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Resistive Charge-Readouts: Towards the Next Generation of Dual-Phase LArT-TPCs

Tuesday, 5 September 2023 11:00 (20 minutes)

The development of new materials with tunable surface and/or bulk resistivity paved the way to explore new resistive-MPGD technologies for application in cryogenic systems. We will present new results obtained with two novel technologies targeting operation in liquid argon DP-TPCs: the cryogenic Resistive WELL (RWELL) and the cryogenic Resistive Plate WELL (RPWELL). The RWELL and RPWELL consist of a single-sided THGEM electrode coupled to a readout anode either through an insulating sheet coated with a thin resistive layer (DLC) or through a Fe2O3-YSZ ceramic plate, respectively. The advantages of these technologies relative to non-resistive detector configurations are demonstrated and their performance is compared in terms of maximal achievable gain, pulse shape, and discharge probability. Scaled-up versions of such detectors could become a technology of choice in DP-TPC-based applications requiring cost-effective solutions for large area coverage at moderate spatial and energy resolution.

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