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Techniques for the Identification of Cosmic and Beam Halo Muons in the CMS ECAL Detector MICHAEL BALAZS, University of Virginia, CMS COLLABORATION — Energetic cosmic muons or muons from beam halo can produce photons as they pass through the CMS Electromagnetic Calorimeter (ECAL) and fake secondaries from beam-beam interactions. The pattern of light for these photons in the ECAL is different from the pattern of light produced by secondaries. Secondaries from the interaction point hit a crystal approximately perpendicular to the face because the crystals in the ECAL are rotated such that they point back approximately to the interaction point. Muons from the beam halo, on the other hand, will transverse multiple crystals producing a distinctive pattern of light. In addition to the shower pattern, shower timing can be used to distinguish muon signals from the secondaries. The photons from cosmic muons will be asynchronous with the beam allowing them to be removed while photons from beam halo muons will have a very specific time distribution determined by geometric factors with respect to the interaction time. These techniques will be discussed in this talk.

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