



Contribution ID: 257

Type: **Talk**

Intensity-dependent effects in the ILC BDS at 250 and 500 GeV c-o-m

Thursday 23 October 2025 10:40 (20 minutes)

The International Linear Collider (ILC) is a proposed electron–positron collider envisioned for the post-LHC era. Its Beam Delivery System (BDS) transports the beam from the main linac and focuses it to nanometer-scale dimensions at the Interaction Point (IP). Along this path, the beam passes through collimators, diagnostic instruments, and strong magnetic elements. Intensity-dependent effects such as wakefields induced by resistive walls, beam position monitors, and collimators make the system particularly sensitive to beam current. A detailed understanding of these phenomena is essential to confirm that the nominal beam size at the IP can be achieved under realistic operating conditions. This work presents results on intensity-dependent effects in the ILC BDS at both 250 GeV and 500 GeV beam energies.

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

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