

The SPS as Lead-Ion Accelerator, X. ALTUNA,
G.L. ARDUINI, C. ARIMATEA, R. BAILEY,
R. BLANCHARD, T. BOHL, E. BROUZET,
H. BURKHARDT, P. COLLIER, K. CORNELIS,
G. DE RIJK, A. FAUGIER, F. FERIOLI, A. HILAIRE,
M. LAMONT, T. LINNECAR, L. NORMANN,
M. JONKER, C. NIQUILLE, G. ROY,

J. WENNINGER CERN - In 1995 the CERN SPS was used during two months in order to accelerate fully stripped ions of the Pb^{208} isotope from the equivalent proton momentum of 13 GeV/c to 400 GeV/c. The radio frequency swing which is needed in order to keep the synchronism during acceleration is too big to have the SPS cavities deliver enough voltage for all frequencies. In a first stage, the beam is accelerated from 13 GeV/c to 26 GeV/c using the fixed frequency mode. During this stage the beam is grouped in four 2μ sec batches, separated by 3μ sec holes during which the frequency is changed in order to keep synchronism. At 26 GeV the beams are de-bunched and recaptured in order to fill the 3μ sec holes. From there on the lead ions are then accelerated up to 400 GeV/c with the normal frequency program. The de-bunching and recapture at 26 GeV improved the effective spill at extraction by a factor of three. Intensities up to $3.5 \cdot 10^{10}$ charges could be obtained at 400 GeV/c. The total efficiency of the two RF captures was 65%.