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Development of Hall probe system for accurate field mapping at NSRRC

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After 20 years of use, the Hall-probe system at the National Synchrotron Radiation Research Center (NSRRC) has poor measurement reproducibility. The granite bench is 6m long and is robust but the Hall-probe stage with air bearings has deteriorated. To create a reasonable operating space for field correction for an insertion device (ID), the distance between the ID and the measurement system must be increased so a more stable and accurate stage is required. The developed system has a new structure to isolate the imbalance in the forces that act on it when the Hall probe stage is moving and the cable drags. An optical position sensitive detector (PSD) is also fitted to measure the change in the position of the hall probe in space. The positional error in space for the Hall probe is now less than 15um. This is achieved by measuring and correcting the position in real time.

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Footnotes

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Yes

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