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Vertex and Tracking Detectors for the Circular Electron Positron Collider (CEPC)

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The Circular Electron Positron Collider (CEPC) has been proposed as a Higgs factory to measure the properties of the Higgs boson with high precision and to enable the possibility to explore new physics. To meet the stringent physics requirements, it is necessary to design and construct both vertex and tracking detectors with the state-of-the-art silicon detector technologies. Initial R&D has been focused on CMOS pixel sensors to achieve both high position resolution and low power consumption. They are desirable for the vertex detector, which will sit closest to the interaction point and play a decisive role in precise determination of the primary and secondary vertices that are crucial for heavy flavor tagging. Recently, efforts have been also made to explore the possibility to design the large area silicon tracker with pixel sensors developed with high voltage CMOS technology, which promises both high position resolution and timing resolution. A short stave populated with the latest development of ATLASPix has been proposed for the demonstrator and sensor design tailored toward the CEPC tracker requirements are being pursued.

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