Prototype Readout System Software for The STAR Interlock Safety System at BNL[1] JOSEPH D'ALESIO, Creighton University — RHIC, located at BNL, collides nuclei at relativistic speeds to artificially recreate the initial conditions of the universe. The STAR Collaboration studies these collisions using a detector, the Solenoidal Tracker At RHIC. The Interlock Safety System is responsible for monitoring and displaying parameters in the STAR control room. These parameters include the temperature and pressure of the TPC gas mixture, the Oxygen Deficiency Hazard status, the Uninterruptable Power Supply status and the water cooling system status. If these parameters fall outside an accepted range, alarms will sound to notify the control room. The readout system and software allow for the shift operator to adjust detector variables while the experiment is running and thus prevent circumstances in which fires and explosions are likely. This project focuses on upgrades to the Interlock monitoring system. The current Interlock Readout monitor uses a VME to communicate with various STAR systems while the upgraded monitor uses a Programmable Logic Controller interfaced to a PC. Device support for the upgraded monitor has been written and compiled using a prototype input/output controller program to communicate to the new readout PLC. Functionally, the existing and upgraded system will have the same capabilities. However, the new readout system will be easier to maintain and more easily updated to include, for example, additional safety signal outputs. In turn, this will result in a critical readout system prepared for future operations.

[1]Ferlic Summer Undergraduate Research Fellowship

Joseph D'Alesio
Creighton University

Date submitted: 18 Sep 2019   Electronic form version 1.4