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Spark Protection System for the sPHENIX TPC GEMs

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The sPHENIX experiment is currently under commissioning at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Lab (BNL). The Time Projection Chamber (TPC) serves as a tracking detector for the experiment. The sPHENIX TPC uses a stack of four Gas Electron Multipliers (GEM's) as a gain stage in a reduced ion back-flow configuration. In non-ideal conditions, the high voltage across the GEMs can create sparks which can cause physical damage and result in dead time as the detector settles. In order to monitor the occurrence of sparks and mitigate damage in the TPC GEMs it is important to have a spark monitoring system. In this talk, we will present the development and operation of the spark protection system for the sPHENIX TPC.

Authors: DRIEBEEK, Julian (Stony Brook University); MAJOROS, Tamás (University of Debrecen); BARANYAI, David (University of Debrecen (HU)); HEMMICK, Thomas (Stony Brook University); SHULGA, Evgeny; HUGHES, Charles (University of Tennessee (US)); UJVARI, Balazs (University of Debrecen (HU)); Dr HUANG, Jin (Brookhaven National Lab); SAKAGUCHI, Takao (Brook Haven National Lab)

Presenter: DRIEBEEK, Julian (Stony Brook University)

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