



Contribution ID: 1506 Contribution code: WEPM082

Type: **Poster Presentation**

Upgrading magnet power supply system in J-PARC main ring

Wednesday, 10 May 2023 16:30 (2 hours)

The main ring (MR) of the Japan proton accelerator research complex (J-PARC) delivers the high-intensity proton beams to the T2K long-baseline neutrino experiment. To observe charge-conjugation and parity-transformation violation in the lepton sector with high accuracy, the upgrade of the MR toward the beam power of 1.3 MW is mandatory. One promising method for increasing the beam power is to shorten the repetition cycle of the MR. The crucial point in the success of this scheme is the upgrade of the magnet power supply system corresponding to the increase in the output voltages of the magnet power supplies and the power fluctuation of the electric system. During the long-term shutdown period of MR in FY2021, a wide range of works were carried out, including installations of new power supplies, rearrangement of existing power supplies, split of magnet families, and cable rewiring. The upgrade scheme of the power supply system in the J-PARC MR and the results of this upgrade will be presented.

Funding Agency

Footnotes

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Yes

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Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T11: Power Supplies