

Slit system between the foci F2 and F3 of the BigRIPS separator

K. Yoshida,^{*1} M. Ohtake,^{*1} and Y. Yanagisawa^{*1}

A new slit system has been installed between the second and third foci (F2, F3) of the BigRIPS separator, as shown in Fig. 1. The slit system is used to select the angles of RI beams produced at the target (F0) because it is placed at the point-to-parallel spot where the beam angles focusing at F2 are converted to positions by beam-line magnets.

The inset of Fig. 1 shows the structure of the slit system. It consists of horizontal and vertical slits and has a similar structure as the F2 or F7 slit system.¹⁾ It was installed in a vacuum chamber whose inner dimensions were $750 \times 360 \times 875 \text{ mm}^3$. Slit-blades were made by tungsten alloys (HAC2, Nippon Tungsten Co. Ltd.) with dimensions $150 \times 150 \times 80 \text{ mm}^3$ (horizontal) and $240 \times 120 \times 80 \text{ mm}^3$ (vertical) and weights 38 and 44 kg, respectively. They were connected to the linear actuators mounted on the wall of the vacuum chamber through the vacuum feedthroughs. The

slit-blade positions were remotely controlled using the stepping motors of the linear actuators. A position accuracy of $\pm 0.1 \text{ mm}$ was achieved. To support the heavy slit-blades, a rail and cam followers were used for the horizontal slits, whereas Conston springs were used for the vertical slits. A detector stage for the position sensitive detector was also installed at the upstream of the slits in the vacuum chamber.

The hardware of the slit system was installed in March 2018 and its control software was modified in April 2018. The slit system became operational at the beginning of May 2018. Since then, the slit system is used as the standard device to select RI beam angles in the BigRIPS separator.

Reference

- 1) K. Yoshida *et al.*, RIKEN Accel. Prog. Rep. **38**, 293 (2005).

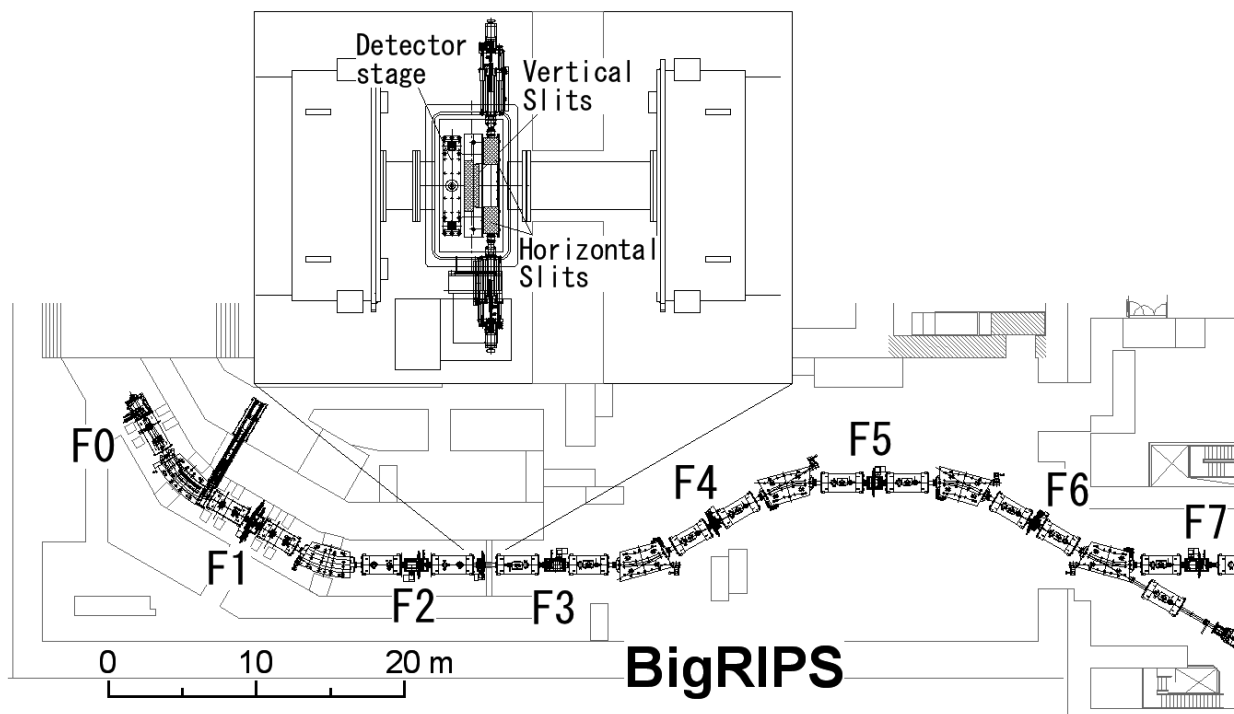


Fig. 1. Layout of the BigRIPS separator. The target (F0) and seven foci (F1-F7) of BigRIPS are indicated in the figure. Inset is the enlarged drawing of the newly installed slit system.

^{*1} RIKEN Nishina Center