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Development of the micro-RWELL discs for the CMD-3 detector.

The CMD-3 is general purpose detector at the VEPP-2000 electron-positron collider at Budker Institute of Nuclear Physics. CMD-3 is intended to measure parameters of light vector mesons and their excited states with accuracy better than 1% and study dynamics of multihadron production. In order to increase acceptance for the trigger for charged particles and improve precision of track polar angle measurements the end-cap discs based on micro-resistive-WELL (muRWELL) structures are proposed for the upgrade of the CMD-3 tracking system. Two muRWELL discs 50 cm in diameter were assembled and tested. The discs have two-layer readout structure with the top layer of quarter-rings with 2mm pitch in radius and the bottom layer of sectors with average angular pitch of about 0.3 degrees. The first preliminary tests of both discs demonstrated the possibility to reach gas amplification of 20000 locally in some sectors. However the gain is very non-uniform and is below 10000 on average. These measurements have been performed in current mode. The readout structure of the discs is connected to front-end electronics based on VMM3a ASICS. The results of more systematic study of the main parameters of the detectors with front-end electronics will be reported.

Primary experiment

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Track Classification: Gaseous Detectors