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## Turn-by-turn beam size measurement based on spatial interferometer

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The transverse beam size is a key parameter of electron bunches in the storage ring for beam quality evaluation. High-precision beam size measurement will offer better performance for accelerator monitoring and will be beneficial to study beam instabilities and optimizing machine operation. The interferometer system is a commonly used diagnostic tool for beam size measurement. High accuracy measurement can be achieved with low variation of beam size. It can also be used for very small size measurements by altering slit spacing. For future research on the physics and key technologies of high-brightness electron accelerators, we will build a turn-by-turn and bunch-by-bunch beam size measurement system based on the Shanghai Synchrotron Radiation Facility (SSRF) platform for related research. It will realize high-speed and high-resolution beam size measurements with the help of a multi-slit spatial interferometer and photomultiplier array (PMT). In this paper, we will introduce the construction of the overall system, discuss related problems, and give preliminary experimental results.

### Funding Agency

### Footnotes

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Yes

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