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Investigation and improvement of slow extraction quality at HIRFL-CSRm

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The slow extraction experimental users are urgent and imperative for the quasi-consecutive and uniform beam during the spill, generally several seconds. The online monitoring of the beam spot and intensity are also demanded. Recently, a set of slow extraction instruments were upgraded at the HIRFL-CSRm not only for the online monitoring, but also the improvement of the spill quality and the investigation of the micro structure. A new RF knockout (RF-KO) with the equivalent power up to 9 kW was equipped at the CSRm for the third-integer resonance. An online ionization chamber was fixed at the CSR External-target Experiment (CEE) monitoring the pre-target beam spot and intensity. A feedback loop comprises the RF-KO, IC and the home-made electronics, was adopted and demonstrated a significant improvement on the spill quality. A pilot experiment with a SiPM based plastic scintillator at the CEE revealed the sub-ns micro structures. The data acquisition system features 1 Gsps sampling rate and 5s storage, covering the whole spill. The measurement in recent campaigns is presented and the further improvement of the feedback system, the detector design, the electronics parameters is given.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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