Contribution ID: **1124** Contribution code: **WEODB2** Type: **Contributed Oral Presentation**

5D phase-space reconstruction of an electron beam

Wednesday, 10 May 2023 11:50 (20 minutes)

The complete knowledge of electron bunch properties is of great interest to understand and optimize the performance of accelerators and their applications. A new tomographic beam diagnostics method to reconstruct the full 5-dimensional phase space (x, x', y, y', t) of bunches has recently been proposed. This method combines a quadrupole-based transverse phase-space tomography with the variable streaking angle of a polarizable X-band transverse deflection structure (PolariX TDS).
In this contribution, we show preliminary data of the first experimental demonstration of the method including the reconstruction of the full 5-dimensional phase space distribution of an electron bunch at FLASHForward.

Funding Agency

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Session Classification: MC06.2 - Beam Instrumentation, Controls, Feedback & Operational Aspects (Contributed)

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T03: Beam Diagnostics and Instrumentation