Contribution ID: **24** Contribution code: **WEP19** Type: **Poster Presentation**

Design of an adjustable permanent dipole magnet

Wednesday 17 September 2025 17:00 (1 hour)

This paper focuses on the design of an adjustable permanent dipole magnet that achieves changes in magnetic field strength through mechanical adjustment. The use of permanent magnets, as opposed to electromagnets, offers several advantages, including a compact structure, reduced energy consumption, and stable magnetic field. However, challenges remain in replacing electromagnets with permanent magnets in applications such as gas pedals. These challenges include difficulties in adjusting the magnetic field, the impact of temperature on permanent magnets, and susceptibility to radiation damage. This thesis presents an adjustable permanent dipole magnet with a maximum magnetic field strength of 1.4 T, a minimum magnetic gap of 30 mm, and a magnetic integral field ranging from 0.117 T·m to 0.35 T·m.

Footnotes

Funding Agency

Project suppoded by Shanghai Municipal science and Technology Major Project

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Session Classification: Wednesday Poster Session

Track Classification: ACCELERATORS: Magnets