Abstract

A prototype bipolar correction magnet with permanent magnets, which is realized by rotatable permanent magnet rods, was fabricated and magnetic field measurements were performed. Based on the evaluation, improvement on the magnet structure is under study. The new design will be discussed here.

Design of bipolar correction magnet

- Rotate the rotor to adjust the strength of the magnetic field.
- A design was formulated using a total of eight octagonal prism ferrite magnets, four on the top and four on the bottom.
- The shape of the ferrite magnet used has been optimized in order to suppress the multi-pole component.

Prototype Design

- Designed and manufactured a prototype PM correction magnet that uses a total of four octagonal prism ferrite magnets, two on the top and two on the bottom, as a prototype for principle verification.

Summary

- PM correction magnet prototype was manufactured and magnetic field measurement was carried out.
- It was confirmed that the polarity reversal required for the correction magnet was realized.
- The integrated magnetic field was calculated from the measurement results of the PM-corrected magnet prototype, and a magnetic field performance evaluation method was established to derive the multipolal components contained in the integrated magnetic field.
- The second prototype with improved evaluation accuracy of residual magnetization of octagonal prism ferrite magnet and assembly accuracy of magnet is underway.

Performance of Bipolar Correction Magnet with Permanent Magnets

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