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Calculations of radiation levels in the service caverns and on the surface at Point 1 of the Large Hadron Collider

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The ATLAS detector is installed at Point 1 of the Large Hadron Collider. The underground infrastructure consists of the experimental cavern UX15, which houses the detector, and two lateral service caverns, USA15 and US15. The experimental cavern is connected with the surface by two large vertical shafts, PX14 and PX16. Calculations were performed with the FLUKA code to assess the prompt radiation levels in the underground service caverns and on the surface at Point 1. The FLUKA geometry reflected the actual design of the ATLAS detector and the civil engineering infrastructure. The estimated radiation levels are given and results and methods are compared with the initial shielding design studies for Point 1.

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