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## Radiation levels in the LHC tunnel and impact on electronics during the 2023 Pb ion run

*Thursday, 23 May 2024 16:00 (2 hours)*

The 2023 operation of the Large Hadron Collider (LHC) at CERN included a one-month-long run with fully stripped Pb ion beams, marking the first heavy-ion run since 2018, and delivering Pb ion collisions at an unprecedented center-of-mass energy of 5.36 TeV per nucleon pair. During this period, the radiation fields in the LHC tunnel have been measured by means of different radiation monitors, including Beam Loss Monitors (BLMs), RadMons, and distributed optical fiber dosimeters, with the primary goal of quantifying the radiation exposure of electronic systems. The radiation levels are driven by the Bound Free Pair Production (BFPP) and Electromagnetic Dissociation (EMD) processes taking place in all four interaction points, yielding significant radiation peaks in the Dispersion Suppressor (DS) regions of the tunnel. An overview of the radiation levels is presented in this contribution, with a special focus on the Insertion Region 2 (IR2) hosting the ALICE experiment, where a new collimator (TCLD) has been installed specifically for the ion run. The impact of radiation on the electronic systems and on the LHC availability during the run will also be discussed.

### Footnotes

### Funding Agency

### Paper preparation format

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### Region represented

Europe

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