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μ -RWELL muon system and pre-shower for FCC-ee

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This presentation provides a full review of the R&D for the μ -RWELL technology for the FCC-ee application, with the report

on update on the detector optimization, on the studies to improve the ASIC, and on the evaluation of the proposed performance within the IDEA framework

In the IDEA experiment, μ -RWELL technology is proposed for the muon systems and the pre-shower. This MPGD exploits a compact manufacturing technique and provides competitive performance. This design keeps the cost of the entire system affordable and, benefiting from the ongoing technological transfer within the MPGD community will maintain a strong connection with industries.

Optimizing the readout electronics channels is needed to advance this technology's state of the art and meet the IDEA requirements. Ongoing activities focus on readout segmentation with various schemes, such as strips, capacitive sharing, and top-readout. Performance comparisons between new TIGER electronics and the APV-25 will be reported. These inputs will be used to define the final configuration for the detector proposal.

Moreover, the activities include simulations for both the detector and the experiment: a simulation of the μ -RWELL with TIGER or APV electronics is performed, and tuning with experimental data will improve their reliability and provide a useful tool to define the characteristics of a new ASIC. Additionally, a simulation of the μ -RWELL muon system in the IDEA simulation framework is implemented in DD4HEP. This powerful tool connects the gas detector community to the needs of the FCC experiment.

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