



Contribution ID: 51

Type: not specified

PO15 - Challenging quest of three-dimensional spiral injection scheme to store the 80 keV electron beam in 12 cm diameter ring

Tuesday, 12 September 2023 15:10 (20 minutes)

Demonstration experiment by use of strongly X-Y coupled electron beam into the solenoid magnetic field will be introduced. Our goal is to validate newly developed three-dimensional beam injection scheme and formulate strategy of beam commission for the original experiment “muon $g-2$ /EDM experiment at J-PARC”. In our system, several beam diagnostic methods are available to understand different levels of commissioning steps. For instance, visualization of three-dimensional trajectory helps understanding of highly X-Y coupled Twiss parameters. Monitor by metallic wires and plastic scintillating fibers monitor system are useful to detect time-wise and spatial distribution of DC/pulsed beam. By combining these diagnostic methods, the beam is successfully injected and stored inside of the storage solenoid magnet, however, we have been facing with bunch of unforeseen events. The current biggest issue is how to align our beam center to the solenoid field center. Many challenges to hold the electron beam into 12 cm diameter ring for several micro-seconds will be given by small organization: “Six Samurai”.

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Session Classification: Poster / Demo Sessions