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Simulation Studies of Drift Gas Mixtures for BONuS12

RTPC NATHAN DZBENSKI, GABRIEL CHARLES, Old Dominion University, CLAS COLLABORATION — The Barely-Offshell Nucleon Structure experiment at 12 GeV (BONuS12) will use a radial time-projection chamber (RTPC) in a magnetic field to study (nearly-free) neutron structure functions. This RTPC will record slow-moving spectator protons in coincidence with deep-inelastically scattered electrons from deuterium. The detector will be installed in the CEBAF Large Acceptance Spectrometer (CLAS12) in Experimental Hall B at Thomas Jefferson National Accelerator Facility (JLab). The original BONuS experiment ran in 2005 with a drift-gas mixture of helium-dimethyl ether (DME). With a new BONuS detector being developed for use in 2019, we have to find an optimal mixture of non-flamable gasses with a fast drift velocity and a small drift angle. I will present simulations performed with Garfield++ to identify such a drift-gas mixture suitable for this RTPC.

☒ Prefer Oral Session
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