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Robotic Solution for BLM Detector Maintenance in High Radiation Areas

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CERN's beam-loss system is essential for the protection of machine elements against energy deposition due to beam losses. The protection function is based on Ionization Chambers Detectors installed along all of CERN's accelerators, totalling about 4000 detectors. Some of the areas where the detectors are installed have a high background dose (above 2mS per hour), so installation and maintenance times must be very short for the safety of the operators. For this reason, a new solution was designed that allows the manipulation of detectors and detector holders by robotic action. Every detail of this solution has been designed to reduce intervention time thanks to a rapid locking mechanism and the possibility of transporting the material by robot. The paper presents the design, prototype characterisation results, identified issues, and mitigation methods to achieve the automatised manipulation of the detectors.

Footnotes

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I have read and accept the Conference Policies

Yes

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