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Design and Construction of a Cylindrical GEM Detector as Inner Tracker Device at KLOE-2

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We report on the design and construction of a triple-GEM detector as a new Inner Tracker (IT) for the KLOE-2 experiment at the Frascati Phi-factory. The IT is composed of four tracking layers, each providing an independent 2-dimensional space point. Each layer is a fully cylindrical triple-GEM detector.

The front-end electronics is based on the GASTONE ASIC, specifically developed for this detector, a charge amplifier with digital output integrating 64 channels in one single chip.

After three years of R&D the construction of the first layer has started, with the aim of completing the detector by middle of 2012.

We report on the R&D achievements, including the construction process, the results of two beam-tests with prototype detectors, and the present realization status of the final detector and electronics.

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