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Present Status of J-PARC Linac LLRF System

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In the low-level radio-frequency (LLRF) control system J-PARC Linac, the digital feedback and feedforward (DFB and DFF) system plays an important role in stabilizing the output beam momentum by achieving a high-precision cavity electric field. The twenty-four 324 MHz DFB and DFF systems were upgraded to a new system using a MTCA board in 2020-2021. The increased degrees of freedom in the system made it possible to implement a high-precision adaptive beam loading compensation system.
During the modification of the system, monitoring has been enhanced to check the set values and save waveforms automatically and regularly. In addition, various applications of automatic adjustment of parameters have been developed, making it possible for anyone to easily carry out adjustments. Recently, we have developed an interlock control system that automatically acquires and analyses waveforms of interlock events, processes them systematically and statistically, and stores the data on a MySQL server. In addition, a Mattermost server has been used to write records of parameter changes and program errors.
In this presentation, the current LLRF system of the advanced J-PARC Linac will be introduced.

Keyword

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