

Electron-Muon Ranger (EMR)

Progress Report

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On Behalf of the EMR Group

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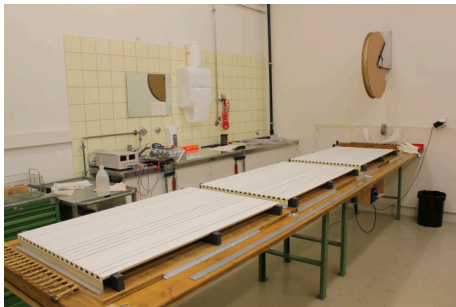
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 - Geant4 simulation

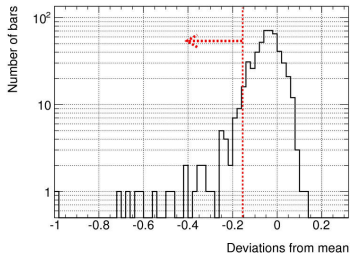
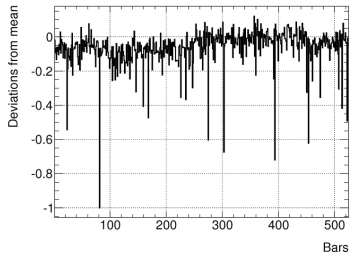
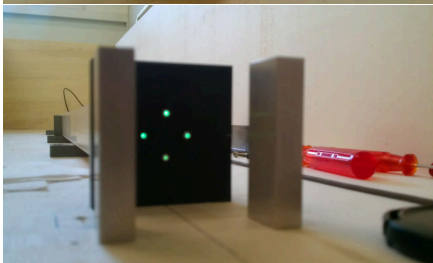
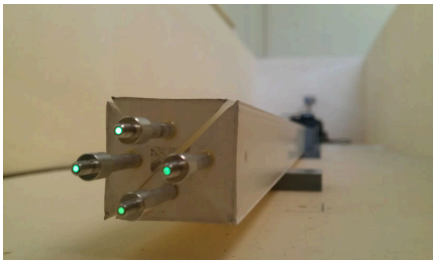
Production Status



- 90% of bars glued (20% left)
- 30% polished
- old refurbished bars tested (as expected, 10% are faulty)



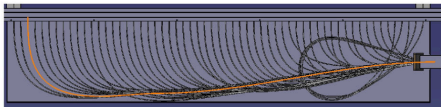
Bar Tests after Gluing and Polishing



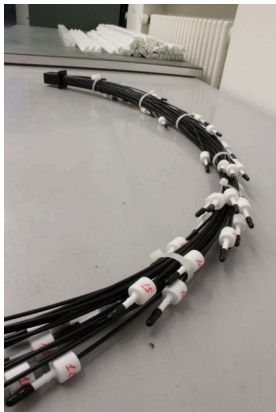
Clear Fiber



- Kuraray, multi-cladding, dia. 1.5mm, S-type
- 10 km delivered in May
- in order to maximize the bending radius fiber lengths ranges from 10 to 110 cm
- 3-5 fibers still have to be bended below minimum bending radius



PMT connectors

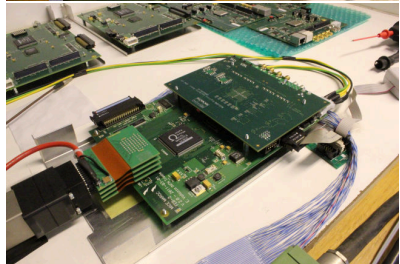
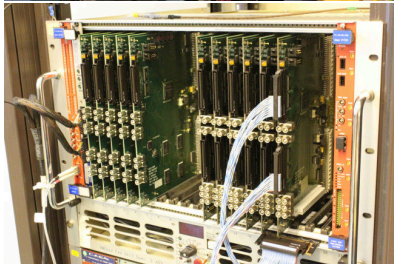
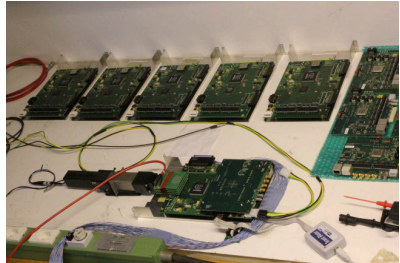
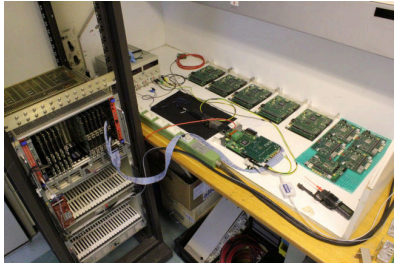


- 96 assemblies
- 60 fibers each
- each fiber and PMT connector are glued and polished
- 1 full-time technician will be hired to speed up the production ⇒ 2.5 in total

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Front-End-Boards



PMT tests



- PHILIPS XP2972
- 100 PMT tested with LED/Cosmics
- $>1/3$ are bad (low signal, high noise)
- performance will be compared to HAMAMATSU R6427 (the same design)
- we may decide to switch to new R6427

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Status

This week-end we will brainstorm the EMR software during MAUS workshop.

Simulation

- EMR geometry and sensitive detector implemented
- data to be saved in Json files (work in progress)

Digitization

- digitization to be implemented by Matt (work in progress)
- should take into account all effects: light generation, trapping, conversion from blue to green, attenuation along the fibre and loss in fibre matching faces

Reconstruction

- not touched at all (will start after the CM)

Geant4 simulation

Leïla's work

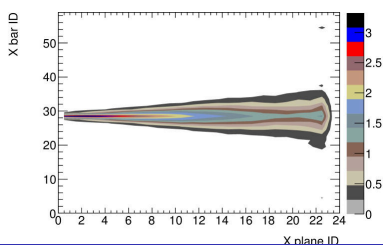
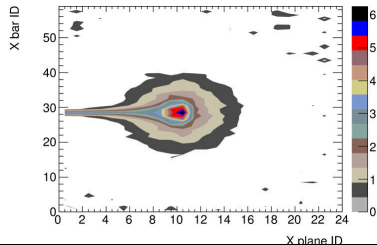
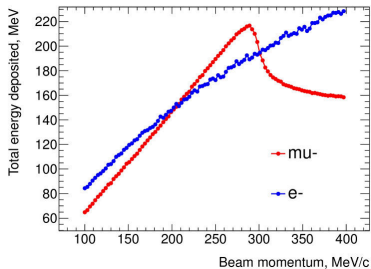
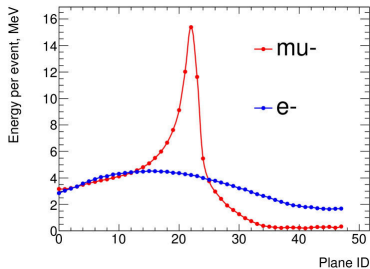


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4 Summary

Summary

Construction

- one additional technician is crucial to finish the construction in time
- we have all the materials and we've developed all necessary techniques to complete the detector

Electronics

- most of the boards were developed as standalone and they've never been tested together
- we need to understand and develop some parts of the firmware to make the full system work

Software

- under development

Thank you for your attention!