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## Characterization of a 180nm CMOS pixel sensor prototypes for the CEPC vertex detector

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The proposed Circular Electron Positron Collider (CEPC) imposes new challenges for the vertex detector in terms of pixel size and material budget. A Monolithic Active Pixel Sensor (MAPS) prototype, TaichuPix, based on a column drain readout architecture, has been implemented to achieve high spatial resolution and fast readout.

In December 2022, a beam test system consisting of 6 layer TaichuPix-3 chips was tested in DESY II TB21. The offline analysis results shows the spatial resolution can reach 5 $\mu$ m, and detection efficiency is larger 98%. The baseline vertex detector was designed with 6-ladder architecture with double-sided TaiChuPix-3 chips. In order to verify the performance of the baseline vertex detector, another beam test was set up in April 2023. Enough valid data was recodred during the beam data, and the offline analysis is working on progress.

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