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Cosmic ray test system for a multigap resistive plate chamber (MRPC)–based time-of-flight subsystem (TOF) for the STAR Detector at RHIC KOHEI KAJIMOTO, The University of Texas at Austin, STAR TOF COLLABORATION — Research and development for a time-of-flight (TOF) subsystem for the STAR detector at RHIC has been underway for the past several years. The TOF system will utilize multigap resistive plate chambers (MRPC) whose excellent time resolution (velocity determination), together with STARs Time Projection Chamber (TPC) track information (momentum determination), will considerably extend particle identification capability of STAR to higher momentum over large angular acceptance. We have constructed a cosmic ray test system comprised of three plastic scintillators, 4 MRPC modules, and TOF prototype electronics in order to investigate the timing resolution that will be characteristic of the entire TOF system. The test setup will be discussed, test data will be described, and the timing analysis technique will be presented. Overall timing resolution of ∼90 ps for cosmic ray events has been achieved.

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