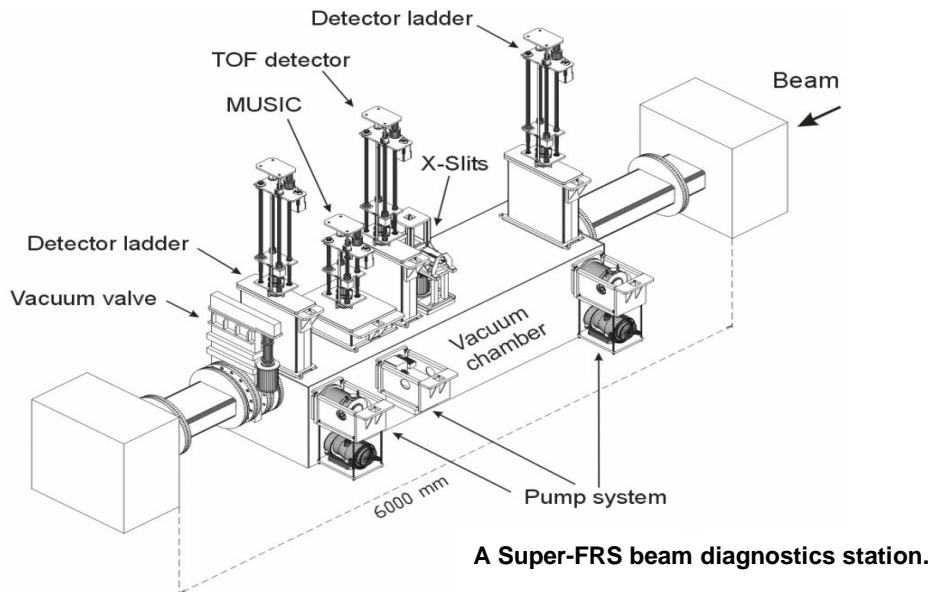


# GEM-TPC DETECTOR PROTOTYPE FOR THE BEAM DIAGNOSTICS OF THE SUPER FRAGMENT RECOIL SEPARATOR FOR THE NUSTAR EXPERIMENT OF THE FAIR FACILITY

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The FAIR [1] facility is an international accelerator centre for research with ion and anti-proton beams. It is being built at Darmstadt, Germany as an extension to the current GSI research institute. One major part of the facility will be the Super-FRS [2] separator. The NUSTAR experiments will benefit from the Super-FRS, which will deliver an unprecedented range of radioactive ion beams (RIBs). These experiments will exploit beams of different energies and characteristics at three branches; the high-energy branch utilizes the RIBs at relativistic energies 300-1500 MeV/u as created in the production process, the low-energy branch aims at using beams in the range of 0-150 MeV/u whereas the ring branch will exploit cooled and stored beams in the storage ring NESR.



The main tasks for the Super-FRS beam diagnostics stations will be to set up and adjust the separator and to provide an event-by-event particle identification. The Helsinki group is in the R&D phase of the GEM-TPC tracking detectors for these stations, which will fulfil the requirements of the Super-FRS diagnostic system. We will present the current status of our work, introduce the first detector prototype and show some simulation results.

[1] <http://www.gsi.de/fair/>

[2] H. Geissel et al., [Technical Design Report on the Super FRS](#)