

Status of GEM Trackers for GMn:

Response to the ERR charge

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SBS Weekly Meeting 05/03/2017

Status of the GEMs for GMn

Rear GEM chamber

GMn GEM Tracker: 4 layers (INFN GEM modules)

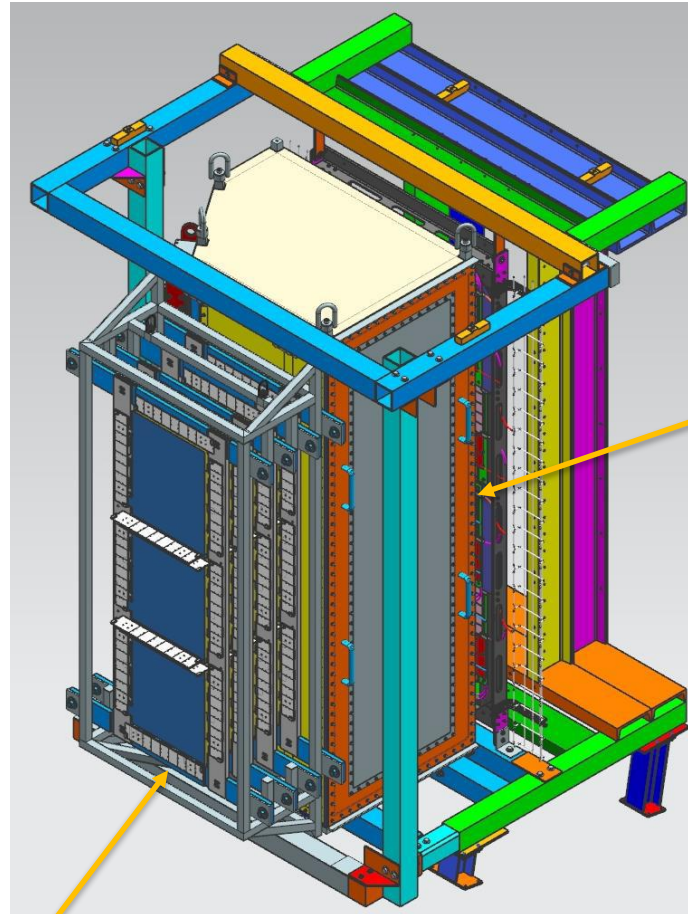
- INFN groups at Roma, Catania, Genoa and Bari
- Required a total 12 modules, each layer (150 cm x 40 cm) made of 3 INFN modules.
- Italian group have already built 16 modules
- 2 chambers (modules + frames + FE electronics) already delivered @ JLab
- Other 2 remaining chambers on their way

One additional layer behind the GRINCH detector:

- Back layer (200 cm x 50 cm) made of 4 UVa modules
- More than 40 UVa modules available
- Module migration to JLab to start after May 15°
- The Aluminum frame has been built and tested with modules @ UVa

One layer of the Front Tracker GEM chamber

Bigbite Spectrometer for the GMn experiment



- Setting the cosmic stand for characterization and commissioning of the GMn tracker
- Sasha will be giving an update on GMn GEM gas system next week (May 10 at the SBS weekly meeting)

GEM Readout Electronics & DAQ

2 VME crates for all 4 + 1 GEM layers

Front Tracker crate

- 16 MPDs (v4.0)
- 1 SSP
- 1 Trigger Supervisor
- 1 VME CPU or Controller
- 2 slots for HV PS

Back Tracker crate

- 7 MPDs (v.40)
- 1 SSP
- 1 Trigger Supervisor
- 1 VME CPU or Controller
- 1 slots for HV PS (or not)

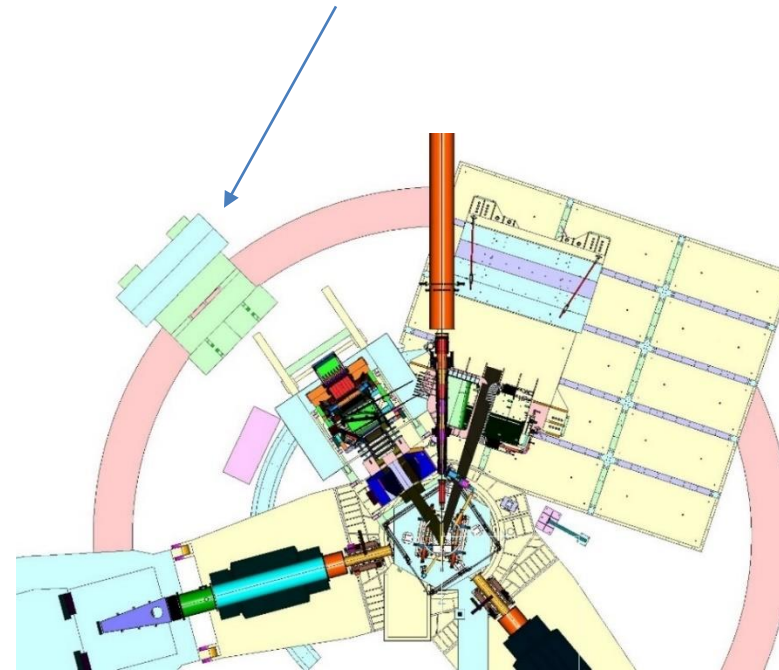
Electronics Hut & Shielding for GMn/Gen GEM electronics

Shielding and dose simulations study done

http://hallaweb.jlab.org/12GeV/SuperBigBite/SBS-minutes/2017/obrecht_GMn_hut.pdf

Progress on the DAQ and rate capability

- MPD4.0 with the implementation of the SSP module and optical link
- The system is under test (Danning, Alex, Paolo and the DAQ group).
- Ongoing debugging of the data transfer with optical link



Commissioning of GEM Trackers

Setting of the cosmic stand for GEM trackers

- Full characterisation of the GEM modules with cosmics
 - Evaluate the dead area (disabled HV sector), study efficiency,
 - Define the optimal working HV and gas flow for each module
 - Full readout performance DAQ
- Ideally we will have all 4 INFN GEM layers on the cosmic stand and if possible, the additional UVa GEM chamber
- One VME crate for the readout will be used
- Trigger: 1.6 m long scintillators used for neutron detectors in GEn 2006 experiment (Bogdan)

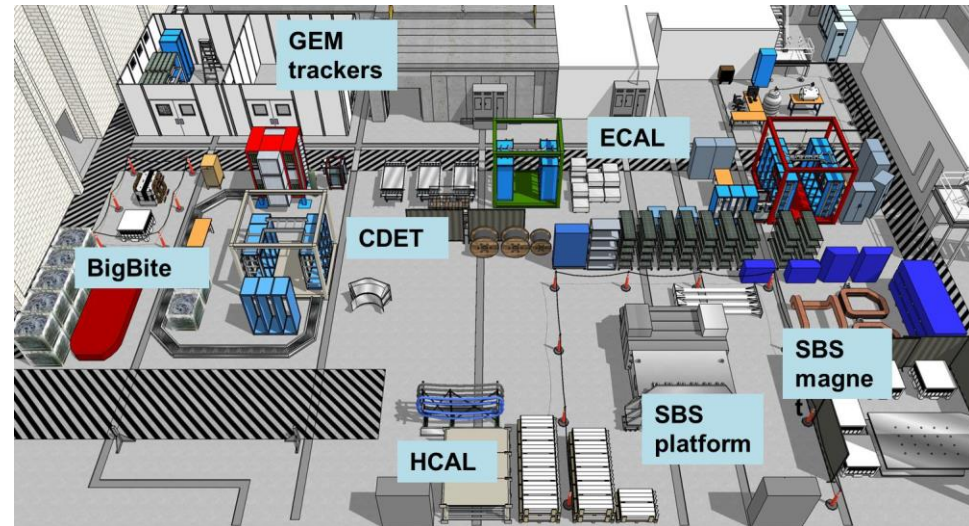
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Tentative plan and timeline for the cosmic test setup

- Installation of the stand will likely start on May 15 upon completion of the Clean room space
- Evaristo is coming with his team to help

Status of the construction of Clean Room space

- Space allocated in the test lab for the storage of the GEMs modules (UVa & INFM modules)
- Setting of the Cosmic test for GEM layers
- Construction of wall is completed but installation of sprinkler and electrical system etc ..ongoing
- Clean room expected to be ready by May 15th



Manpower and Resources

Commissioning of GEM trackers on the cosmic stand

- UVa team (Kondo, Siyu, John, Danning)
- Evaristo's team will provide support during the setting of the cosmic test and commissioning phase
- We will have one undergrad student from HU this summer (M. Kohl)

GEM readout electronics and DAQ

- Danning, Alex and DAQ group
- Support from Evaristo and Paolo
- Full scale test on cosmic stand (Kondo, Siyu, John)