SW Scintillator Wall Design Studies

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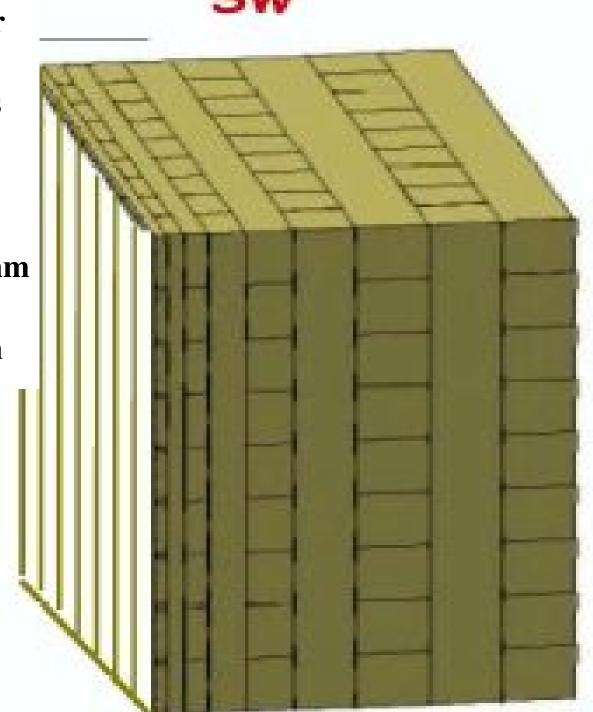
MICE-CM17, 2007-Feb-26

Fully Active Scintillator

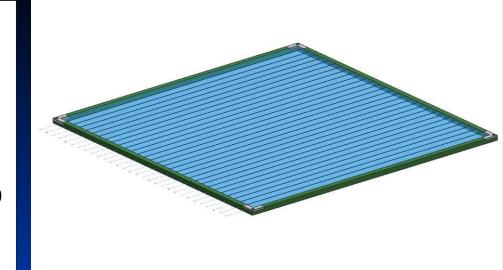
Plastic Scintillator Bars (US type): Polystyrene (Co-extruded with white diffusive coating) 17mm x 33 mm x 990 mm

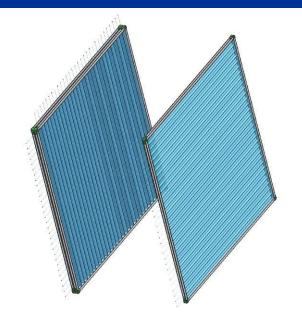
WLS fibers: 3 x 0.8 mm

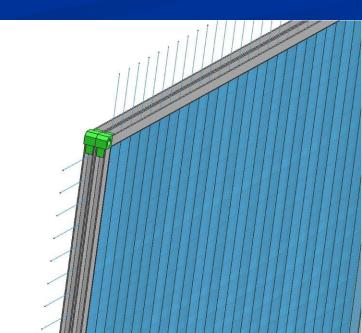
Mirrored end

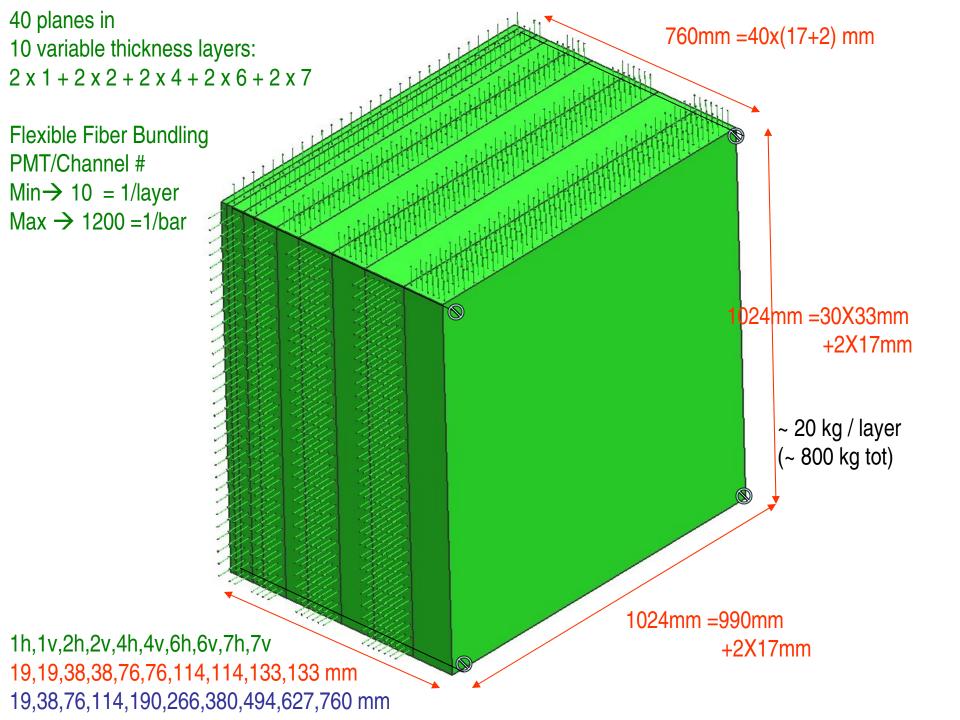


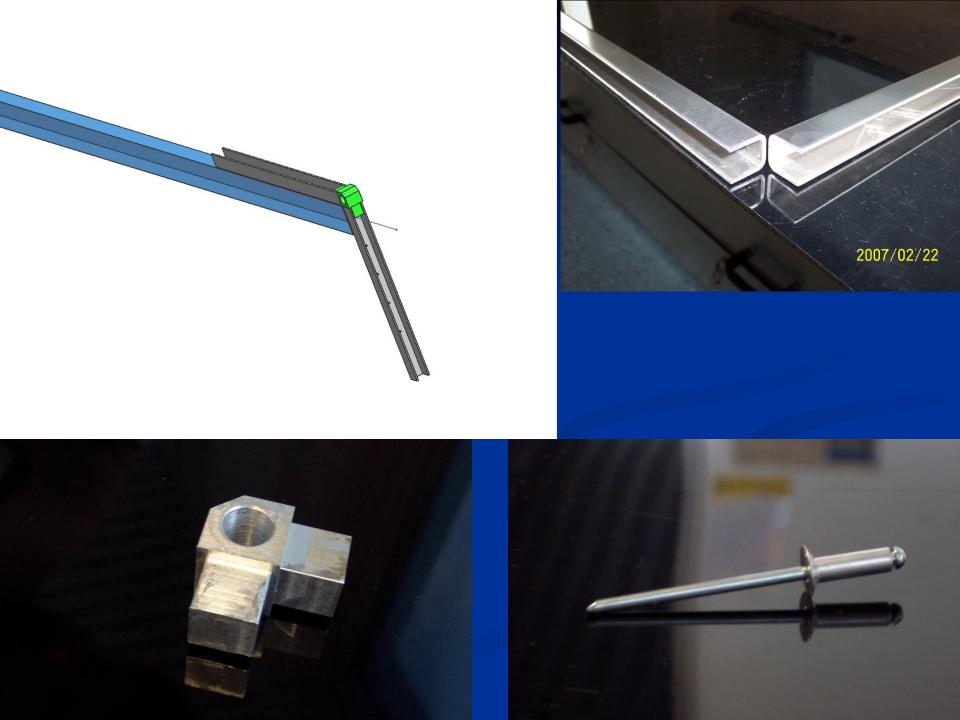
Basic design idea: modular structure based on planes of scintillating bars glued together and reinforced against mechanical stress by a metallic support and two fiber-glass layers

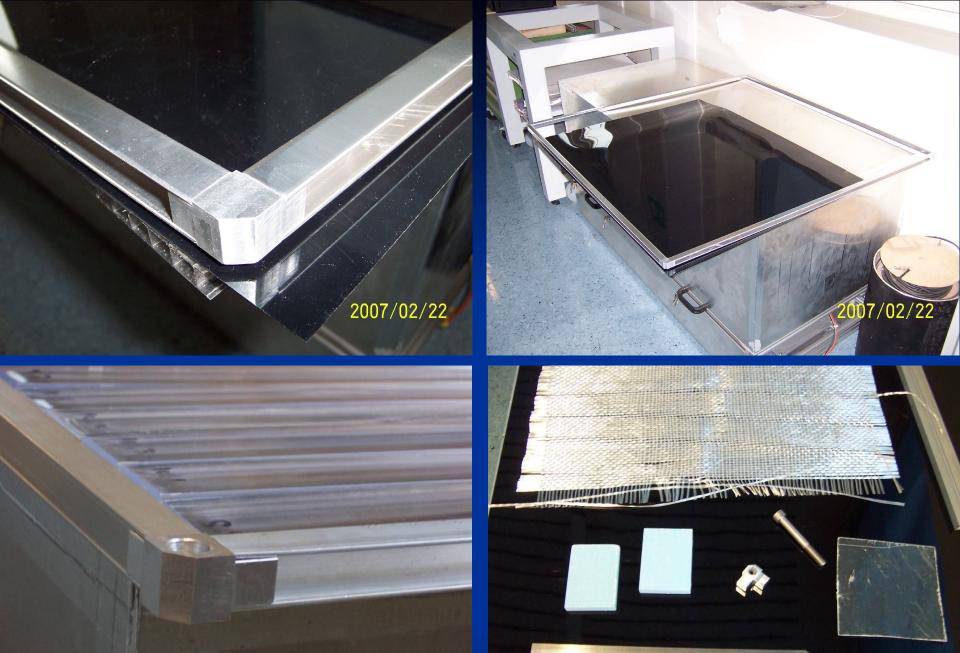












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Open design issues:

Mechanical support (interface with KL)

Light collection:

- Number of available channels (both PMT and electronics)
- Desired segmentation (simulation in progress)
- Choice of PMTs

PMT mechanical structure and shielding

Light tightness (a big envelop?)

Calibration system (?)

Cost:

Scintillator (9 dollars/Kg) ~7000 dollars

Fibers (1 dollar/m) ~6000 dollars

Mechanical structure of planes (50 euro/plane) ~2000 euro

PMTs (to be recuperated)?

Electronics (very expensive) !!!

Mechanics and PMT shielding to be estimated (not too much)

Plans for the (very uncertain) near future: complete first version of a realistic design build a prototype of a plane and test in Rome (I think very important step!) complete the simulation and estimate impact of non-active region and first layer thickness on performance (in the present design the first layer is 1.9 cm instead of 1 cm as in Rikard's note)