Contribution ID: **671** Type: **Poster**

Correction of the Effect of the Coherent Betatron Oscillation by the RF Electric Field for Fermilab Muon g-2 Experiment

Friday, 6 July 2018 20:15 (15 minutes)

The Fermilab Muon g-2 experiment aims to measure the muon anomalous magnetic moment with a 140 parts-per-billion precision to investigate the greater than 3 standard deviation difference between the Standard Model prediction and the previous measurement by the BNL Muon g-2 experiment. The coherent betatron oscillation (CBO) beam effects must be corrected for in the decay-positron time spectra fits used in high precision muon storage ring based anomalous magnetic moment measurements. This MC simulation study indicates that the application of radio frequency (RF) electric fields to the muon storage ring beam can reduced the CBO amplitude by up to a factor of 10, as well to increase the symmetry of the beam phase space. This is achieved by correcting the mismatched oscillation phases between the high and low momentum muon populations by modulating the muon beam betatron oscillation frequencies with off-resonance RF fields.

Primary author: KIM, On (IBS/CAPP and KAIST)

Co-authors: Dr HACIOMEROGLU, Selcuk (CAPP/IBS); CHOI, Jihoon; CHANG, Seungpyo (KAIST)

Presenter: KIM, On (IBS/CAPP and KAIST)

Session Classification: POSTER

Track Classification: Posters