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Efficiency Studies of the Resistive Plate Chambers for PHENIX Trigger Upgrade RAMSEY TOWELL, ACU, PHENIX COLLABORATION — The PHENIX experiment at RHIC studies polarized proton-proton collisions to learn more about the spin structure of the proton. PHENIX can only record a few thousand collisions of the millions that occur every second. A trigger upgrade is required to select rare events. The trigger upgrade includes two sets of Resistive Plate Chambers (RPCs) that will be installed in both muon arms. The smaller RPCs will be installed closer to the collision point and will be constructed and installed before the next run. One of the many quality assurance tests that are performed on the RPCs is an efficiency measurement. In addition to the normal efficiency test that is ran on each module, some long-term tests are being performed to see how environmental factors (e.g. temperature, humidity, and pressure) cause a change in the performance of the chambers. This test is being performed on the chambers in a specially designed cosmic ray test stand using hodoscopes to trigger on cosmic muons that are tracked through the RPCs. These tests accumulate data for an extended period of time while the environmental conditions are continuously monitored. The results from these tests will be presented.

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