Contribution ID: **191** Contribution code: **WEPMO06** Type: **Poster Presentation**

Studies of an optimal geometry for arc beam position monitors of the FCC-ee

Wednesday 10 September 2025 16:00 (2 hours)

The electron-positron Future Circular Collider (FCC-ee) has challenging requirements for beam instrumentation, including the need for thousands of high-resolution beam position monitors (BPMs) presenting low impedance to the circulating beam. This paper details the requirements for the FCC-ee arc BPMs and presents the simulation results of BPM button pickups with various geometries modelled with FCC-ee beam parameters. These simulation results are used to estimate BPM parameters, including impedance and heating. Applying results from bench-marking tests of other BPMs, a suggested geometry and expected performance are presented.

Footnotes

Funding Agency

CERN

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Yes

Author: HOWLING, Emily (John Adams Institute)

Co-authors: GASIOR, Marek (European Organization for Nuclear Research); BURROWS, Philip (John Adams Institute for Accelerator Science; University of Oxford); MAZZONI, Stefano (European Organization for Nuclear Research); LEFEVRE, Thibaut (European Organization for Nuclear Research)

Presenter: HOWLING, Emily (John Adams Institute)

Session Classification: WEP

Track Classification: MC03: Beam Position Monitors