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## **Bunch lengthening of the extracted beam using second harmonic in J-PARC RCS**

*Tuesday 3 June 2025 16:00 (2 hours)*

The 3GeV Rapid-Cycling Synchrotron (RCS) at J-PARC supplies the beam to the Main Ring (MR). Under the current operating conditions, there is the longitudinal beam mismatch between RCS and MR. To improve the RCS-MR longitudinal matching, a method for the bunch lengthening of RCS at the extraction is proposed. The method is based on introducing a second harmonic RF voltage at beam extraction and placing the beam at the unstable fixed point. The considerations of the bunch lengthening in the RCS are described in this presentation. The focus is on optimizing the second harmonic RF voltage pattern. Demonstrations of introducing a second harmonic RF voltage are also discussed.

### **Footnotes**

### **Paper preparation format**

LaTeX

### **Region represented**

Asia

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