



Contribution ID: 55

Type: Oral presentation

## Silicon vertex tracker studies for a future electron-ion collider

Thursday, 25 July 2019 09:36 (15 minutes)

At the University of Birmingham, work on the EIC research and development is focused on the silicon vertex tracker, which is the detector closest to the interaction point. Simulations are carried out in an effort to determine the performance of different silicon vertex tracker layouts, and tests are made on individual sensors to find the optimal technology to use, utilising the Birmingham Instrumentation Laboratory for Particle physics and Applications (BILPA).

Currently, depleted monolithic active pixel sensors (DMAPS) are the primary path of investigation. The performance of different settings and pixel sizes and layouts are investigated, primarily using prototype test chips from TowerJazz. The goal is to use the information gathered from experiments on the test chips to develop a new sensor for the EIC, with improved spatial and timing resolution compared to current state-of-the-art silicon vertex tracker detectors.

The presentation will give an overview of the work carried out at the University of Birmingham relating to the EIC R&D, presenting results and conclusions so far. The experiments carried out on the test chips will be discussed in more detail, and results presented and interpreted.

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**Session Classification:** Parallel session A

**Track Classification:** Detector R&D