Contribution ID : **286**   Type : **Plenary/section talk**

Measurement of the energy spectra and of the angular distribution of the Transition Radiation with a silicon strip detector

Thursday, 25 October 2018 16:45 (20)

We plan to develop an advanced Transition Radiation Detector (TRD) for hadron identification in the TeV momentum range, based on the simultaneous measurement of the energies and of the emission angles of the Transition Radiation (TR) X-rays with respect to the radiating particles. To study the feasibility of this project, we have carried out a beam test campaign at the CERN SPS facility with 20 GeV/c electrons and muons up to 300 GeV/c. To detect the TR X-rays and the radiating particles, we used a 300 μm thick double-sided silicon strip detector, with a strip pitch of 50 μm. A 2 m long helium pipe was placed between the radiators and the detector, in order to ensure adequate separation between the TR X-rays and the radiating particle on the detector plane and to limit the X-ray absorption before the detector. We measured the double-differential (in energy and angle) spectra of the TR emitted by several radiators. The results are in good agreement with the predictions obtained from the TR theory.

Primary author(s) :   Dr. LOPARCO, Francesco (Bari University and INFN);   ALOZY, Jerome (CERN);   Mr. BELYAEV, Nikita;   CAMPBELL, Michael (CERN);   CHERRY, Mike (Louisiana State University);   Dr. DACHS, Florian (CERN);   DORONIN, Semyon (MEPHI);   FILIPPOV, Konstantin (National research nuclear university «MEPhI»);   Dr. FUSCO, Piergiorgio (Bari University and INFN);   Dr. GARGANO, Fabio;   HEIJNE, Erik (CERN);   KONOVALOV, S (Lebedev Physical Institute);   KRASNOPEVTSEV, Dimitrii (NRNU MEPhI);   LLOPART, Xavi (CERN);   Dr. MASCAGNA, Valerio (Insubria University & INFN Milano Bicocca);   Dr. MAZZIOTTA, Mario Nicola (INFN Bari);   PERNEGGER, Heinz (CERN);   PONOMARENKO, Daniil (NRNU MEPhI);   PREST, Michela (Insubria University & INFN Milano Bicocca);   PYATIIZBYANTSEVA, Diana (MEPHI);   RADOMSKII, Artyom (MEPHI);   REMBSER, Christhoph (CERN);   ROMANIOUK, Anatoli (MEPhI);   SCHIOPPA, Enrico Junior (CERN);   SHULGA, Evgeny (NRNU MEPhI);   Mr. SMIRNOV, Sergei (NRNU MEPhI);   SMIRNOV, Yury;   SOLDANI, Mattia (Insubria University & INFN Milano Bicocca);   Prof. SPINELLI, Paolo (Bari University and INFN);   SERGEEVA, Daria (NRNU MEPhI);   SAVCHENKO, Alexandr (NRNU MEPhI);   SCHAEFER, Doug (University of Chicago);   Prof. STRIKHANOV, M.N.;   TETERIN, Peter (National Research Nuclear University ”MEPhI”);   TISHCHENKO, Alexey (MEPhI);   Dr. TIKHOMIROV, Vladimir;   VALLAZZA, Erik (INFN Trieste);   VAN BEUZEKOM, Martin (Nikhef);   VAN DER HEIJDEN, Bas (Nikhef);   VOROBEV, Konstantin (National Research Nuclear University MEPhI (Moscow Engineering Physics Institute));   ZUKHOV, Konstantin (Lebedev Physical Institute)

Presenter(s) :   Dr. LOPARCO, Francesco (Bari University and INFN)

Session Classification : Facilities and Advanced Detector Technologies

Track Classification : Facilities and advanced detector technologies