Contribution ID: **2115** Contribution code: **WEPA032** Type: **Poster Presentation**

A 100 mA RFQ Beam Dynamics Design with Small Output Beam Emittance

Wednesday, 10 May 2023 16:30 (2 hours)

The control of beam emittance growth in high-current Radio Frequency Quadrupole (RFQ) accelerator is fairly challenging because of the strong space charge effect. The transverse beam emittance growth in the RFQ is well controlled in many international high power accelerator projects, while the longitudinal beam emittance growth is really significant which affects the beam transmission in the later accelerating structure especially in the super-conducting section. In this study, the beam dynamics design studies performed with respect to a 100 mA, continuous-wave proton RFQ linac are presented. The reasons for emittance growth have been analyzed, and great attention has been paid to both transverse and longitudinal beam dynamics to control the beam emittance growth. The beam dynamics has been simulated with the codes TranceWin and TOUTATIS. And the beam losses and field errors of the RFQ have been analyzed.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: GONG, Lingyun (Institute of Modern Physics, Chinese Academy of Sciences); DOU, Weiping (Institute of Modern Physics, Chinese Academy of Sciences); WANG, Zhijun (Institute of Modern Physics, Chinese Academy of Sciences)

Presenter: GONG, Lingyun (Institute of Modern Physics, Chinese Academy of Sciences)

Session Classification: Wednesday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D08: High Intensity in Linear Accelerators Space Charge, Halos