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The sPHENIX Streaming Readout System

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The sPHENIX Collaboration at RHIC is upgrading the PHENIX detector in a way that will enable a comprehensive measurement of jets in relativistic heavy ion collisions. The upgrade will give the experiment full azimuthal coverage within a pseudorapidity range of $-1.1 < \eta < 1.1$. Parts of the apparatus might one day be the basis of an EIC experiment at BNL.

We have made significant progress with the readout of our calorimeters, which work with a “classic” triggered-event paradigm. At the same time, we have developed the prototype readout electronics for the Time Projection Chamber, which will operate in streaming, or trigger-less, readout mode. The entire tracking system, which consists of 3 detectors, will eventually be read out in a streaming mode.

We will present an overview of the DAQ system and the choices and current status of the readout electronics, firmware, and software components, especially with the detectors read out in a streaming mode, and discuss potential paths forward for the readout at the EIC.

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