ACCELERATOR SEMINAR

Cristopher Cortés

Heidelberg Ion-Beam Therapy Center (HIT)

Thursday, 17. March 2022 at 4 pm

Online-Seminar via Zoom (ID: 669 8228 7384 / PW: 757572)

Horizontal beam response for the design of an RF signal for the slow extraction at HIT's synchrotron

The Heidelberg Ion-Beam Therapy Centre's synchrotron makes use of the well established slow extraction RF KO method near the third-order resonance to deliver ion beams to patients and experiments. The horizontal beam response was studied experimentally and with simulations at extraction conditions in order to deduce regions of interest for an optimal excitation signal spectrum. Two narrow regions were found near the betatron resonance. With these results a new signal was engineered for the emittance blow-up scheme. The new excitation signal improves the spill quality for the available extraction configurations; for instance the median value of the spill duty factor R = mean² / (mean² + std.dev²) for the most rigid available carbon-ion beam E = 430 MeV/u improves from 92.5% to 97.5%.



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