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A Barrel IFR instrumented with Limited Streamer Tubes for BaBar Experiment

The new barrel Instrumented Flux Return (IFR) of BABAR detector will be reported here. Limited Streamer Tubes (LSTs) have been chosen to replace the existing RPCs as active elements of the barrel IFR. The layout of the new detector will be discussed: in particular, a cell bigger than the standard one has been used to improve efficiency and reliability. The extruded profile is coated with a resistive layer of graphite having a typical surface resistivity between 0.2 and 0.4 M Ω /square. The tubes are assembled in modules and installed in 12 active layers of each sextant of the IFR. The streamer coordinate z (along the beam direction) is read out by detecting signals induced on external strips, while the coordinate ϕ (azimuthal angle around the beam direction) is read out by detecting signals on the wires. Innovative solutions, as the Z-strip planes which cover each entire layer of a sextant and are decoupled from the modules, will be discussed, as well as the performance and the operating behavior of the detector.

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