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The BONuS Experiment with CLAS12[1] M. ERIC CHRISTY, Hampton University , MOHAMMAD HATTAWY, SEBASTIAN KUHN, STEPHEN BUELTMANN, Old Dominion University, CLAS COLLABORATION — The BONuS experiment aims to measure structure functions of the neutron by tagging electrons scattered off the neutron inside deuterium with slow, backward-moving protons detected in coincidence. Using the energy-upgraded Jefferson Lab electron beam and the CLAS12 spectrometer, the experiment can access the neutron structure function F_2 up to Bjorken-x $= 0.8$, thereby testing definitively various theoretical predictions for the behavior of valence up and down quark distributions as x goes to 1. In addition, we will measure, for the first time, fully exclusive Deep Virtual Compton Scattering (DVCS) on the neutron. A new Radial Time Projection Chamber (RTPC) has been constructed to match the high event rate and geometrical constraints of CLAS12, and has been successfully operated during the data taking runs of BONuS in Winter and Summer of 2020. We will discuss the construction, calibration and operation of the RTPC, and give a first glimpse of the data set collected.

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Sebastian Kuhn
Old Dominion University

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