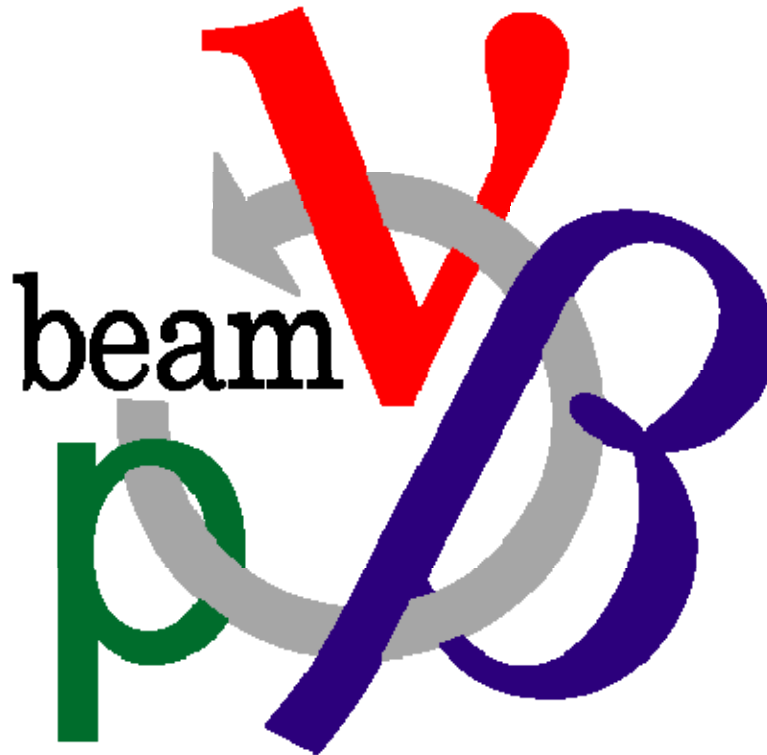


RCS RF cycle and beam losses

A.Lachaize CNRS/IN2P3 IPN Orsay

The logo for EURISOL, with the word 'EURISOL' in a bold, multi-colored font where each letter has a different color (E: red, U: orange, R: yellow, I: green, S: blue, O: purple, L: dark blue).

The RF cycle has been optimized to minimize beam losses during trapping and acceleration up to 3.5 GeV p eq. While keeping the required longitudinal emittance. (0.64 eV.s for Helium and 1.4 eV.s for Neon.)

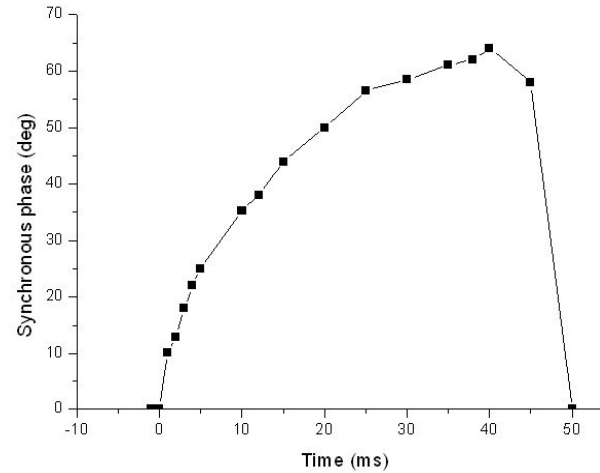
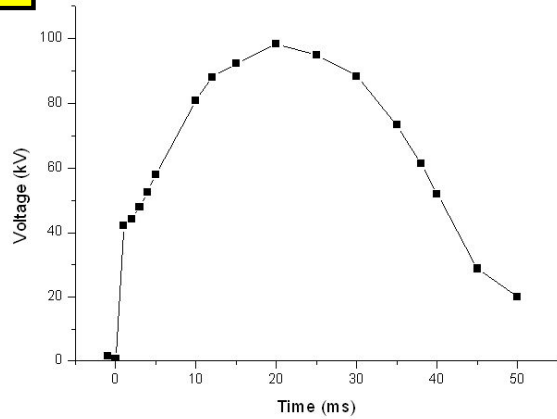
Obtaining and preserving the longitudinal emittance during cycle (with minimum losses) leads to a relative momentum spread after injection of 10^{-4} .

Simulations have been performed with ACCSIM and compared to another code developed at IPN Orsay in order to valid the results.

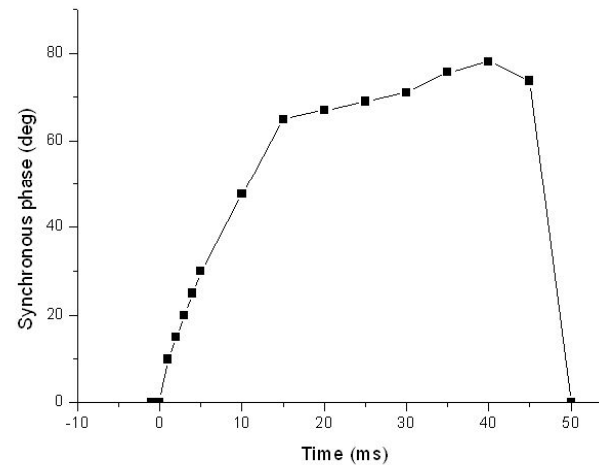
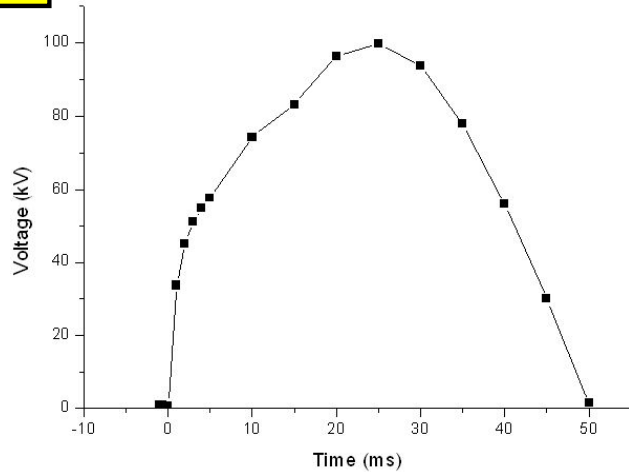
Losses occuring during the cycle (including decay and capture losses) have been calculated with ACCSIM. Results will be presented by S.Trovati in the next talk.

Voltage and phase program

He



Ne

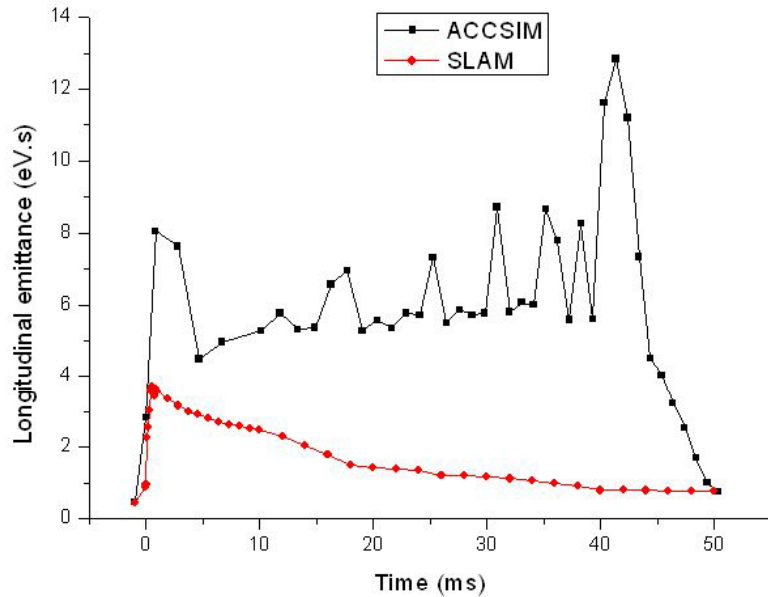


The maximum synchronous phase is determined by the required emittance value at extraction so the phase has to increase (as smoothly as possible) from 0 at the end of capture up to this final value at the end of acceleration. (62° for He and 78° for Ne).

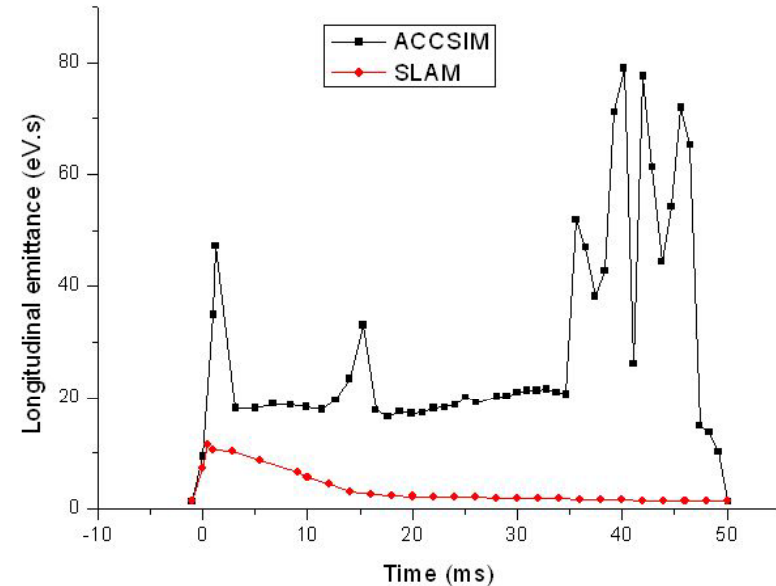
The voltage program is directly deduced from the phase program.

Longitudinal emittance variation during acceleration

He



Ne



The « small » difference between code results is due to a problem with the emittance calculation in ACCSIM. This error is under correction by Fred Jones.

Total transmission of the beam reach 60% for Neon ions and 65% for Helium ions, including multiturn injection efficiency, RF trapping, acceleration and decay losses.