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## Electron cloud observations and mitigation for the LHC Run 3

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When operated with the nominal bunch spacing of 25 ns, the Large Hadron Collider (LHC) suffers from significant electron cloud effects. During the second operational run (Run 2) of the LHC, beam-induced conditioning allowed a satisfactory exploitation of 25 ns beams for luminosity production but could not fully suppress electron cloud formation. It has since been understood that this limitation was due to a degradation of some of the beam screen surfaces that occurred with beam operation after air exposure during the first long shutdown period. In the LHC Run 3, several electron cloud effects are expected to become even more important due to the increase in bunch intensity foreseen during the run. In addition, the beam screens have again been exposed to air during the preceding shutdown period, leading to a reset of most of the conditioning acquired in Run 2 and opening the possibility for further degradation. In this contribution, we describe the experimental observations of electron cloud effects during operation with beam after the start of Run 3 in 2022 and discuss their implications for future operation and mitigation strategies for the remainder of the run.

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### Footnotes

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Yes

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