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Photon Reconstruction and Identification in sPHENIX FRANCESCO VASSALLI, Univeristy of Colorado Boulder, SPHENIX COLLABORATION — The super Pioneering High Energy Nuclear Interaction eXperiment (sPHENIX) at the Relativistic Heavy Ion Collider (RHIC) will perform high precision measurements of photon-jet production to study the strongly coupled quark-gluon plasma. Comparison of the color neutral photon with the strongly-interacting jet provides a natural control-experiment channel. In sPHENIX Photon kinematics are reconstructed using calorimeter data. To obtain a high purity sample of prompt photons the hadronic background, especially π^0 decay, must be reduced. This can be done by analyzing the calorimeter cluster shape. The methods of event reconstruction for sPHENIX are currently being developed and tested in simulation. The results will serve as a benchmark for the capabilities of the detector. Furthermore, the photon identification efficiency can be increased through converted photon recovery. Photon conversion recovery is performed by analyzing electron, positron track pairs. Photon conversion recovery can also be used to make material maps of the inner detector in simulation and data. Comparing these maps allows for detailed in situ verification of detector geometry. This presents sPHENIX's ability to reconstruct and identify photons using GEANT4 simulation.

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