



Contribution ID: 1813 Contribution code: TUPM103

Type: **Poster Presentation**

## The leakage field of the new high-field septum magnets for fast extraction in Main Ring of J-PARC

*Tuesday, 9 May 2023 16:30 (2 hours)*

As part of the goal of increasing the beam power of the Main Ring for Fast eXtraction (FX) in J-PARC to 750 kW, the two low-field septa and three high-field septa for FX were installed into MR in 2022. The most significant goals regarding the magnets are achieving an extremely low leakage field in the circulating line. To reduce the leakage field in

the circulating line, the new pure iron duct-type magnetic shields were produced for all the septa in 2021, and mounted in the circulating line in 2022. We verified that the leakage field in the circulating line of a low-field septum and high-field septa were greatly reduced. We also confirmed that the impact of the leakage field of all of the septa for FX on the 3-GeV circulating beam was below 1/10 of that of the previous septa for FX in beam test in July 2022. We also measured the leakage field in the circulating line of the new high field septum magnets. We verified that the field integral was about 1/10 lower than previous septa. The quadrupole component was about 1/100 lower than previous septa. Consequently, the leakage field of high field septa could be reduced extremely.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** SHIBATA, Tatsunobu (High Energy Accelerator Research Organization)

**Co-authors:** MATSUMOTO, Hiroshi (High Energy Accelerator Research Organization); ISHII, Koji (High Energy Accelerator Research Organization); MATSUMOTO, Noriyuki (High Energy Accelerator Research Organization); IWATA, Soma (High Energy Accelerator Research Organization); IGARASHI, Susumu (High Energy Accelerator Research Organization); YASUI, Takaaki (High Energy Accelerator Research Organization); ASAMI, Takashi (The University of Tokyo); SUGIMOTO, Takuya (High Energy Accelerator Research Organization); SATO, Yoichi (Japan Proton Accelerator Research Complex)

**Presenter:** SHIBATA, Tatsunobu (High Energy Accelerator Research Organization)

**Session Classification:** Tuesday Poster Session

**Track Classification:** MC4: Hadron Accelerators: MC4.T12: Beam Injection/Extraction and Transport