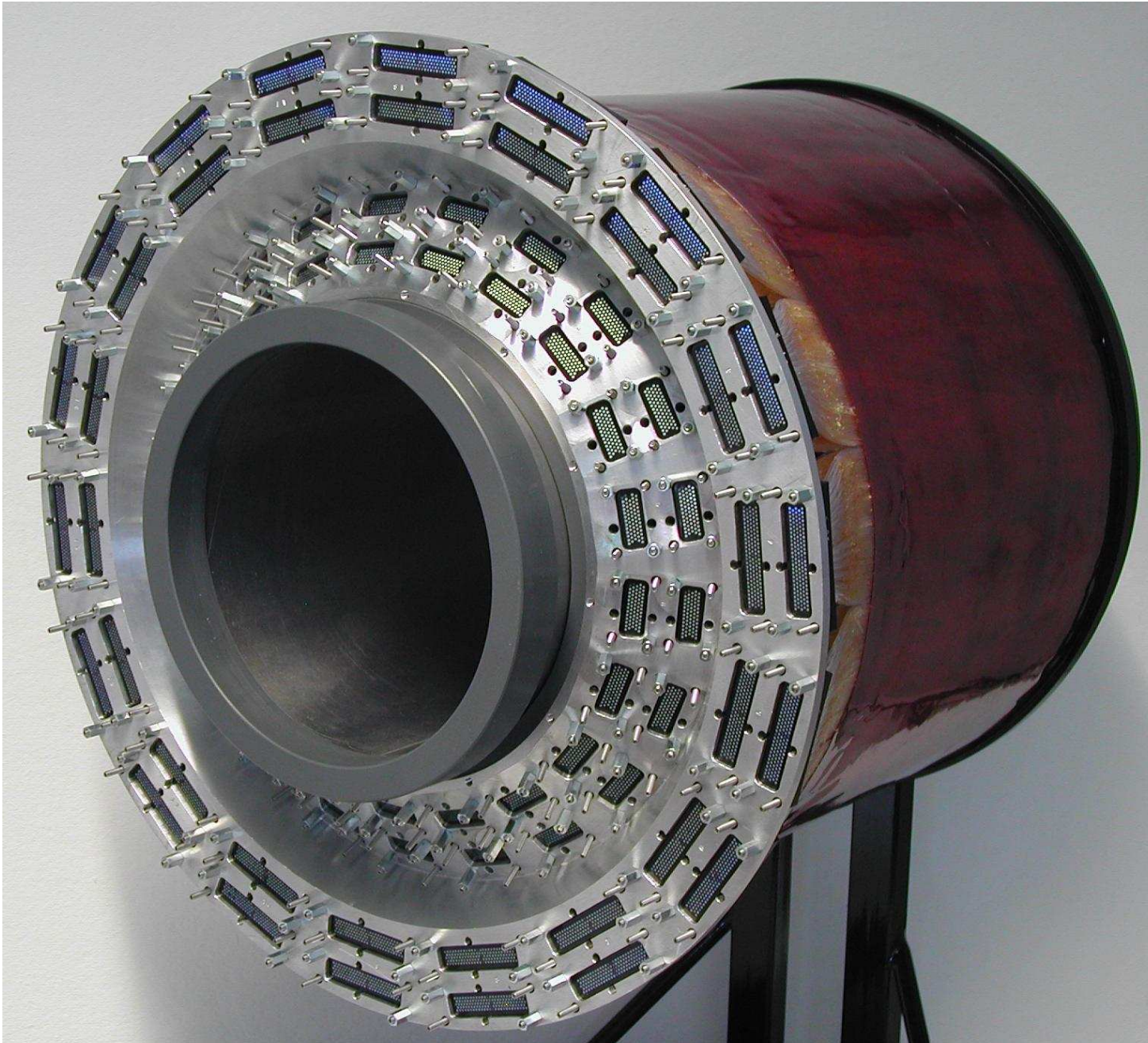


Scintillating fiber tracker

- Each SciFi cylinder contains two SciFi layer, one parallel and one stereo layer
- 21(18) modules are assembled to an inner (outer) SciFi layer
- SciFi Module consists of 64 (128) fibers for inner (outer) cylinder arranged in two layer
- Kuraray SCSF-78 M fibers read out by 64 chn. Hamamatsu PMTs and high density customized VME electronics



Scintillating fiber tracker

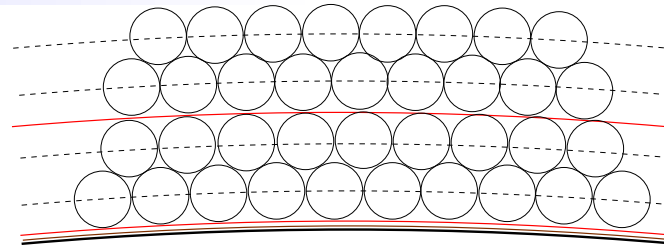


Scintillating fiber in Module

Outer layers

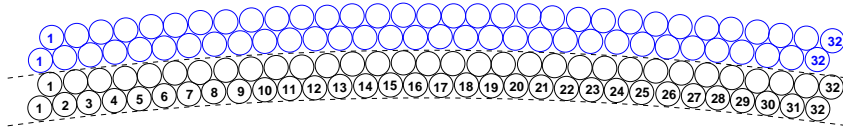


dgDET
 } 244 stereo
 } 242 parallel
 outer stereo
 outer stereo
 glue 0.1 mm
 outer parallel
 outer parallel
 glue 0.1 mm
 kapton 0.125 mm

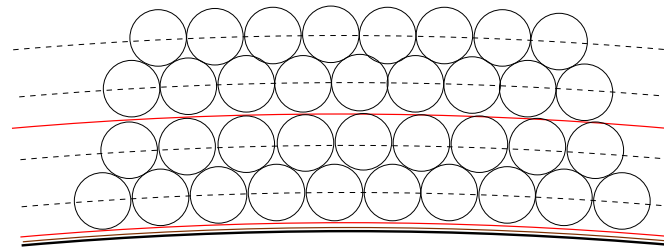


← $R_8 = 186.625 \text{ mm}$
 ← $R_7 = 185.725 \text{ mm}$
 ← $R_6 = 184.625 \text{ mm}$
 ← $R_5 = 183.725 \text{ mm}$
 ← $R_{\text{outer}} = 183 \text{ mm}$

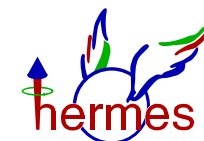
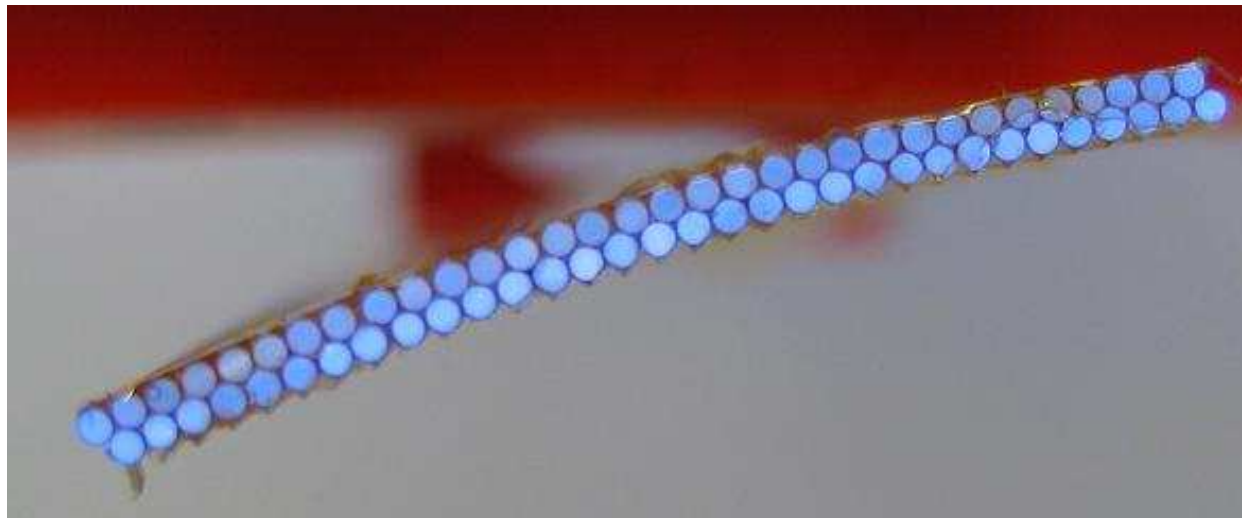
Inner layers



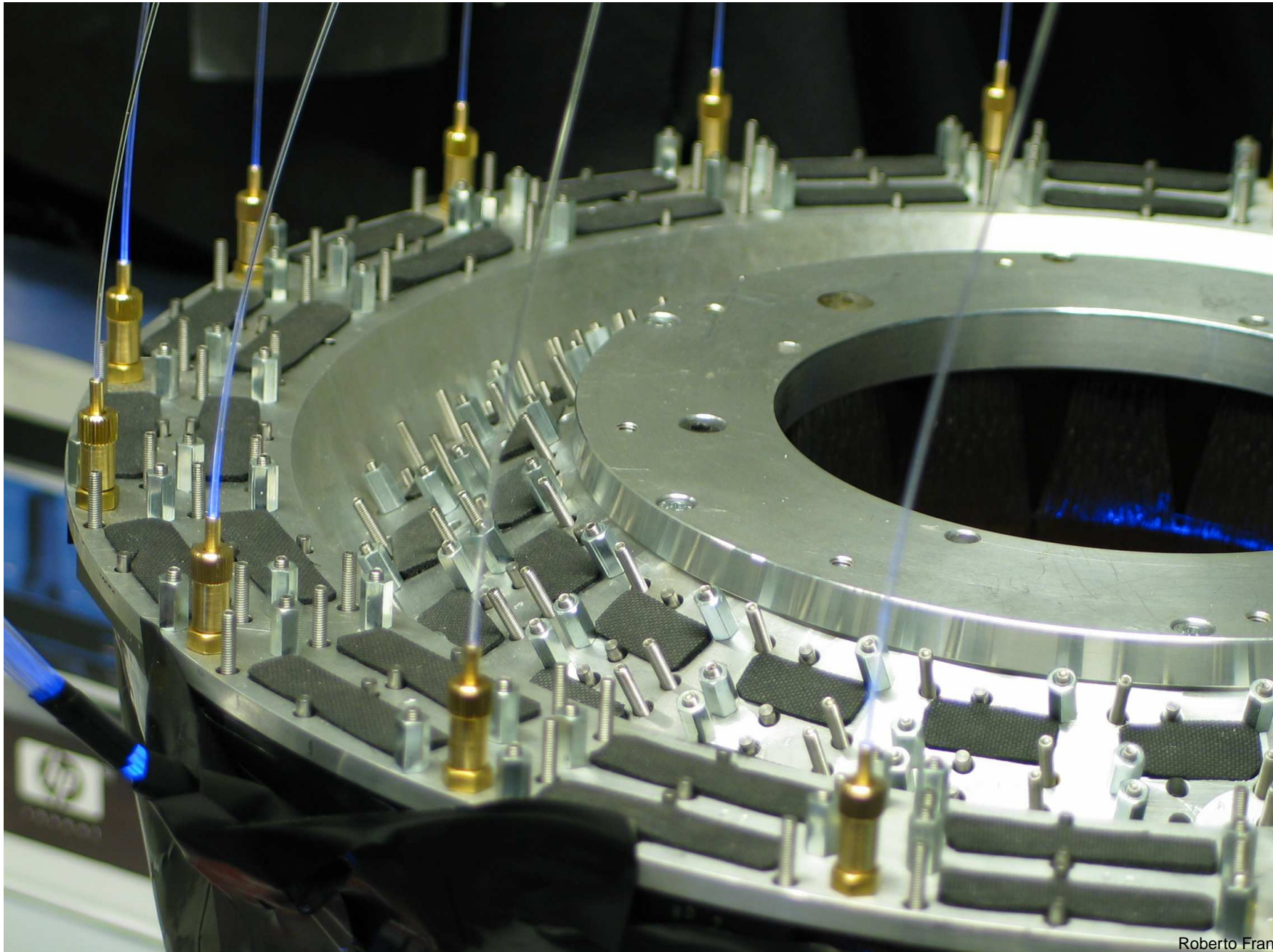
dgDET
 } 241 stereo
 } 240 } stereo
 } 239 } parallel
 } 238 }
 inner stereo
 inner stereo
 glue 0.1 mm
 inner parallel
 inner parallel
 glue 0.1 mm
 kapton 0.125 mm



← $R_4 = 112.625 \text{ mm}$
 ← $R_3 = 111.725 \text{ mm}$
 ← $R_2 = 110.625 \text{ mm}$
 ← $R_1 = 109.725 \text{ mm}$
 ← $R_{\text{inner}} = 109 \text{ mm}$

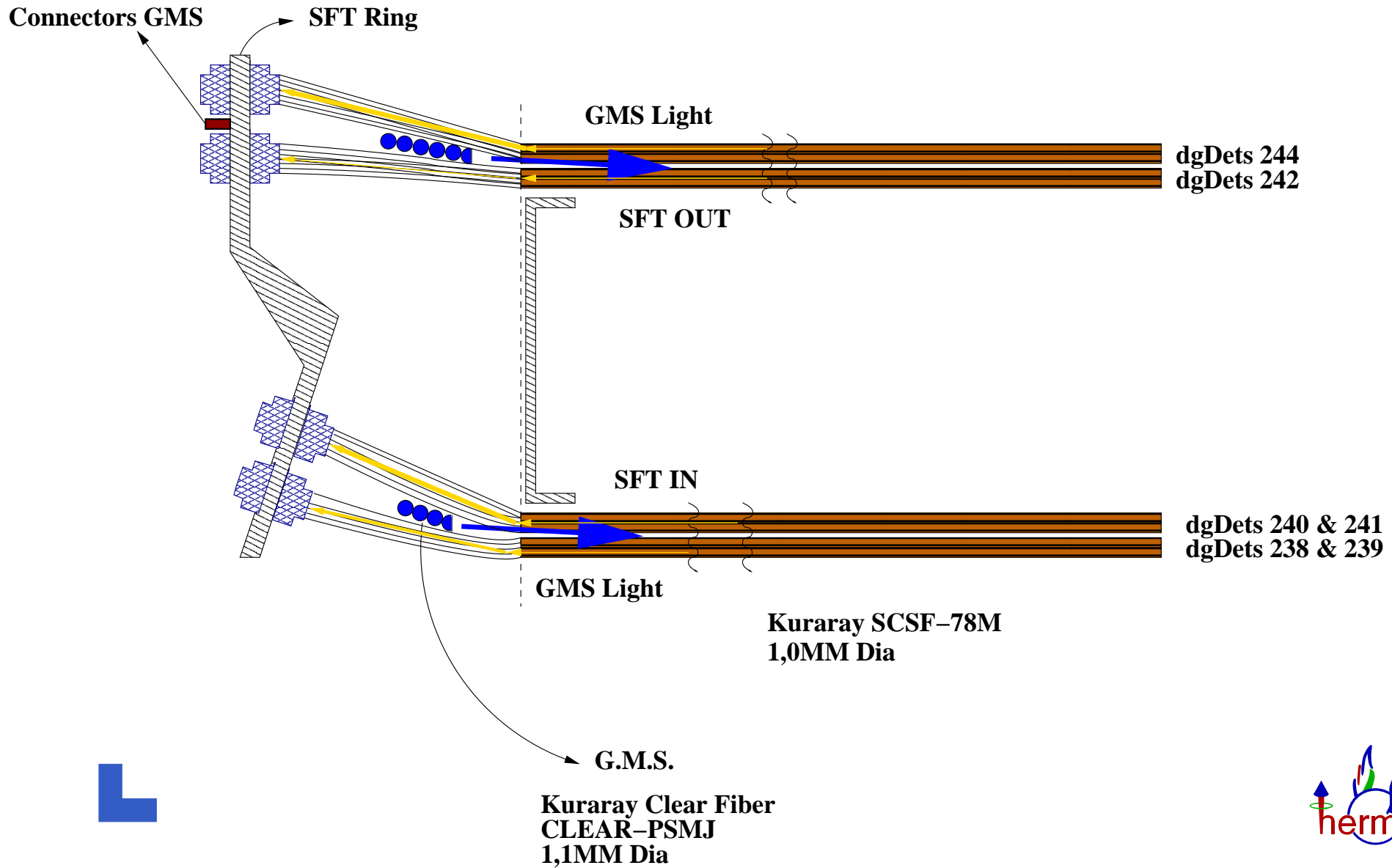


GMS in SFT

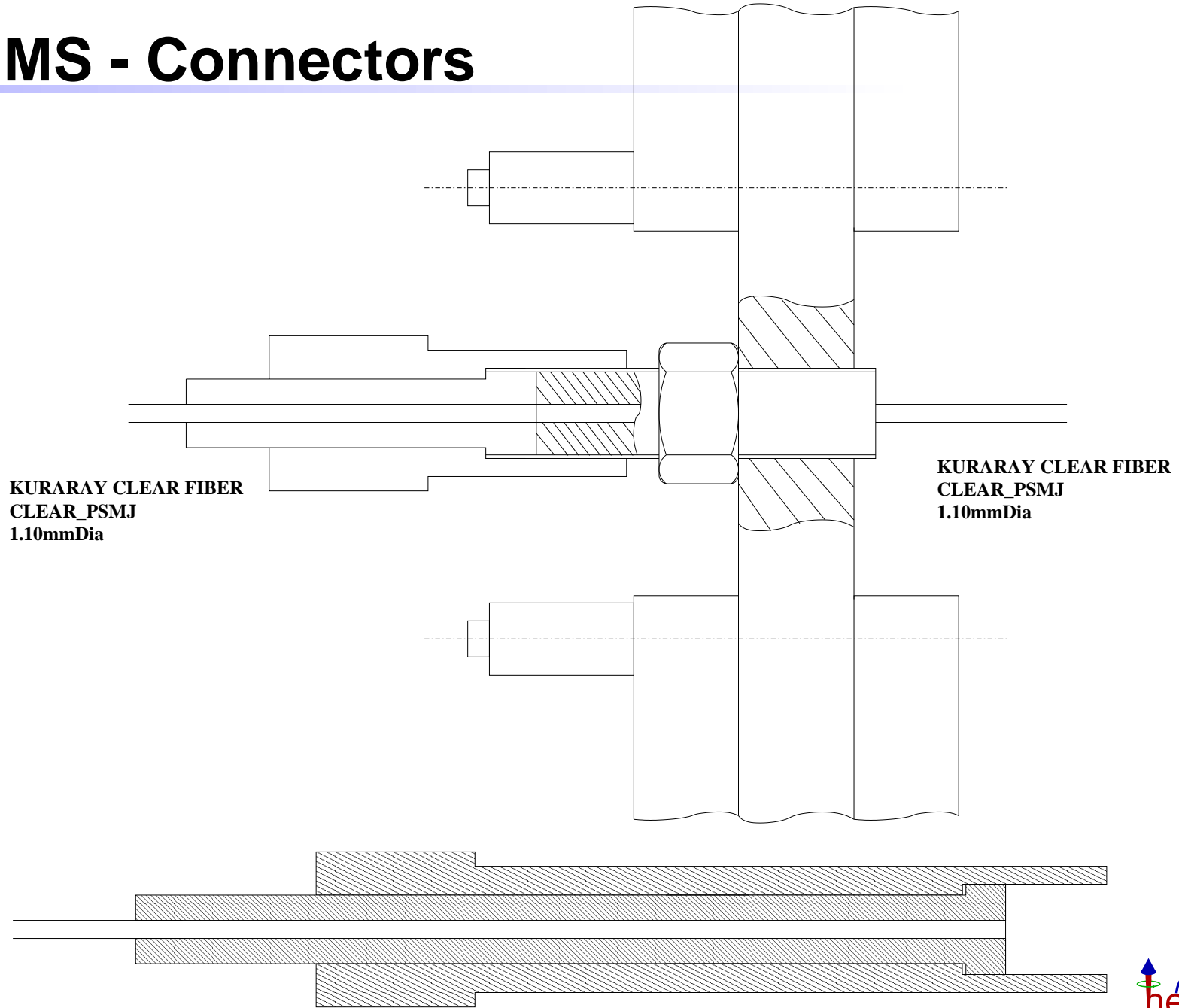


GMS instalation

G.M.S. Position SFT IN & OUT



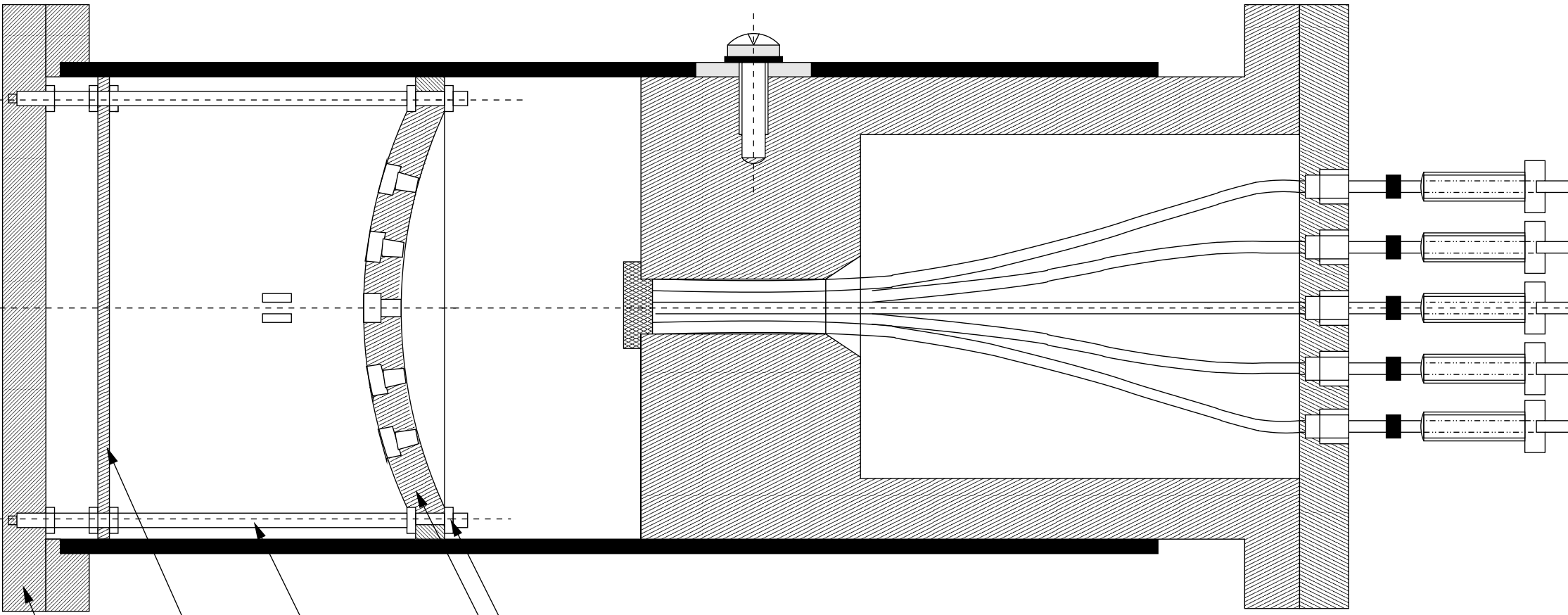
GMS - Connectors



GMS Light source



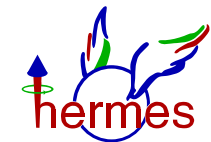
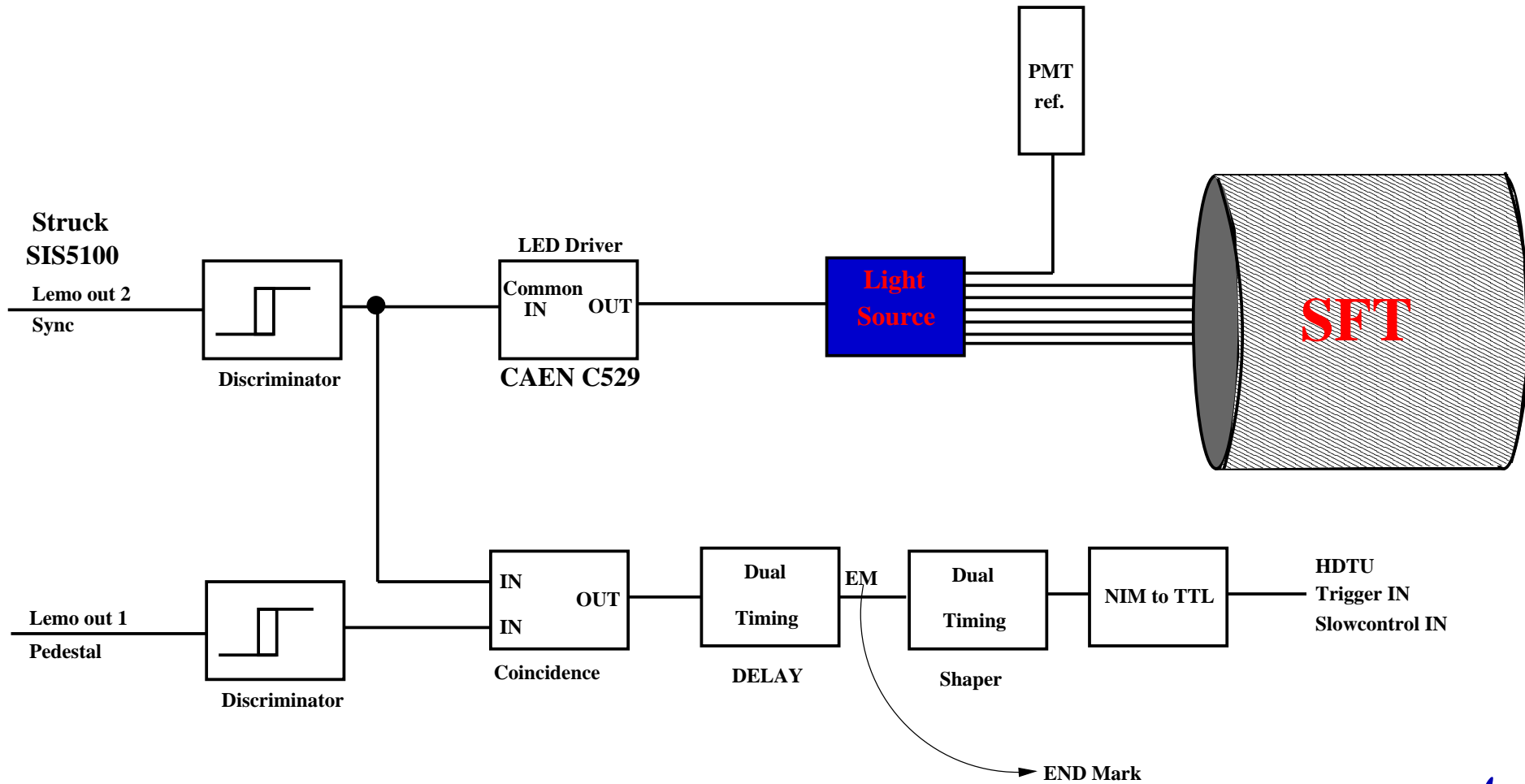
HERMES – LED Focus Box



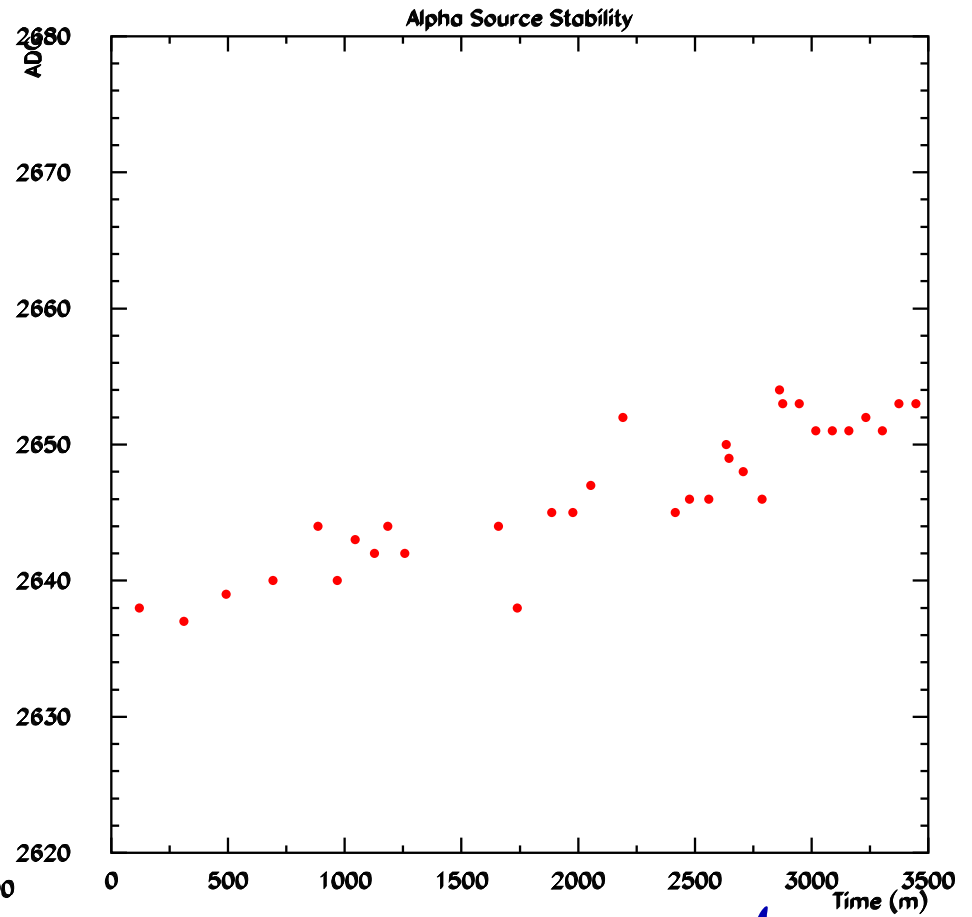
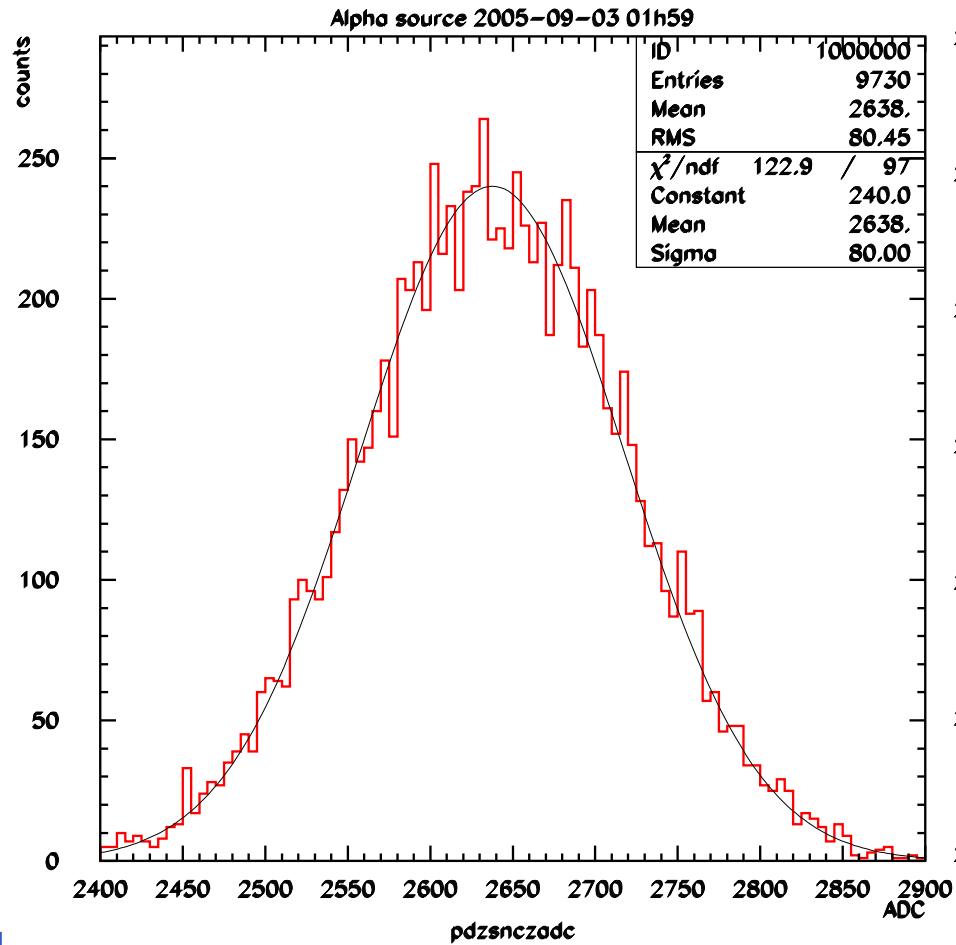
1 2 3 5 4



GMS Scheme



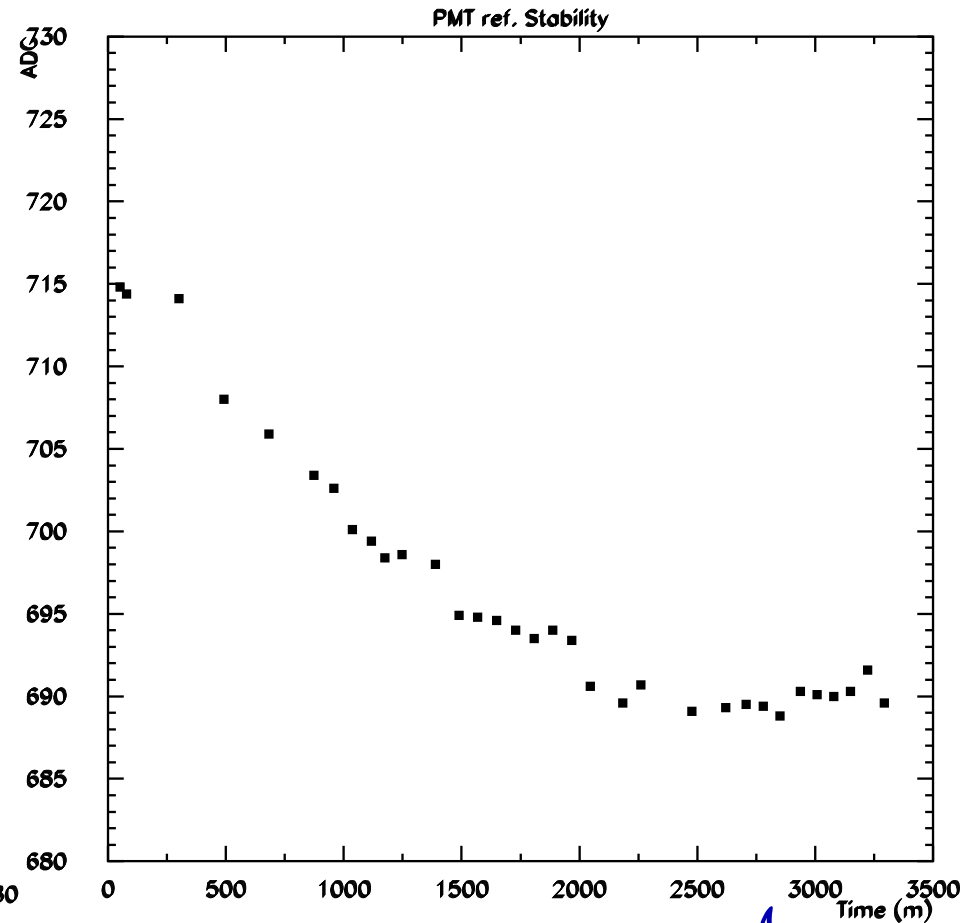
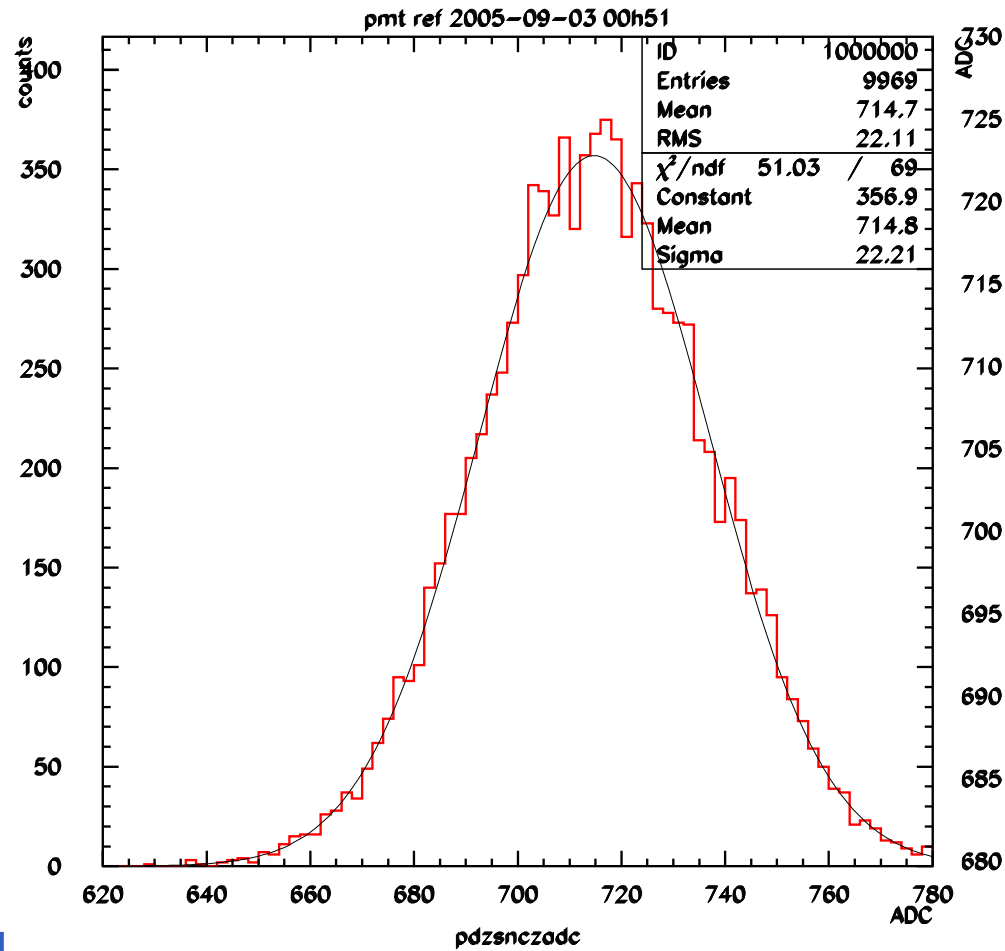
Alpha Source for GMS



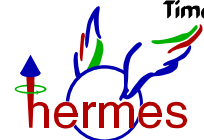
one run



PMT ref. for SFT GMS



one run



Gain Stability SFT

fit in one Gauss and two Poisson corresponding to the pedestal and the first and second p.e.

