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Beam Loss consequences

Sunday 22 June 2025 14:55 (1 hour)

This lecture examines beam losses in high-energy particle accelerators and their implications for machine infrastructure, reliability, and safe operation. Following an introduction to the mechanisms and primary sources of beam loss, we explore their consequences in detail, focusing on three key areas: equipment and magnet damage, Radiation to Electronics (R2E), and Radiation Protection (RP). The discussion is grounded in operational experience from CERN's accelerator complex, with particular emphasis on the Large Hadron Collider (LHC) as a case study. We conclude with an outlook on beam loss challenges at future collider projects, covering the electron-positron stage of the Future Circular Collider (FCC-ee) and the muon collider

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