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The Summary of the MPS of J-PARC and the Speedup for the MPS on the RF Accelerating System

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The Machine Protection System (MPS) of the Japan Proton Accelerator Research Complex (J-PARC) is the system that aborts a high intensity proton beam pulse to prevent unnecessary radio activation of accelerator components when it receives a failure signal of the device constituting the accelerator. Because of improvements of the first extraction (FX) device, it was recently able to abort the beam pulse immediately in the FX. Therefore, it is also necessary to speed up the MPS of each device consisting MR synchrotron. The RF System of J-PARC consists of a cavity, a driver amplifier, a final amplifier, an anode power supply and the Low-Level-RF (LLRF). And the Programmable Logic Controller (PLC) controls the MPS of RF system. When the system detects any failure signals, the corresponding system sequentially stops, and the failure information is transferred to the main MPS system in the accelerator control system. In the case of the RF system, it was effective shortening the program scan time by model update and optimizing the ladder program for the speed-up. We described the outlines of the J-PARC MPS and how to speed up the MPS of the RF system of J-PARC MR.

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