

Beam test results on the detection of single particles and electromagnetic showers with microchannel plates

IMCP is an R&D project aimed at the exploitation of secondary emission of electrons from the surface of micro-channel plates (MCP) for fast timing of showers in high rate environments.

The usage of MCPs in “ionisation” mode has long been proposed and is used extensively in ion time-of-flight mass spectrometers. What has not been investigated in depth is their use to detect the ionizing component of showers. The fast time resolution of MCPs exceeds anything that has been previously used in calorimeters and, if exploited effectively, could aid in the event reconstruction at high luminosity colliders.

Results from tests with electrons with energies up to 150 GeV of MCP devices with different characteristics will be presented, in particular detection efficiency and time resolution.

Primary authors: GHEZZI, Alessio (Universita & INFN, Milano-Bicocca (IT)); BARNIAKOV, Alexander (Novosibirsk State University (RU)); MARTELLI, Arabella (CERN); MARZOCCHI, Badder (Universita & INFN, Milano-Bicocca (IT)); ROVELLI, Chiara Ilaria (Universita e INFN, Roma I (IT)); JORDA LOPE, Clara (Universita e INFN, Roma I (IT)); GOTTI, Claudio (Universita & INFN, Milano-Bicocca (IT)); DEL RE, Daniele (Universita e INFN, Roma I (IT)); CAVALLARI, Francesca (Universita e INFN, Roma I (IT)); SANTANASTASIO, Francesco (Universita e INFN, Roma I (IT)); ORGANTINI, Giovanni (Universita e INFN, Roma I (IT)); BRIANZA, Luca (Universita & INFN, Milano-Bicocca (IT)); Dr PERNIE, Luca (Texas A&M University); BARNIAKOV, Mikhail (Novosibirsk State University (RU)); MERIDIANI, Paolo (Universita e INFN, Roma I (IT)); GOVONI, Pietro (Universita & INFN, Milano-Bicocca (IT)); PARAMATTI, Riccardo (INFN - Rome I); RAHATLOU, Shahram (Universita e INFN, Roma I (IT)); GELLI, Simone (Universita e INFN, Roma I (IT)); PIGAZZINI, Simone (Universita & INFN, Milano-Bicocca (IT)); TABARELLI DE FATIS, Tommaso (Universita & INFN, Milano-Bicocca (IT)); CIRIOLO, Vincenzo (Universita & INFN, Milano-Bicocca (IT))

Presenter: PIGAZZINI, Simone (Universita & INFN, Milano-Bicocca (IT))

Track Classification: Gaseous Detectors