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The Power System of GEM-Muon Sub-Detector for CMS Phase-II upgrade

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In preparation for the High Luminosity LHC phase, the Compact Muon Solenoid (CMS) experiment is working on its (Phase-2) upgrade. The Gas Electron Multiplier (GEM) detectors are one of the technologies involved in this upgrade. The GEM systems consist of 3 stations. GE1/1 was installed and is taking data since the beginning of Run3; GE2/1 and ME0 will be installed during the next Year End Technical Stop (YETS) and the Long Shutdown 3 (LS3). The GEM stations utilize different modules manufactured by CAEN for the High-Voltage (HV) and Low Voltage (LV) power systems (PS). The HV-PS is used to generate the electric field needed for the multiplication of electrons inside of the GEM foils while the LV-PS is crucial for the GEM ON/OFF detector electronics. Some hardware modifications are applied to CAEN HV-boards to meet the HV-PS requirements for ME0. We benefit from different features of CAEN modules to build a LV power system for the 3 stations of GEM detectors that minimizes the space needed in both the service and the experimental caverns of CMS, the power consumption, and the financial budget. All these modules have to be tested and validated before installation in the CMS caverns. In this talk the configuration, the design and mapping of HV and LV power systems for the GEM Phase-II upgrade will be presented.

Primary author: Dr ABUZEID, Shimaa (Ain Shams University (Egypt) and INFN (Italy))

Presenter: Dr ABUZEID, Shimaa (Ain Shams University (Egypt) and INFN (Italy))

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