Contribution ID: **5** Type: **QCD and Hadrons**

Simulating an Active Target Time Projection Chamber

Thursday, 17 February 2022 10:00 (12 minutes)

The A2 Collaboration uses the Mainz Microtron to conduct measurements probing hadron structure. An upcoming experiment will study Compton scattering off of helium-3 to obtain the polarizabilties of the neutron. To get a full picture of these events and reduce backgrounds, an active target is required. We intend to use a compact Time Projection Chamber (TPC) for this purpose, in combination with our existing CB-TAPS photon detector set-up.
In preparation for this experiment, I have been simulating the TPC in Geant4, and implementing an event reconstruction framework in the A2 data analysis software. Various limitations in Geant4 have made this project more challenging than expected, but the resulting simulation will help design electronics for the detector and optimize experimental parameters, to make the best possible measurement of the neutron polarizabilities.

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Please select: Experiment or Theory

Experiment

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