

Thin non-isochronous position sensitive detector for use in the rare RI-ring

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The Rare RI-ring is a newly constructed mass storage ring at RIKEN, built with the purpose of measuring the mass of exotic nuclei, such as those produced during the r-process. In order to develop the rings mass measuring capabilities, in ring beam diagnostics is required. For this purpose, a large area, non-isochronous, position sensitive detector with low energy loss is being developed to monitor beam position inside the ring.

The chosen design uses accelerated secondary electrons which are then reflected, by an electrostatic mirror, towards an MCP and delay line to measure position. Simulation tests suggest that, for the non-isochronous condition, the optimum acceleration and mirror potential ratio is 1:1. A prototype detector has been built as was able to achieve a resolution of up to 2.3mm in the x-direction during recent online tests at HIMAC.

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