Contribution ID: **109** Type: **Poster**

Prototype assembly and tests for CEPC vertex detector

The first four layers of the CEPC(Circular Electron Positron Collider) vertex detector are designed using wafer-scale sensors based on stitching technology. To ensure the inner most layer is as close as possible to the central beam pipe, the design radius is set at 11 mm, posing significant challenges for the development of bent detector modules. Currently, a prototype model with a minimum bending radius of 11 mm has been successfully fabricated using 30 μm-thick dummy wafers. A full four-layer model of the CEPC vertex detector will be developed in the following studies, including flexible cables, support structures, and bent chip bonding techniques. Additionally, to verify the feasibility of silicon pixel sensors after bending, a small-area bent detector module with a radius of 20 mm was fabricated using 50 μm-thick MAPS(Monolithic Active Pixel Sensors) chips. The beam test with a 1.3GeV electron beam confirmed that the sensor bent to a radius of 20 mm exhibits the same performance as before bending. Further tests with smaller bending radii are planned. These results will provide valuable experience for the subsequent development of the CEPC vertex detector.

Primary authors: Mr JIN, Liangchenglong (IHEP); DONG, Mingyi (IHEP)

Co-authors: 李 (LI), 亚轩 (Yaxuan) (Nankai University); WANG, Meng (Shandong University); LI, Lankun (IHEP); ZHOU 周, Yang 扬 (IHEP); Mr WANG, Anqing (Shandong University); Mr GENG, Qinglin (Shandong University)

Presenter: Mr JIN, Liangchenglong (IHEP)

Session Classification: Silicon Detector

Track Classification: Detector and System: 12: Silicon Detector