

## Development of FFAG Ring for Muon Phase-Space Rotation

by

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PRISM is a project aiming at searching for muon to electron conversion process beyond the Standard Model. This experiment requires narrow energy spread ( $\pm 2\sim 3\%$ ) of muon beam. Such energy spread is achieved with phase-space (bunch) rotation of pulsed muon beam which is produced from intense-pulsed-proton beam. In PRISM, an FFAG (Fixed Field Alternating Gradient) ring is adopted as a phase rotation ring. The FFAG ring (PRISM-FFAG ring) requires specific features such as a large transverse ( $20,000 \pi$  mm mrad  $\times$   $3000 \pi$  mm mrad) and longitudinal ( $\pm 20\%$  @ 68 MeV/c) acceptance and rapid phase rotation (a few micro seconds). For this purpose, a large aperture FFAG magnet, and high gradient RF cavity has been developed. A test PRISM-FFAG ring has been constructed to perform the phase rotation. To do this, we use alpha particles emitted from radioactive isotope,  $^{241}\text{Am}$  as beam. Here, design of PRISM-FFAG ring, R&D of components, commissioning status of the test ring, and future prospect will be presented.