Contribution ID: **87** Type: **Poster**

The MAGIX Trigger Veto System

The MAinz Gas Injection Target EXperiment (MAGIX) experiment at the
Mainz Energy-Recovering Superconducting Accelerator (MESA) requires precise event selection and background supression. This poster presents the dedicated Trigger Veto System developed for that purpose.

The MAGIX setup consists of a windowless gas jet target, followed by two high-resolution magnetic spectrometers that focus the scattered electrons onto their focal planes. There, the detector system is located, starting with the TPC (Time Projection Chamber), which is described on a companion poster. Directly underneath is the MAGIX Trigger Veto System.

The system features a segmented plastic scintillator trigger layer with dual photomultiplier readout, providing precise timing and position information. The veto layers with SiPM readout and passive lead absorbers suppress background from cosmic muons, neutrons, and other background particles. The system is built in a modular "drawer"design, allowing flexible configuration and easy maintenance.

This combination of fast triggering, background suppression, and modularity ensures reliable event selection, leading to a significant improvement in the overall data quality of MAGIX measurements. By providing this setup, the MAGIX Trigger Veto System is a key element in enabling the MAGIX physics program, which ranges from precise astrophysical S-factor determinations to detailed studies of nucleon form factors.

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