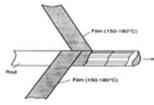
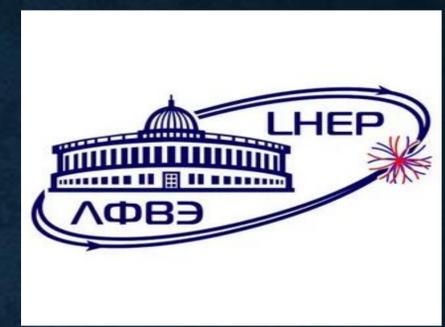


Straw chambers for the NA64 Experiment

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 Joint Institute for Nuclear Researches

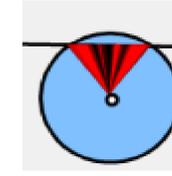
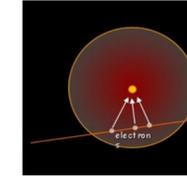
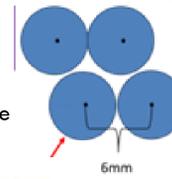
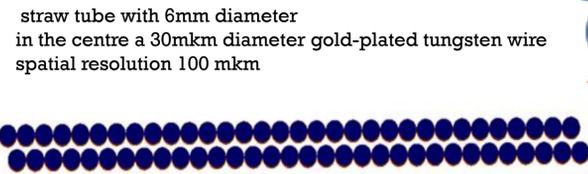
NA64 experiment is one of the several experiments at Super Proton Synchrotron (SPS) particle collider searching for phenomena of the dark sector and dark matter. It is a fixed target experiment in which an electron beam strikes fixed atomic nuclei. The main goal of this work is to describe the characteristics and properties of the particle-tracking straw tube detectors created at the Joint Institute for Nuclear Research for the NA64 Experiment.



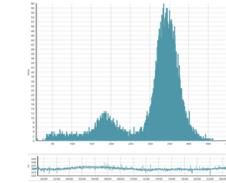
Glueing 2 overlapping strips



Glued and reinforced by carbon fibres



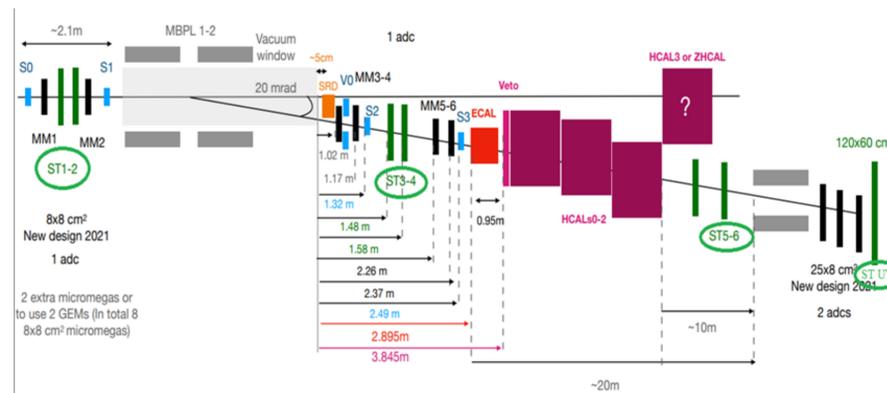
When a charged particle passes through the tube, the free electrons formed along the trace of the particle give rise to avalanches coming to the anode wires closest to these primary electrons. The electronics register the signal from each wire. Thus, the incoming signals indicate the position (coordinates) of the particle in the pipe,



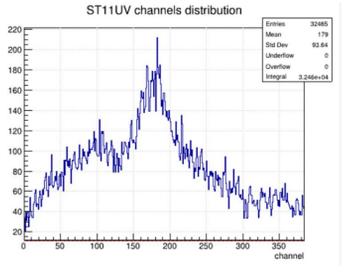
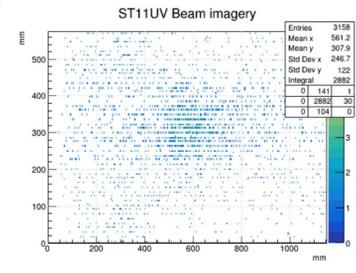
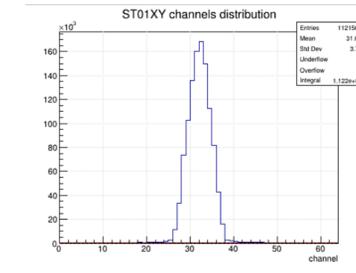
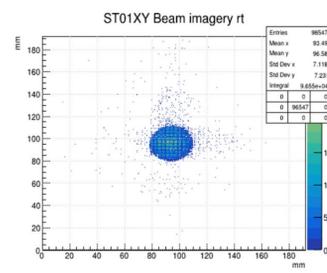
Spector of Fe55 at Ar/CO2 70/30 % mix with 1500 V tension

NA64 Experiment

The NA64 experiment is a fixed-target experiment at the CERN SPS combining the active beam dump and missing energy techniques to search for rare events. The experiment will build and operate a fully hermetic detector placed on the H4 beam line with the primary goal to search for light dark bosons (Z') from dark sector that are coupled to photons, e.g. dark photons (A'), or sub-GeV Z' coupled only to quarks. In some cases the Z' is coupled only to μ or tau, so we call the Z' the dark leptonic gauge boson. The experiment is also capable to search for $K_L \rightarrow$ invisible decay, which is complementary to $K^+ \rightarrow \pi^+ + \nu \nu$, and invisible decays of π^0, η, η', K_S



Straw detector setup for NA64 2022B run includes 3 station of small chambers and one station of large chambers, each station has 2 chamber of straw detectors. Picture of small chambers(left) and picture of large (UV) straw chamber(right)



Pictures from the program for data quality monitoring which is used during data taking. It is also convenient to use for simple analysis and review of collected data. Beam profile and distributions of small straw chambers.