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## A new system for monitoring beam profile uniformity under high-power high-intensity beams

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This article proposed a new system for measuring beam profile uniformity under high-power, high-intensity beams. The device is capable of real-time measurement of the size, position, and beam spot uniformity of the beam. In comparison to existing technologies, the target head of the detector is capable of adjusting its position. When the accelerator system is not required to measure the beam, the chamber can retract to the offline area without compromising the vacuum environment, and without affecting the normal passage of the beam, this design offers the advantage of high measurement efficiency. Furthermore, the detector structure is designed with the driving components installed outside the cavity, thus ensuring a more stable vacuum environment within the cavity. To prevent the overall beam from bombarding the measuring chamber and to control the temperature, baffles and cooling devices are installed.

The data acquisition system of the detector comprises multi-channel, high-precision and wide-range I/V conversion circuits, high-speed analog-to-digital conversion circuits, and a high-speed data processing system. These enable the collection and processing of multi-channel current signals and the calculation of beam uniformity information, with high stability and high measurement accuracy. This meets the requirements for monitoring the uniformity of high-power, high-intensity beams.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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