Contribution ID: **633** Contribution code: **MOPM050** Type: **Poster Presentation**

Combining quadrupole-driven slow extraction with RFKO at the CERN SPS

Monday 2 June 2025 16:00 (2 hours)

The CERN Super Proton Synchrotron (SPS) employs quadrupole-driven third-integer slow extraction to deliver beam to the North Area. This process is controlled by ramping all the magnets in the lattice, gradually driving the circulating beam into the tune resonance. In medical synchrotrons, Radio-Frequency Knock Out (RFKO) has proven to be a reliable alternative for driving the extraction process while maintaining good spill quality. Inspired by these efforts, a hybrid scheme was tested in the SPS, where a transverse exciter was used to apply a sinusoidal excitation in parallel with the magnetic ramp. It is demonstrated that this setup improves spill uniformity both in simulation and measurements.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

Funding Agency

Author: ARRUTIA SOTA, Pablo Andreas (Oxford University)

Co-authors: VELOTTI, Francesco (European Organization for Nuclear Research); FRASER, Matthew (European Organization for Nuclear Research); LEVENS, Thomas (European Organization for Nuclear Research)

Presenter: ARRUTIA SOTA, Pablo Andreas (Oxford University)

Session Classification: Monday Poster Session

Track Classification: MC1 :Colliders and Related Accelerators: MC1.T12 Beam Injection/Extraction and Transport