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Availability, Efficiency and Integrated Luminosity: Rising to the challenge in the FCC-ee

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To reach integrated luminosity goals, the FCC-ee aims to be operational for minimum 80 % over the scheduled 185 physics days each year. For comparison, the Large Hadron Collider (LHC) averaged 72 % in 2015-2024. Characteristics of the FCC-ee relating to size, complexity and ambitious technical objectives make availability one of the main challenges to its physics deliverables. This presentation showcases results from an enhanced Monte Carlo simulation environment that extrapolates reliability and availability performance of all major systems and subsystems in the FCC-ee from current working accelerators. Shortfalls in integrated luminosity are identified in all energy modes in the current baseline design, which are compounded in the electroweak sector by low operational efficiency. The primary contributors to unavailability and lost luminosity are highlighted, and compelling R&D opportunities are discussed.

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