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Operational experiences of high-power production target and high-power beam dump at BigRIPS separator at RIKEN RI beam factory

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A water-cooled rotating target and a water cooled stationary beam dump to withstand beam powers of 82 kW corresponding to the ^{238}U beams with the energy of 345 MeV/nucleon and the intensity of 1 particle μA , were developed as the target and beam dump system for the BigRIPS separator at RIKEN RI Beam factory in 2007. They have been successfully operated without severe trouble with the beam powers of up to 15 kW. Operational experiences of these systems over the 15 years will be presented at the conference. Results of measurements of the beam-spot temperatures for the target and the beam dump with various beams from RIBF accelerators were compared with the thermal model calculations and validity of the design will be discussed. Radiation damage to the system equipment, although not yet relevantly observed, will also be discussed along with PHITS¹⁾ simulation results.

1) T. Sato et al., J.Nucl.Sci.Technol.55, 684-690 (2018).

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