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Test of BPM cables vs and temperature humidity

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Measuring the absolute position of the beam in the intensifier and storage ring of a high energy photon source (HEPS) requires measuring the offset between the electrical and mechanical centers of the beam position monitor (BPM). In the HEPS project, a four-electrode BPM is used, and the signals from each of the four electrodes of the BPM probe are led out by a cable. During the operation of the intensifier and storage ring, the influence of ambient temperature and humidity on the BPM cable and the difference between the four channels will directly lead to changes in the BPM measurement results. In this paper, vector network analyzer (VNA) is used to test the data of signal amplitude change of four BPM cables within ten hours when temperature and humidity change. The conclusion is that the influence of temperature on the signal is about 0.01 dB/°C, the influence of humidity on the signal is about 0.05 dB/10%, and the relative change between channels is about 5%.

Footnotes

Funding Agency

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Yes

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