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## A gaseous beam monitor for the CSR external-target experiment

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The cool storage ring (CSR) external-target experiment (CEE) will be the first large-scale nuclear physics experiment at the Heavy Ion Research Facility in Lanzhou (HIRFL). Within the project of CEE, a gaseous detector is being developed for the beam monitoring. It is designed to measure the lateral position of each beam particle up to a rate of  $10^6$  pps with a spatial resolution better than  $50 \mu\text{m}$ , and with minimum interference with the beam. The beam monitor mainly consists of two field cages inside a gas vessel with electrical fields orthogonal to each other, and custom-designed charge sensing and readout chips on the anode of each field cage. Two prototypes have been developed, with upgraded charge sensor and readout system on the second one. The charge sensor integrates in the same chip the charge sensing and readout functionalities, and is intended to be used as direct charge sensor, or with the gas electron multiplier (GEM). We will present the design and test of the prototypes, with a focus on the CMOS charge sensor of the second one.

**Primary author(s) :** Prof. WANG, Hulin (Central China Normal University)

**Co-author(s) :** WANG, Zhen (Guizhou Normal University); LIU, Jun (Central China Normal University); Prof. GAO, Chaosong (Central China Normal University)

**Presenter(s) :** Prof. WANG, Hulin (Central China Normal University)

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