

## **Current status of J-PARC Main Ring slow extraction**

J-PARC Main Ring(MR) accelerates the proton beam from 3 GeV to 30 GeV and delivers the beam to the Hadron Experimental Facility(HEF) through slow extraction using third-order resonance. At the HEF various particle and nuclear physics experiments are conducted mainly using kaon beams generated on secondary particle production targets and also primary proton beams. From 2021 to 2023, the J-PARC MR upgraded its components such as main magnet power supplies and RF cavities intending to shorten the acceleration time and the repetition time. Although there were various troubles in and after the MR upgrade, we performed the first 30 GeV slow extraction operation after the upgrade in June 2023. We successfully reproduced the high extraction efficiency of 99.5% with the same 5.2s repetition cycle as before the upgrade. Currently, preparations are underway for a beam tuning operation with a shortened repetition time of 4.24 s. In this talk, we will explain the current status and plan of the slow extraction system of the J-PARC MR.

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**Session Classification:** Facility Overview