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Development of stretched wire measurement system for magnetic field measurement of Siam Photon Source II's magnets

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A stretched wire measurement system has been developed for magnetic field measurement of magnet prototype for Siam Photon Source II. It is used for magnetic field integral measurement for characterization of multipole errors, field homogeneity, magnet centering and fiducialization of multipole magnets. The wire trajectory across magnet aperture can be either linear or circular. The maximum wire movement is ±100 mm in both horizontal and vertical directions with the accuracy of ±2 μm. The system was built on a 3.2-m granite support which allows the maximum magnet length of 2.2 m and magnet weight of 2.5 kg to be measured. Effects of wire tension, speed of linear stages, scan region, number of repeated measurements, temperature and magnet alignment have been studied. With the optimized parameters, the repeatability better than 1E-4 can be achieved for the multipole measurement of quadrupole magnet using the circular scan. Results of magnetic field measurement will be reported and discussed.

Footnotes

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