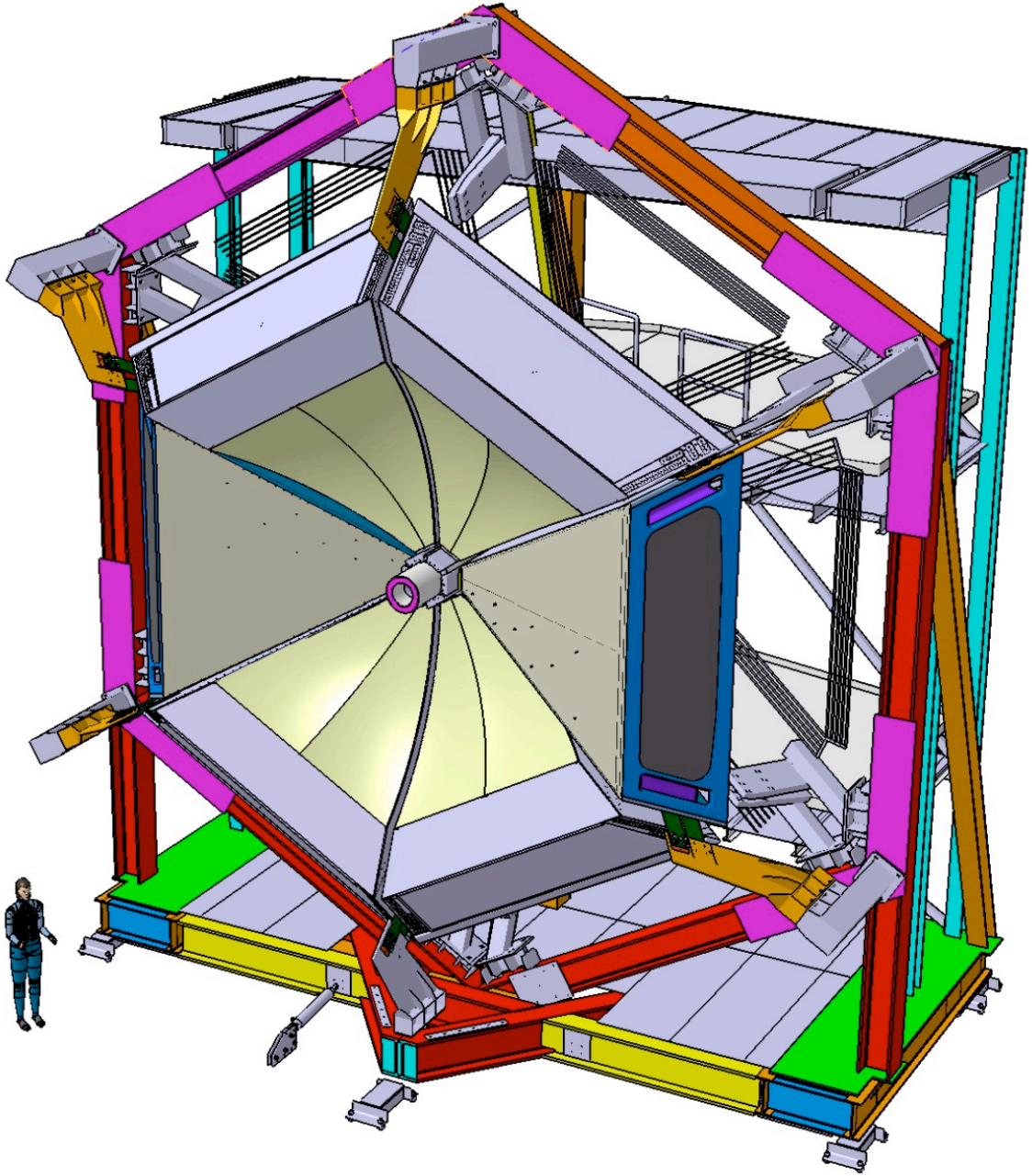


CLAS12-RICH Status-Report

December 11th 2013

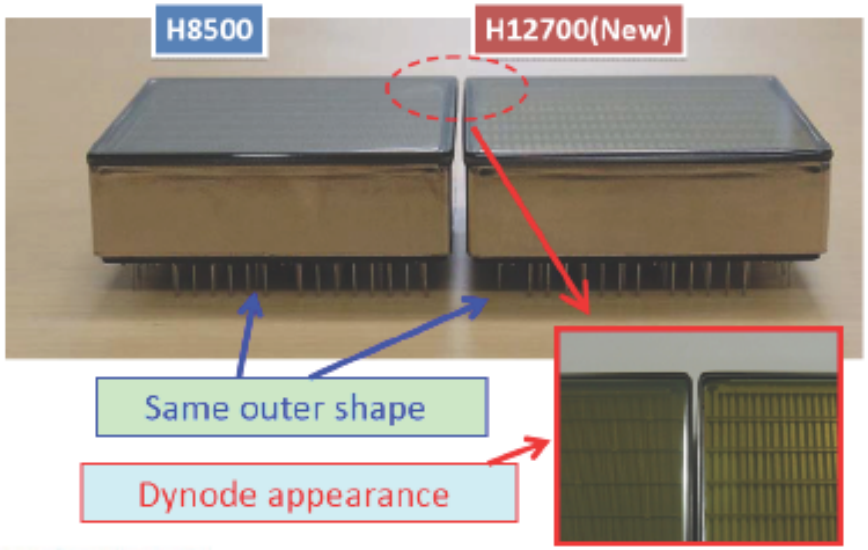
PMTs

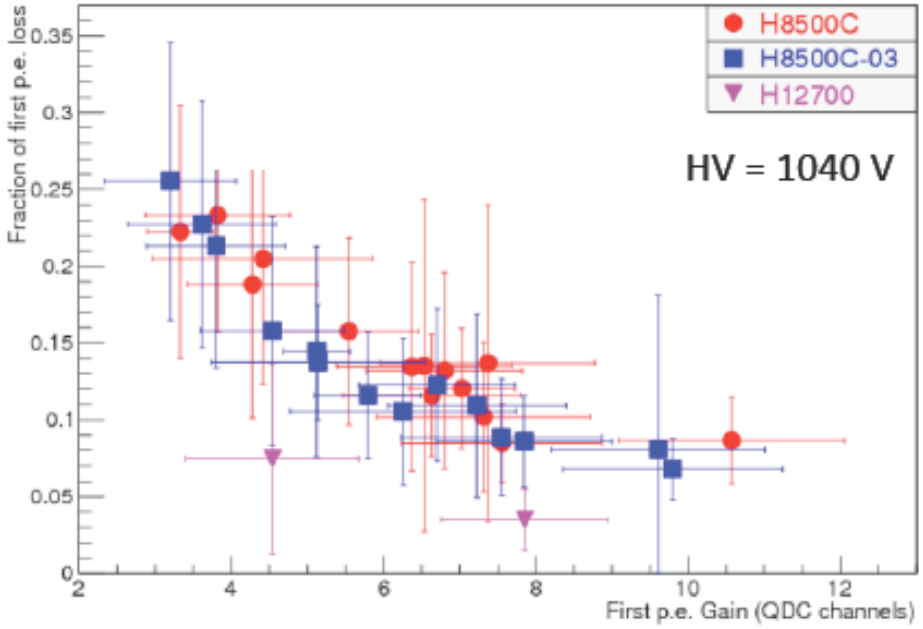
H12700 vs H8500:

- better SPE resolution at similar gain
- reduced cross-talk (shown at RICH2013)

H12700 not on marked because:

- x10 dark count on the corner pixels (not an issue for us)
- leakage current between case and base (to be solved)

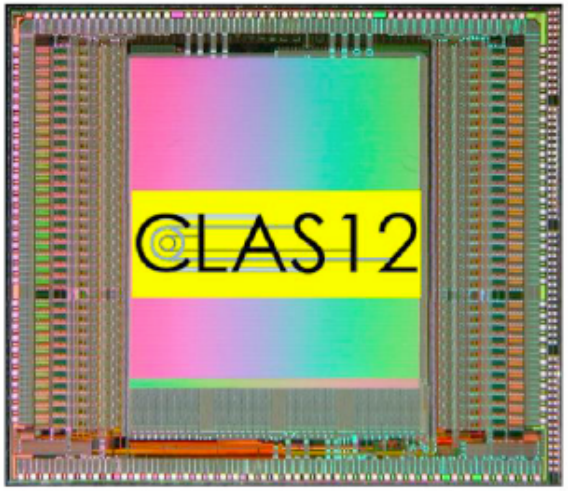




Electronics

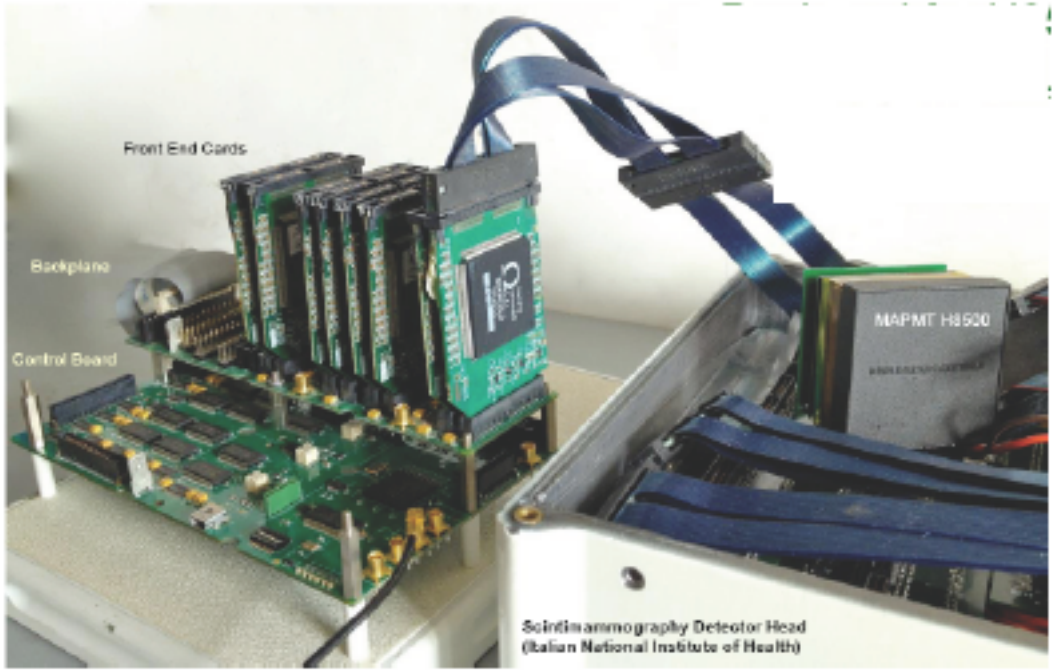
DREAM chip:

- successfully tested with H8500 (laser test)
- ~2 ns time resolution
- available only in limited number, no new production foreseen



MAROC3 chip:

- less than 100 ps intrinsic time resolution of the digital output



Aerogel

Manufacture Engineering Phase ongoing with Novosibirsk to improve and stabilize large tiles production yield and transmission length

Milestone: Start Aerogel procurement 12/31/13

- pro-forma quotation for 1st square meter in line with cost evaluation
- 80 keuro reserved from INFN FY2013

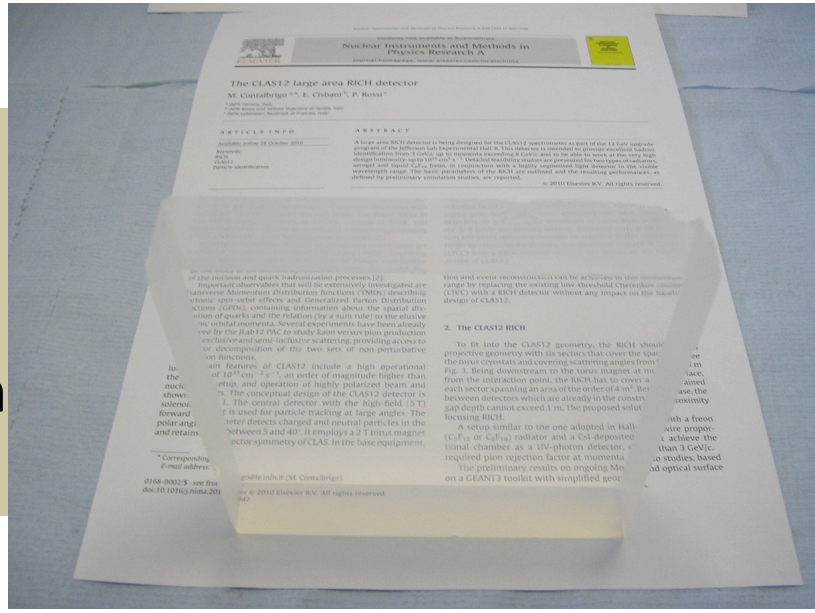
Aerogel Radiator

Rafractive index: 1.05

Area: 20x20 cm^2

Thickness: 3 cm

Scattering Length: greater than 50 mm

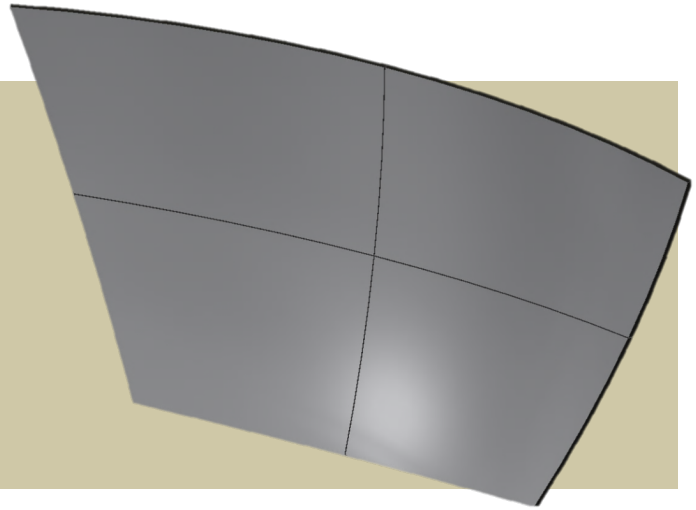


Mirrors

Manufacture Engineering Phase ongoing with companies in Italy and USA
In contact with CERN laboratory for mirror characterization

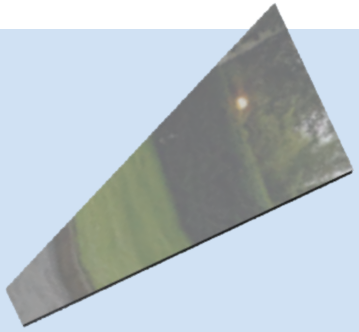
CFRP SPHERICAL Mirror

Radius tolerance <= 1%
Surface accuracy: 5 µm RMS
Surface Quality: 3 nm RMS
D0 < 5 mm
Reflectivity > 90%



Planar Glass Mirror

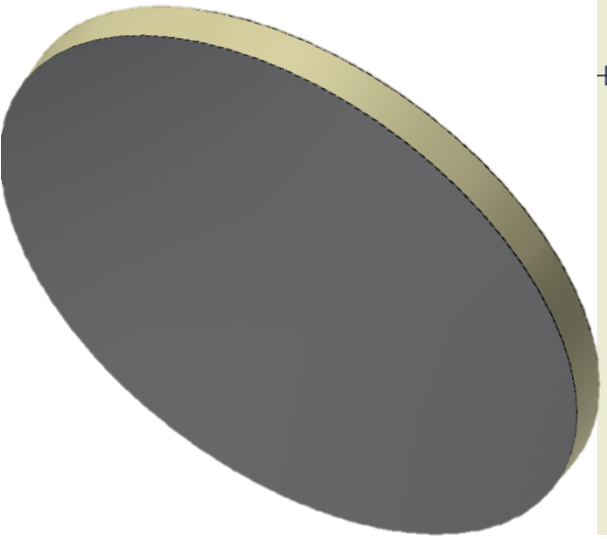
Planarity tolerance <= 0.1 mm
Surface accuracy: 5 µm RMS
Surface Quality: 3 nm RMS
Reflectivity > 90%

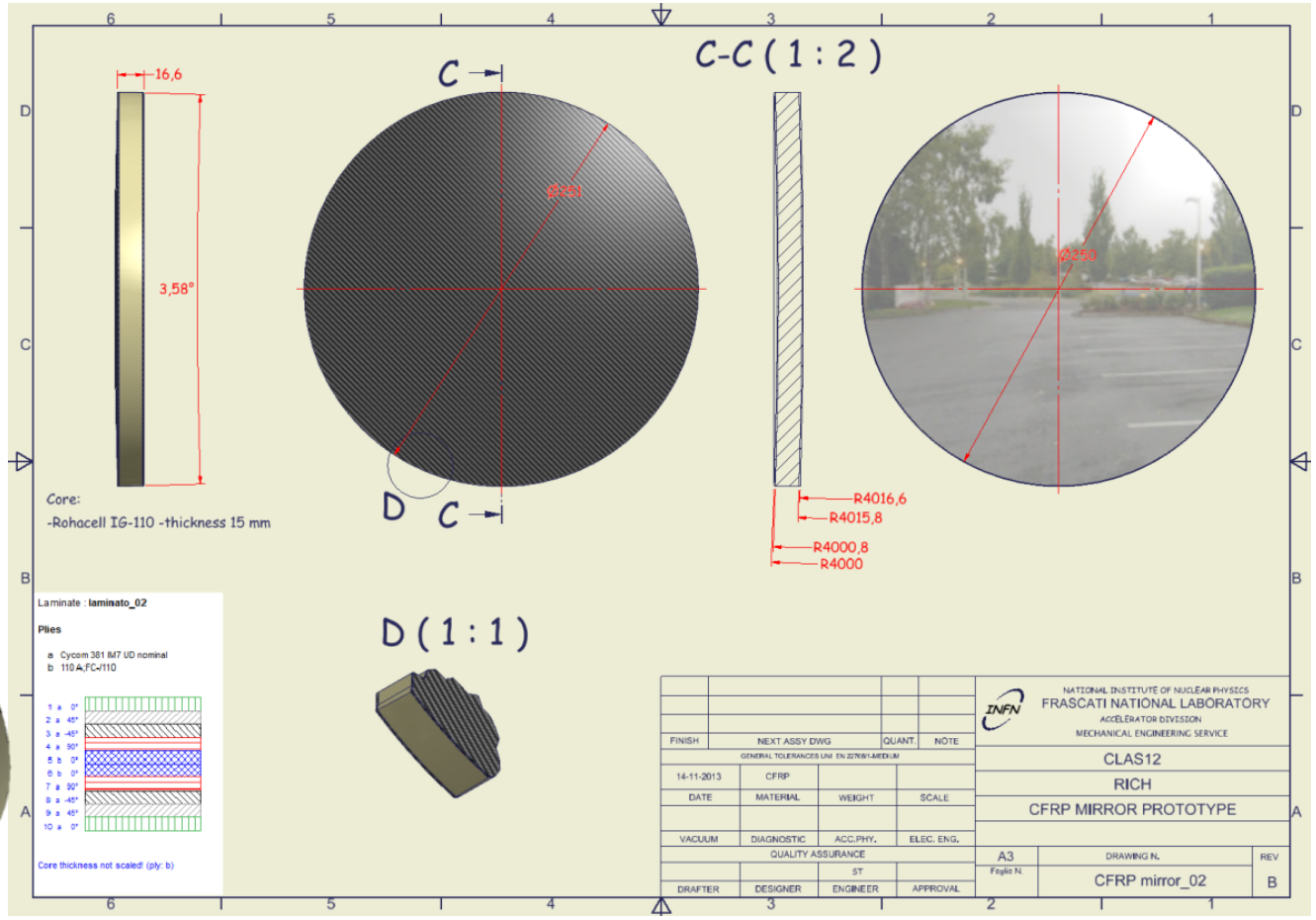


CFRP Spherical Mirror: Mandrel Demo

Mandrel demo in preparation at Marcon (Italy) :

- supremax (borosilicate glass) material
- spherical shape, 4 m radius, 35 cm diameter



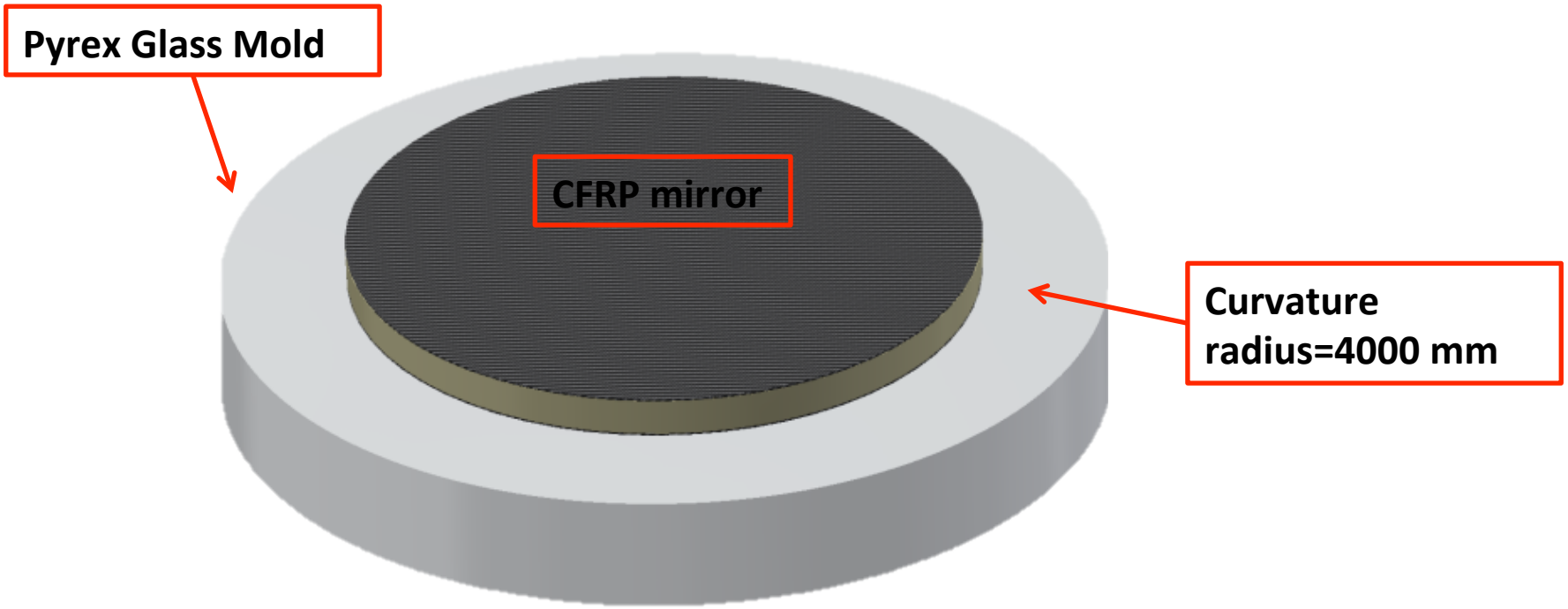


CFRP Spherical Mirror

Two mirrors demo in preparation at CMA (USA) :

- CFRP skin and rohacell core
- spherical shape, 30 cm diameter
- 1st demo: 3.5 m radius, LHCb finish, from a CMA mandrel
- 2nd demo: 4 m radius, CLAS12 finish, from the Marcon mandrel

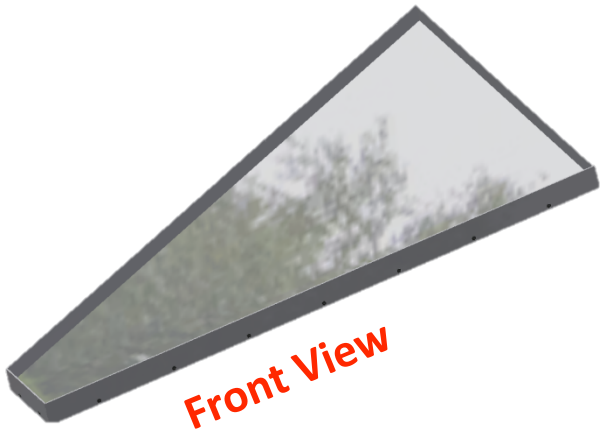
CMA can do mirror and coating up to 1.8 m diameter
prefer to produce the mirror together with support structure



Forward Glass Mirror

Two demos under preparation at Media-Lario (Italy) :

- soda-line mm glass skin and Al honeycomb core
- reinforced frame for aerogel holder
- 1st demo: 1.6 mm (standard) glass skin thicknesses
- 2nd demo: <1 mm (goal) glass skin thicknesses



Front View

Back View