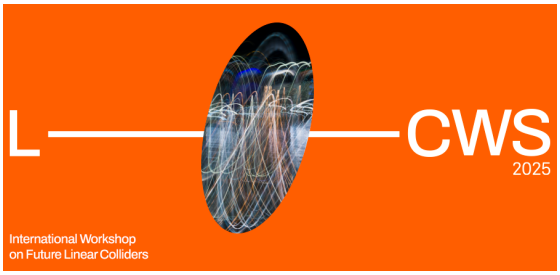

Contribution ID: **121** Type: **Talk**

A High Performance Beam Delivery System for CLIC at 1.5 TeV

Thursday 23 October 2025 11:30 (20 minutes)

A new Beam Delivery System (BDS) has been developed for the 1.5 TeV stage of the Compact Linear Collider (CLIC). While the original 3 TeV BDS design was previously considered adequate for operation at 1.5 TeV, the revised design takes advantage of the reduced synchrotron radiation (SR) at lower energy. The reduced SR permits the use of stronger bending dipoles and consequently weaker chromaticity-correcting sextupoles. The resulting optics significantly enhances beam performance by reducing the impact of chromatic aberrations, while also enabling a more compact layout. Placing increased importance on the minimisation of 2nd and 3rd order chromatic aberrations leads to improved correction and reduced beam size. The new BDS provides a 45% increase in luminosity alongside a reduction of approximately 500 metres in length compared to the original design.

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Session Classification: Damping rings, Beam dynamics, Beam delivery systems

Track Classification: Accelerator: Damping rings, Beam dynamics, Beam delivery systems