



Contribution ID: 75

Type: **Poster**

The Effect of Beam Chopping on the Emittance Growth of Negative Hydrogen Ion Beam

Thursday 6 October 2022 09:05 (5 minutes)

A fast electrostatic chopper is installed in the low-energy beam transport (LEBT) of China Spallation Neutron Source (CSNS) accelerator. It is used to chop the beam into pulses before RFQ accelerator. The chopped beam pulses synchronize with the period of Rapid Cycling synchrotron (RCS). But the electric field induced by this chopper will destroy the space charge compensation (SCC) in LEBT, which causes the rapid growth of H-beam emittance due to the space charge effect. This will lower down the beam transmission rate in RFQ and downstream accelerator. However, there is no quantified result of the effect of chopper electric field on the beam emittance for CSNS accelerator. In this paper, this effect is studied experimentally and the result will be used to guide the redesign of beam chopper at high beam current.

Authors: OUYANG, HuaFu (Institute of High Energy Physics, Chinese Academy of Sciences); LI, Hui; LIU, Shengjin; CHEN, Weidong; CAO, Xiuxia (Institute of High Energy Physics, Chinese Academy of Sciences); XIAO, Yongchuan (Institute of High Energy Physics, Chinese Academy of Sciences); LV, Yongjia (Institute of High Energy Physics, Chinese Academy of Sciences)

Presenter: LI, Hui

Session Classification: Poster Session 2

Track Classification: 4. Beam formation and low energy transport