



Contribution ID: 460 Contribution code: THPG39

Type: **Poster Presentation**

The pre-alignment strategy of Hefei Advanced Light Facility storage ring magnet unit

Thursday, 23 May 2024 16:00 (2 hours)

As a fourth-generation diffraction-limited light source, Hefei Advanced Light facility has high requirements on the alignment accuracy and installation efficiency of key components of the storage ring. We plan to use four laser trackers to build a high-precision pre-alignment system based on the principle of polygonal to achieve a pre-alignment accuracy of $30\mu\text{m}$ within the magnet unit (generally composed of eight quadrupole and sextupole). In order to ensure reliable accuracy, the position of the quadrupole magnet is checked using a vibrating wire pre-alignment system. According to relevant engineering experience, in the early stage of the project, it will take about 5 working days to complete the pre-alignment work of an eight-magnet unit. After the operation is proficient, it can be shortened to 3 working days. This schedule can meet the progress requirements of the project construction.

Footnotes

Funding Agency

Paper preparation format

Region represented

Asia

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Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback, and Operational Aspects: MC6.T17 Alignment and Survey