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Endcap Disc DIRC Developments for Future Detectors

Endcap Disc DIRCs have been designed for the PANDA Experiment at FAIR and for the Super Charm Tau Factory at Novosibirsk. The original PANDA Endcap Disc DIRC was designed to provide particle identification and especially π/K separation of at least 3 standard deviations in the forward region of 5° to 22° polar angle. It features a fused silica radiator with attached cylindrical focusing optics and MCP-PMT based photon detection read out by a free running ASIC based readout system. The design has been extensively verified with beam experiments. The Super Charm Tau Factory requires μ/π separation in the 1 GeV/c range. New Disc DIRC designs have been studied, using lenses and dispersion correction. A modified readout module using cooled SiPM matrices is currently tested inside the Giessen Cosmic Station to evaluate the limits of SiPM detectors for Cherenkov single photon detection. The DIRC group in Giessen presents recent results of prototype tests.

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