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Synchrotron radiation tagging of 100 GeV electrons in NA64 experiment at the CERN SPS

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The NA64 experiment at CERN is a new experiment searching for invisible decays of dark photons (A') using a 100 GeV electron beam of the CERN SPS dumped in an active target. The experimental signature of such A'-> invisible decay is more than 50 GeV missing energy in the NA64 detector which cannot be produced by any known Standard Model process. To obtain the aimed sensitivity of NA64 to a single A'-decay for > 10^10 electrons on target, the use of an incoming electron tagging with efficiency better than 95% and suppression of hadron contamination in the e- beam down to the level < 10^-5 is required. The results obtained with a prototype version of the e- tagging system based on the detection of synchrotron radiation by a BGO detector are presented.

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